

▪ **COUNCIL OF MINISTERS REGULATIONS NO. 49/1999 COUNCIL OF MINISTERS REGULATIONS TO PROVIDE FOR THE REGULATIONS OF ELECTRICITY OPERATIONS**

These Regulations are issued by the Council of Ministers pursuant to Article 5 of the Definition of powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation No. 4/1995 and Article 28(1) of the Electricity Proclamation No. 86/1997.

**PART ONE**

**General**

**1. Short Title**

These Regulations may be cited as the “Electricity Operations Council of Ministers Regulations No. 49/1999.”

**2. Definitions**

In these Regulations, unless the context requires otherwise:

1. “Proclamation” means the Electricity Proclamation No. 86/1997, and definitions provided therein shall also apply to these Regulations;
2. “Agency” means the Ethiopian Electricity Agency;
3. “Generation facility” means a set of technology used to produce electricity;
4. “peak demand” means the highest level demand for electricity achieved by electricity users within a defined period of time.
5. “system based load” means a defined amount of demand for electricity continuously available in the supply system;
6. “marginal generation capacity cost” means the cost associated with producing one additional unit of power expressed in kilo watt;
7. “marginal energy cost” means the cost associated with producing one additional unit of energy expressed in kilowatt hour;
8. “system generation price” means a single price of power or energy prevailing in the supply system which in effect consists of different generation technologies bearing different unit cost of generation;
9. “system marginal transmission capacity cost” means the cost associated with transporting and transforming one additional unit power expressed in kilo watt;
10. “system marginal distribution capacity cost” means the cost associated with distributing and transforming one additional unit of power expressed in kilo watt;
11. “high voltage” means a voltage level above 60,000 volt;

12. "medium voltage" means a voltage level above 1000 but less than 60,000 volt;
13. "low voltage" means a voltage level up to 1000 volt;
14. "person" means a natural or a juridical person.

## **PART TWO**

### ***Electricity Operation Licenses***

#### **CHAPTER ONE**

##### **Application for License**

##### **3. General Requirements**

- 1) Any application for a license of generation, transmission, distribution and sale, as well as application for importation or exportation of electricity shall be addressed to the Agency and shall contain:
  - (a) identity and address of the applicant;
  - (b) feasibility study of the project;
  - (c) environmental impact assessment;
  - (d) documents showing the applicant's financial situation, technical competence and experience;
  - (e) construction and installation designs, and
  - (f) such other information the Agency may determine by directives.
- 2) The feasibility study referred to in Sub-Article 1(b) of this Article shall consist of the following components:
  - (a) social and economic impacts;
  - (b) estimated costs and returns of the project;
  - (c) duration of the project;
  - (d) construction and installation program and commencement date of operation.
- 3) The environmental impact assessment referred to in Sub-Article 1(c) of this Article shall consist of the following components:
  - (a) all potential damages to the environment along with mitigation, restoration or reclamation plan including resettlement program for displaced residents;
  - (b) the estimated costs of implementation of the plans and programs referred to in paragraph (a) of this Sub-Article.
- 4) With out prejudice to the provisions of Articles 9 and 10 of these Regulations, information provided to the Agency by any applicant shall be confidential.

#### **4. Application for Generation License**

Any application for a generation license shall, in addition to the general requirements stated under Article 3 of these Regulations, contain the following:

- 1) source of electricity;
- 2) map of the project site at the scale determined by the Agency;
- 3) total power capacity of the project;
- 4) power purchase contract where appropriate.

#### **5. Application for Transmission License**

Application for transmission license shall, in addition to the general requirements stated under Article 3 of these Regulations, contain the following:

- 1) preliminary route map of proposed main and alternative transmission lines;
- 2) total length and maximum load of transmission lines;
- 3) standard of voltage and frequency.

#### **6. Application for Distribution and Sale of Electricity License**

Application for distribution and sale of electricity license shall, in addition to the general requirements stated under Article 3 of these Regulations, contain the following:

- 1) the source from which the distribution system draws electricity;
- 2) estimated number of customers to be benefited from the project and proposed price of each unit of power to be sold;
- 3) power purchase contract where appropriate.

#### **7. Application for Importation and Exportation License**

Application for importation or exportation license shall, in addition to the relevant general requirements stated under Article 3 of these Regulations, contain the following:

- 1) an agreement made with concerned authority of a country from which or to which electricity is imported or exported;
- 2) standard of voltage and frequency;
- 3) power purchase contract where appropriate.

