February, 2012

ELECTRICITY

DISTRIBUTION CODE

(UPDATED DRAFT)

Bangladesh Energy Regulatory Commission

Approval Date: ……..

In exercise of the powers conferred by section 59 of the Bangladesh Energy Regulatory Commission Act 2003 (Act 13 of 2003), read with sub-sections 2(e) and 2(f) thereof and for the fulfillment of the objectives of the Act, the Bangladesh Energy Regulatory Commission is pleased to make the following code for electrical transmission system, namely:-

(1) Short title, commencement and interpretation:-

1. This Code may be called the Bangladesh Energy Regulatory Commission Electricity Distribution Code, 2012, in short Distribution Code.
2. This Distribution Code applies to all Distribution Utilities/ System participants, including
   (a) Distribution Licensee;
   (b) Open Access Customers connected to Distribution Systems;
   (c) Other Distribution Licensee connected to Distribution Systems;
   (d) Embedded Generators; and
   (e) Large Consumers
3. This Distribution Code extends to the whole of Bangladesh
4. This Distribution Code shall come into force from the date of their notification in the Gazette.

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Distribution Code

Chapter 1: GENERAL

1.1 Objectives

To ensure that various Chapters of the Distribution Code work together to develop and maintain an efficient coordinated and economical distribution system and the Distribution Licensee and all Distribution System participants comply with respective obligations as specified in the Act.

1.2 Requirement of Distribution Code

The Section 31(1) of Bangladesh Energy Regulatory Commission Act 2003 provides that it shall be the duty of Distribution Licensee to develop and maintain an efficient coordinated and economical distribution system in respective area of supply and to supply electricity in accordance with the provisions contained in the Act, regulations 19 and 20 of the Bangladesh Energy Regulation Commission Licensing Regulation 2006 and the Distribution Licensee Standards of Performance issued by the Commission.

This Distribution Code has been specified by the Commission so as to ensure that the Distribution Licensee comply with the requirement of Section 31 and Section 54 of the Act read with regulations 19 and regulation 20 of BERC Licensing Regulation 2006.

1.3 Suspension of Provisions

Any provision of the Distribution Code may be suspended, in whole or in part, during a security period, emergency period or pursuant to any directions from the Commission.

1.4 Unforeseen Circumstances

The Distribution Code contains procedures to permit equitable management of day-to-day technical situations in the Distribution System, taking into account a wide range of operational conditions likely to be encountered under both normal and abnormal circumstances. It is nevertheless necessary to recognize that the Distribution Code cannot predict and address all possible operational conditions and fully exhaustive as to the requirements of Distribution System.

1.5 Overriding Effect of Electricity Laws

Nothing contained in this code shall have effect, in so far as it is inconsistent with the requirement of Bangladesh Energy Regulatory Commission Act 2003, the Electricity Act 1910, all other relevant legislations, the rules and regulations made there under; and the Grid Code specified by the Commission and directions of the Commission.

1.6 Mode of Data Submission

Submission of data under the Distribution Code shall be in an electronic format; or in writing; or any suitable format agreed upon by the parties.

1.7 Notices

Submission of service notice(s) under the Distribution Code shall be by hand delivery, registered mail, E-mail followed by written communication, telex or facsimile transfer. Exception to these requirements may be made with the agreement of the parties.

1.8 Confidentiality

All data submitted to the Distribution Licensee according to the Distribution Code shall be treated by the Distribution Licensee as confidential and shall not be released without the written consent of the affected User. These include, but are not limited to demand forecast, metered data and generating unit characteristics.

Aggregate data however may be released for planning and evaluation of Distribution System reliability and security as may be specify by the Commission.

1.9 Settlement of Disputes

In the event of any dispute between any User/