## **CHAPTER TWO**

### **Registration and Advertisement of Application**

#### **8. Registration of Application**

Each application for license, if complete and in the proper form as provided in Chapter One of these Regulations, shall immediately be registered in the register

maintained in the office of the Agency for such purpose in the order received, and each applicant shall upon such registration be given a receipt indicating the date and number thereof.

#### **9. Advertisement of application**

- 1) The Agency shall, within three working days after the registration of an application of license, send notice of the application to the concerned publishers for publication on two successive issues of news papers which have wider circulation in the country.
- 2) The advertisement shall describe the type, purpose and area of license and shall give the address of the offices where copies of maps may be inspected or purchased, and shall specify the address of the Agency to which an objection or comment may be forwarded by any interested person.
- 3) Without prejudice to the provisions of Sub-Articles (1) and (2) of this Article, the advertisement shall be announced on the Radio and TV for three consecutive days.
- 4) The applicant shall bear costs necessary for such an advertisement.

#### **10. Deposition of Copies of Maps for Public Inspection**

The applicant shall deposit copies of the maps of the proposed area of license for public inspection at the office of the Agency and the municipality of proposed area of license.

#### **11. Lodging of Objections**

- 1) Within 60 days form the last publication of the advertisement on the newspaper any interested person may file at the office of the Agency a written objection against the proposed license or may forward any comment stating the reasons thereof.
- 2) If an objection filed by any person pursuant to Sub-Article (1) of this Article is rejected, the Agency shall so notify the person in writing setting the reasons for decision.

#### **12. Amendment of application**

If an applicant desires to make any amendment to his application, he shall submit a written application to the Agency. Such application shall also be subject to the provisions of this Chapter.

### **CHAPTER THREE**

#### **Issuance and Refusal of License**

#### **13. Grant of License**

- 1) If, upon the expiry of the 60 days period specified under Article 11 of these Regulations no objection to the application has been filed at its

office, the Agency shall, upon payment by the applicant of the prescribed fees, grant the requested license within 30 days; provided, however, that no license shall be granted unless the Agency is satisfied that the applicant has the necessary financial resource, technical competence and experience to meet the obligations relating to the license requested.

- 2) Where an objection to the application has been filed pursuant to Article 11 of these Regulations, the granting of license shall be deferred pending a decision by the Agency within 120 days from the registration. If the decision of the Agency is against the submitted objection, then, a license shall be issued to the applicant subject to Sub-Article (1) of this Article.
- 3) No license shall be issued under these regulations unless the applicant is eligible to invest in the sector pursuant to the provisions of the relevant investment law.

#### **14. Refusal of License**

- 1) If the Agency determines that the application or the information supplied or the qualifications, experience or financial capacity of the applicant in connection with the proposed license is materially inadequate, it shall so notify the applicant in writing setting the reasons of the decision.
- 2) The applicant shall be permitted to consult with the Agency in order to provide all evidence in support of his position, shall be afforded a time not less than 30 days to overcome the objection of the Agency, and shall also be entitled to amend or complete his application.
- 3) If, following such consultation and expiry of such time, the Agency still believes that the application or the information supplied or the qualifications of the applicant are materially inadequate to justify the grant of a license, it shall notify same to the applicant in writing.

#### **15. Replacement and Issuance of Copies of Licenses**

- 1) The licensee may, upon the payment of the prescribed fees, request the Agency to issue one or more copies of his license. Upon receiving such request, the Agency shall issue such certified copies to the licensee.
- 2) The licensee may, upon the payment of the prescribed fees, apply to the Agency for the replacement of his license which has been lost or destroyed. Upon receiving such application the Agency shall issue replacement of such license to the licensee.

#### **16. Transfer of License**

Any licensee may transfer his license pursuant to Article 12 of the Proclamation; provided, however, that the transferee has the required competence to fulfill the obligations of the license.

## **17. Duration and Renewal of license**

- 1) The duration of a license issued pursuant to the provisions of the Proclamation and these Regulations shall be based on the life of the project; provided, however, that the maximum duration shall not exceed the following:
  - (a) for hydro power generation license .....40 years
  - (b) for transmission license.....50 years
  - (c) for distribution and sale license.....50 years
  - (d) for importation and exportation license.....10 years
- 2) The maximum duration of license for non-hydro power generation plants shall be determined by directives of the Ministry.
- 3) A license may be renewed for successive periods if the licensee:
  - (a) has made an application to that effect two years prior to the expiry of the license;
  - (b) is not in breach of any provisions of the Proclamation, these Regulations and directives issued hereunder which constitutes grounds for revocation of his license; and
  - (c) has agreed to upgrade his operations in accordance with latest technology generally accepted in the power industry; provided, however, that the duration of each renewal shall not exceed half of the initial period of the license.
- 4) Renewal shall be subject to the provisions of Chapter Two of this part.

## **18. Revocation of License**

Without prejudice to the provisions of Article 14(2) of the Proclamation, a license may be revoked when a licensee commits any one of the following infractions:

- 1) failure to comply with technical standards, safety requirements and environmental laws;
- 2) failure to comply with tariff regulation;
- 3) repeated interruption, reduction or termination of electricity supply in the absence of force majeure.

## **19. Termination of License**

- 1) A license shall terminate if;
  - (a) it expires without being renewed pursuant to the provisions of Article 18 of these Regulations;
  - (b) it is revoked by the Agency pursuant to the provisions of Article 19 of these Regulations;
  - (c) with out prejudice to the right of heirs, the licensee dies or where the licensee is not a natural person, it is liquidated or declared bankrupt.
- 2) Upon termination of a license, the government may take over, in consideration of compensation on the basis of book value or

replacement cost whichever is the lower, the facilities of the licensee which are absolutely necessary to continue, without interruption, the supply of electric power.

- 3) If the government does not desire to take over the facilities due to their being un-operational the licensee shall remove such facilities at its own cost.

## **20. Licensee Fees**

- 1) Any applicant for electricity operation license shall, upon the registration of his application, pay in advance 20% of the license fees to be paid under this Article; provided, however, that such payment shall not be refundable upon refusal of license under Article 14 of these Regulations.
- 2) Fees to be paid for generation license shall be Birr 1.00 per kilowatt; provided, however, that minimum fees shall be Birr 1000.
- 3) Fees to be paid for transmission license shall be Birr 20 per circuit kilo meter; provided, however, that minimum fees shall be Birr 2000.
- 4) Fees to be paid for distribution and sale license shall be Birr 2 per kilo volt ampere of transformer capacity; provided, however, that minimum fees shall be Birr 1000.
- 5) Fees to be paid for import or export of electricity license shall be Birr 1.00 per megawatt hour; provided, however, that minimum fees shall be Birr 2000.
- 6) The fee to be paid for the amendment or renewal of a license shall be 50% of the fee required for the issuance of such license.
- 7) The fee to be paid for the transfer of a license shall be 20% of the fee required for the issuance of such license.
- 8) Fees to be paid for issuance of copies or replacement of license shall be Birr 150.

## **PART THREE**

### **Rights and Obligations of Licensees and Customers**

#### **21. Rights of Licensees**

Licensees shall have the following rights:

- 1) to enter the land covered by the license to undertake electricity operations;
- 2) to issue warnings and disconnect electricity of customers who violate any provision of these Regulations and directives issued hereunder;
- 3) to inspect the electricity installations of customers.

#### **22. Obligation of Licensees**

Licensees shall have the following obligations:

- 1) to carry out electricity operations in accordance with the provisions of the proclamation, these Regulations and directives issued there under and the terms and conditions of the license;

- 2) to take proper measures in order to protect human life, property and the environment;
- 3) to supply electricity to customers on regular basis;
- 4) to respond promptly to connection demand of new customers within its license area;
- 5) to give advance notice to customers before each interruption of electric power;
- 6) to resume electricity service as soon as the reasons for the interruption stated under Article 16 of the Proclamation ceases to exist;
- 7) to provide customers with the necessary guidance on the use of electricity;
- 8) to respond promptly to customers' complaints;
- 9) to keep all employment, financial, commercial and other books and records as well as records of electricity operations, and submit reports periodically as determined by directives;
- 10) to made available to the Agency all books and records for inspection;
- 11) to give employees the training and education necessary for electricity operation;
- 12) to give preference to domestic goods and services, where they are readily available at competitive price and are of comparable quality.

### **23. Rights of Customers**

Customers shall have the following rights:

- 1) to require the provision of regular, safe and quality electricity services from licensees;
- 2) to submit to the licensee or the Agency, as may be appropriate, any complaints related to electricity services.

### **24. Obligation of Customers**

Customers shall have the following obligations:

- 1) to comply with notices and instructions on the use of electricity ;
- 2) to facilitate the installation, repair, inspection and meter reading of electricity;
- 3) to promptly notify the licensee of any irregularities of electricity.

## **PART FOUR**

### **Electricity Price and Tariff**

#### **25. General Principles**

- 1) Electricity pricing shall be based on the principle of efficient allocation of resources where customers and producers receive the true costs associated with consuming and producing one additional unit of energy respectively.
- 2) The price that customers get charged for shall be computed in consideration of the cost incurred by the total system, and the energy



consumption shall as much as possible, be made fair taking the production cost into account.

- 3) The rate level shall be made sufficient enough to support continuing investments and sustainable services, and shall include a system of pricing that guarantees an improved service efficiency.
- 4) Tariff structures shall be kept simple enough to avoid or minimize implementation difficulties.

## **26. General Pricing Approach**

- 1) Price for supplying energy and power to retail or bulk customers shall, subject to adjustments to meet financial requirements to be defined as necessary, be determined on the basis of:
  - (a) the system marginal cost; and
  - (b) optimum system planning
- 2) Where the approach stated under Sub-Article (1) of this Article becomes inapplicable to pricing outside the national grid system due to technical reasons, such pricing shall be based on:
  - (a) average cost of supply; and
  - (b) an acceptable rate of return on investment

## **27. Generation Pricing**

- 1) With regard to generation pricing within the national grid system:
  - (a) the most efficient generation facility identified to meet the system's peak demand shall constitute the base for marginal generation capacity cost;
  - (b) the most efficient generation facility identified to meet the system's base load shall provide the base for computation of energy price;
  - (c) marginal energy cost shall, in the case of hydro power plants, be computed on the basis of the cost which is not attributed to capacity;
  - (d) generation cost of thermal plants and wholesale purchase price of power and energy shall be computed on the basis of planned generation and shall be distributed on the system generation price.
- 2) With regard to generation pricing outside the national grid system:
  - (a) the most efficient generation facility used to meet the system demand shall constitute the base for determining the marginal generation capacity cost;
  - (b) marginal energy cost shall be computed for each generation facility;
  - (c) for cases of small hydro power plants similar approach may be used as in the case of large hydro power plants in the national grid system;

- (d) generator's specific prices shall be spread over the system generation price on the basis of planned generation within the system; and, where appropriate, frequent review of such price by the Agency shall be maintained.
  - (e) appropriate incentive and penalty mechanisms shall be incorporated in the pricing process for securing a higher level for availability of thermal generation facilities.
- 3) Price of bulk energy and power from private producers shall be determined in accordance with power purchase agreements as approved by the Agency, and shall be directly transferred to customers.

### **28. Power Transmission Pricing**

- 1) The system marginal transmission capacity cost shall form the base for transmission pricing within the national grid system.
- 2) The system's transmission capacity cost outside the national grid system shall be determined on the basis of estimated or actual accounting costs and an acceptable rate of return on investment.

### **29. Power Distribution Pricing**

- 1) With regard to power distribution pricing within the national grid system, system marginal distribution capacity cost shall form the base for distribution pricing.
- 2) With regard to power distribution pricing outside the national grid system, the system's distribution capacity cost shall be determined on the basis of estimated or actual accounting costs and an acceptable rate of return on investment.
- 3) Generation and transmission cost at the appropriate voltage level shall be added on top of the distribution cost to form the tariff applicable to customers.

### **30. Other Charges**

- 1) Energy and power metering costs and billing costs shall form the base for determining marginal customer related costs.
- 2) Payment of connection charges shall be related to additional costs resulting from supplying new demand.
- 3) Charges on reactive power consumption shall be related to the capacity cost that each reactive power consumption entails at the voltage level at which consumption is effected.
- 4) Other appropriate charges may be effected in accordance with contractual agreements between licensees and customers.

### **31. Efficiency Indexes and Pricing Procedures**

- 1) the Agency shall, in consultation with licensees, determine generation, transmission and distribution efficiency indexes indicating potentials

for improving electricity services which would have ultimate bearing on prices.

- 2) detailed pricing procedures for applying the provisions of this part incorporating all appropriate pricing factors shall be determined by the Agency .

### **32. Interim Price Adjustments and Studies for Tariff Revisions**

- 1) Interim adjustments to generation, transmission and distribution prices shall be made on the basis of changes in relevant input prices and efficiency indexes.
- 2) The frequency of interim adjustments shall be determined by the Agency.
- 3) Studies on total tariff revisions shall be conducted every four years.

### **33. System of Accounts**

- 1) Uniform system of accounts commensurate with generally accepted accounting principles and designed to support the price regulation efforts, shall be determined by the Agency to be applied by all licensees.
- 2) Any licensee shall submit audited reports of its accounts to the Agency within six months from the end of the Government's fiscal year.

## **PART FIVE**

### **Standards of Safety, Technical and Quality of Service**

#### **Chapter One**

#### **General Safety Requirements**

### **34. Safety of Electrical supply Lines and Apparatus**

#### **All electric supply lines and apparatus shall:**

- 1) be of sufficient ratings for powers, insulation and estimated fault current and of sufficient mechanical strength for the duty which they may be required to perform under the environmental conditions of installation; and
- 2) be constructed, installed, protected and maintained in such a manner as to ensure safety of human beings, animals and property.

### **35. Service Lines and Apparatus in Customers' Premises**

- 1) Any licensee shall ensure that all electrical lines, fittings and apparatus belonging to him or under his control which are in customers' premises are in safe conditions and in all respects fit for supplying power.

- 2) The customer shall, as far as circumstances permit, take precautions for the safe custody of the equipment in his premises belonging to the licensee.

### **36. Towers and Poles Grounding**

- 1) All metal towers and poles shall have the basic grounding installed on one leg using ground rods with 20mm. diameter steel rods.
- 2) Additional basic grounding shall be installed on other legs where it is required to reduce the tower footing resistance to a maximum of 10 ohms.
- 3) In exceptional location of rocky soil with very high resistivity the maximum tower footing resistance may reach 20 ohms.
- 4) All metal supports and reinforced and pre-stressed cement concrete supports of overhead lines, metallic fittings attached thereto, neutral of transformers and control panel of customers shall be permanently and efficiently earthed.

### **37. Position of Switches and Cut-out**

No cut-out, link or switch other than a linked switch arranged to operate simultaneously on the earthed or earthed neutral conductor and line conductor shall be inserted or remain inserted, in any earthed or earthed neutral conductor of a two wire system, or in any earthed neutral conductor of a multi-wire system of any conductor connected thereto except in the case of link for testing purpose or a search for use in controlling a generator or transformer.

### **38. Guarding**

- 1) Every guard-wire shall:
  - (a) have an actual breaking strength of not less than 635kg;
  - (b) be connected with earth at each point at which its electrical continuity is broken;
  - (c) be galvanized if made of iron or steel.
- 2) Every guard-wire or cross connected system of guard-wires shall have sufficient current carrying capacity to ensure the rendering dead, without risk of the fusing of the guard-wire or wires till the contact of any line wire has been removed.

### **39. Color Coding**

Color coding of permanent nature shall be provided by the licensee on substations, net stations and customers distribution bus bars determined by directives of the Agency to distinguish earthed neutral conductor or the conductor which is to be connected thereto from any live conductor.

#### **40. Productive Devices and Equipment**

- 1) Every overhead line erected over any part of a street, or any other public place or in any factory or mine, or in any customer's premises shall be protected with a device approved by the Agency.
- 2) Fire buckets filled with clean dry sand, fire extinguishers and first-aid boxes or cupboards shall be conspicuously marked and kept in all generation stations, enclosed substations and switch stations.
- 3) Adequate number of gas masks shall be kept conspicuously at accessible places in every generation station with capacity of 5 mega watt and above and enclosed substation with transformation capacity of 5 mega volt ampere and above for use in the event of fire or smoke.

#### **41. Protection Against Lightening**

Any licensee owning overhead line, substation or generation station, which is so exposed as to be liable to injury from lightening shall adapt efficient means for diverting to earth any electrical surges due to lightening.

#### **42. Danger Notice**

Any licensee owing high voltage installation shall affix permanently in a conspicuous position a danger notice in English, Amharic and the local language of the area with the sign of skull and bones on generators, transformers, supports of overhead lines which can be easily climbed and other electrical installations as may be required by directives of the Agency.

#### **43. Instructions for Restoration from Electric Shock**

- 1) Instructions in English, Amharic and the local language of the area for the restoration of persons suffering from electric shock shall be affixed by the licensee on a conspicuous place in every generation station, enclosed substation, enclosed switch station and in every factory.
- 2) Copies of the instructions referred to in Sub-Article (1) of this Article shall be supplied on demand by any person at a price to be fixed by directives of the Agency.
- 3) In every manned high voltage generation station, substation or switch station, an artificial respirator shall be provided and kept in good working condition.

#### **44. Accident Report**

If any accident occurs in connection with generation, transmission, distribution or use of electrical energy resulting in injury or loss of human or animal life or damage to property, the licensee shall send to the agency a report on the accident within 24 hours of knowledge of its occurrence.

#### **45. Unused Overhead Lines**

Where an overhead line ceases to be used as an electrical supply line, the licensee shall maintain it in a safe mechanical condition or remove it.

#### **46. Prohibitions**

- 1) No electrical installation work including additions, alterations, repairs and adjustments to existing installation, except such replacements of lamps, fans, fuses, switches, low voltage domestic appliances and fittings as in no way alter its capacity or character, shall be carried out in the premises of the customer except by the licensee or an electrical contractor with the consent of the former.
- 2) Undertaking any type of construction work or growing trees shall not be allowed under electric power lines or within the distance of horizontal clearance thereof.

#### **47. Inspection and Testing of Electrical Installation**

The Agency may, where it deems it necessary and at any time, inspect and test generation stations, substations, transmission lines, switch stations and other electrical installations.

### **CHAPTER TWO**

#### **Transmission Lines and Substations**

##### **48. Line Route**

In the process of line route selection, size and character of load, reliability of power sources, positions of substations, future expansion possibilities, safety and environmental impacts as well as construction and operational costs shall be taken into consideration.

##### **49. Conductors and Earth Wires**

- 1) Conductors shall satisfy all electrical, mechanical and economical requirements.
- 2) The cross section of conductors shall normally be selected from the suitable national standard ranges or where such standard is not available from that of the International Electro-Technical Commission standards.
- 3) The selection under Sub-Article(1) and (2) of this Article shall be carried out in accordance with guidelines of the Agency and shall be followed by checks for current carrying capacity, corona and radio noise elimination, mechanical strength, voltage drop and other factors.

## **50. Insulators**

- 1) The insulation levels of different devices, equipment or structures shall be selected and applied taking into account the over voltage magnitudes in the network as well as the properties of different protective means so that the number of insulation failures and operational outages are limited on an acceptable economical level.
- 2) The selection under Sub-Article (1) of this Article shall comply to the national standard or where such standard is not available to the International Electro-Technical Commission standards.

## **51. Fittings**

String insulator fittings of ball eye and socket couplings, yokeshackels, clamps, arcing horns, vibration dampers and armor rods shall be selected according to their voltage in conformity with the national standard or where such standard is not available with the International Electro-Technical Commission standards.

## **52. Line Transposition**

The transposition of short lines shall be at intermediate substations and that of long lines shall be at suitable points along the line for voltage 132 kv and above depending on circuit arrangements.

## **53. Designs of Towers**

- 1) Towers shall be designed to withstand the following loads which are assumed to occur during the estimated life time of the line:
  - (a) wind loads, weights of conductors, earth-wires and insulator strings and conductor tensions;
  - (b) the overturning and torsional movements resulting from the breakdown of any one of the conductors and earth-wires;
  - (c) loads to be caused by erection and maintenance works.
- 2) The conductor forces shall be calculated in all assumed temperatures and wind velocities.
- 3) In determining the dimensions of a tower, phase to phase, phase to body and ground clearances, length of insulator strings and maximum sag and shielding angle shall be considered.
- 4) The designs of foundations shall be checked for uplift and compression forces in each tower footing arising from normal working, loading, and broken wire conditions with the appropriate factor for safety.
- 5) The designs of towers shall, as may be appropriate, consider future growth in the demand for power transmission.

## **54. Clearance between Line and Un-energized Parts**

The minimum distance between the unenergized, earthed, and live parts of the line shall be determined in accordance with directives of the Agency.

### **55. Clearance between Phases**

The minimum spacing between the conductors or earth wires shall be determined by taking into consideration sag of the conductor at maximum temperature, length of the suspension insulator string, and the standard set by the Agency.

### **56. Clearance from Terrain, Roads and Water Ways**

- 1) The height of conductors, at maximum temperature, above ground or water surface shall be at least 5 meters plus the minimum distance between live and unenergized parts.
- 2) The height of conductors from the road surface shall be at least:
  - (a) 8 meters at maximum temperature ;and
  - (b) 7 meters with conductor broken in the neighboring span.
- 3) In canals and other navigable water ways, the height of conductors from the highest mast shall, at the highest water level and at maximum temperature, be at least 1.5 meters plus the minimum distance between live and unenergized parts.

### **57. Clearance from Buildings and Structure**

- 1) The horizontal distance from conductors to any point of a building or structure shall, with maximum wind, be at least 4.5 meters.
- 2) If the requirement stated under Sub-Article(1) of this Article cannot be fulfilled, the height of the conductor from the building or structure shall, at maximum temperature and with conductor broken in the neighboring span, be at least 5.5 meters.

### **58. Clearance from Trees**

- 1) The vertical and horizontal distance of conductors from trees shall, at maximum temperature and with maximum wind, be at least 1.5 meters plus the minimum distance between live and unenergized parts.
- 2) In the case of fruit trees the distance referred to in Sub-Article (1) of this Article shall be 4 meters plus the minimum distance between live and unenergized parts.
- 3) The distances stated under Sub-Article (1) and (2) of this Article shall be maintained in accordance with the expected growth of trees.

### **59. Clearance from Other Lines**

- 1) In the case of parallel lines the horizontal distance from the transmission line to conductors of another transmission or telecommunication line shall, with maximum wind, be at least 2.5 meters plus the minimum distance between live and unenergized parts.



- 2) In the case of crossing lines the vertical distance between conductors shall, at maximum temperature and with conductors broken in the neighboring span, be 1.5 meters plus minimum distance between live and unenergized parts.
- 3) If the lines referred to in Sub-Article (2) of this Article have different voltage, the distance shall be determined according to the higher voltage.

## **60. Substations**

- 1) Any substation design shall be carried out in such a way as to ensure supply security, extendibility, maintainability capability of being extended, and safety as well as economical operations.
- 2) Without limiting the generality of Sub-Article (1) of this Article, any substation shall be designed with at least one low voltage feeder and a five year supply guarantee at the anticipated load growth rate.
- 3) The selection of equipment shall be based on the national standard or where such standard is not available on the International Electro-Technical Commission standards and shall consider both current and future system requirements and equipment layout standardization adopted by the Agency.
- 4) Production of electrical components shall be commenced only after the drawings have been approved by the Agency, and any subsequent change on the drawings shall not be made without the approval of the Agency.
- 5) Substation sites shall be selected with due regard to minimizing costs and satisfying functional requirements such as accessibility, expandability, proximity to load centers, avoidance of pollution and the social and cultural need of operators.

## **CHAPTER THREE**

### **Distribution**

#### **61. General Provisions for distribution Line Design**

- 1) Distribution network design shall:
  - (a) consider provision for future expansion; and
  - (b) take into account the predicted load characteristics of the area for the duration of the distribution license.
- 2) Distribution network shall be designed to offer economic benefits by reducing electrical losses, black out and operational and maintenance costs.
- 3) The layout design of a distribution network shall be based on the master plan or where a master plan is not available on the plan approved by the Agency.
- 4) The size of the distribution network components and type of their structure shall be in conformity with the requirements of the national

standard, or where such standard is not available, with that of the International Electro-Technical Commission standards.

## **62. Transformers**

The functional and technical standards of transformers to be used in a distribution network and type of their structure shall be determined in accordance with directives of the Agency.

## **63. Erection of Poles**

- 1) Erection of poles shall conform with master plans or where such master plans are not available with plans approved by the Agency.
- 2) The height and the span of electric poles shall be determined in accordance with directives of the Agency.

## **64. Service Lines**

No service line or tapping shall be taken off an overhead line except at a point of support.

## **65. Distribution System Conductors and Earth Wires**

- 1) Distribution system conductors and earth wires shall be technically and economically feasible.
- 2) The cross section of conductors and earth wires shall be selected in compliance with the national standard, or where such standard is not available, with the International Electro-Technical Commission standards.

## **66. Clearances**

The distance from medium and low voltage conductors to buildings and structures, runways, rail roads, water ways, terrain, communication circuits, aerial supply cables and lightning protection wires, and as well as clearance of conductors between phases and between earthed and live parts shall be determined in accordance with directives of the Agency.

## **67. Electricity Consumption**

- 1) Components of electricity consumption meters shall meet all requirements regarding metering performance and efficiency set in the national standard or where such standard is not available in the International Electro-Technical Commission standards.
- 2) Electricity consumption meters shall be calibrated according to the appropriate load standards prior to their installations in customers' premises.

## **68. Quality of Distribution Service**

- 1) Quality of distribution service shall be measured on the basis of the following parameters as determined by the subsequent Articles and directives of the Agency:
  - (a) voltage level;
  - (b) balance between phases;
  - (c) avoidance of disturbance, rapid voltage oscillation and harmonic distortion;
  - (d) non-interference in communication system;
  - (e) lower average interruption frequency;
  - (f) lower total interruption time ; and
  - (g) billing service.
- 2) The licensee shall have the obligation to carry out gathering of information which is necessary to measure quality of service.

## **69. Voltage Level**

The voltage supplied by the licensee at the receiving side in the various terminal of premises shall be:

- 1) In the case of primary distribution at medium voltage:
  - (a) 15000 volt plus or minus 10% ; and
  - (b) 33000 volt plus or minus 10%;
- 2) In the case of distribution at low voltage;
  - (a) 220 volt plus or minus 5%; and
  - (b) 380 volt plus or minus 5%.

## **70. Frequency and Power Factor**

- 1) The system frequency shall be 50 hertz plus or minus 1%.
- 2) The power factor of machinery and equipment installed by customers who use electricity for commercial or industrial purposes shall not be less than 0.9.

## **71. Balance between Phases**

- 1) In facilities of the licensee the load must be distributed among the phases
- 2) The ratio of the load in one phase shall not exceed by more than 10% of the load in any other phase.

## **72. Invoicing**

- 1) The licensee shall issue clear and correct invoices for electricity consumption based on actual readings.
- 2) The following information shall be provided to customers on the invoice;
  - (a) the collection place;
  - (b) places and schedule of attention to customers;

- (c) phone numbers to receive lack of service complaints and reports of accidents or any other irregularities.

### **73. Supply Reinstatement**

In the case of disconnection on the ground of default in payment, the licensee shall reinstate the supply of electricity within 24 hours after the customer had effected payment for owed invoices plus the corresponding overcharges.

### **74. Customer's Complaint Book**

- 1) Every customer's complaint for any deficiency in the service rendered or in any of its features shall be received and recorded by the licensee, taking note of the correlative number and customer's name, date and hour at which the complaint is received and its reason.
- 2) For the purpose of recording complaints under Sub-Article (1) of this Article, the licensee shall keep customers' complaints book at each of its commercial attention center.

## **PART SIX**

### **MISCELLANEOUS PROVISIONS**

### **75. Certificate of Professional Competence**

- 1) Any application for the grant of certificate of professional competence for electrical contractors shall be addressed to the Agency and shall contain the following:
  - (a) identity and address of the applicant;
  - (b) degree, diploma or certificate acquired, if any;
  - (c) work experience, if any;
  - (d) any other information the Agency may determine by directives.
- 2) The Agency may, following verification of all information submitted in connection with the application under Sub-Article (1) of this Article, give a written and performance test, as may be appropriate, to evaluate the professional competence of the applicant and to determine the grade of the certificate.
- 3) The Agency shall, upon payment by the applicant of the prescribed fees, issue certificate of professional competence within 30 days.
- 4) Fees to paid for the issuance of certificate of professional competence shall be as follows:

(a) for grade one	Birr 500
(b) for grade two	Birr 400
(c) for grade three	Birr 300
(d) for lower grade up to grade four	Birr 100
- 5) The Ministry may issue detailed directives regarding examinations and grading of certificates of competence referred to under such Article (2) of this Article.

## **76. Power to Issue Directives**

Without prejudice to the powers given to the Agency under the appropriate provisions of these Regulations, the Ministry shall have the power to issue directives necessary for the proper implementation of these Regulations.

## **77. Transitory Provisions**

1. Any person engaged in the operations of electric power generation, transmission or distribution business prior to the coming into force of these regulations shall, within the period to be specified by the Agency, obtain a license to be issued in accordance with these Regulations.
2. Any person engaged in the operations of electric power generation, transmission or distribution activity for non commercial purposes prior to the coming into force of these Regulations shall, within the period to be specified by the agency, fulfill the requirements of Article 10(2) of the Proclamation.
3. Any electrical contractor's certificate of professional competence issued by the former Ethiopian Electric Light and Power Authority prior to the coming into force of the Proclamation shall remain valid until replaced by certificate of professional competence issued pursuant to these Regulations within a period to be specified by the Agency.

## **78. Effective Date**

These Regulations shall enter into force on the date of their publication in the Federal Negarit Gazeta.

**Done at Addis Ababa, this 20<sup>th</sup> day of May, 1999.**

***MELES ZENAWI***  
**PRIME MINISTER**  
**OF**  
**THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA**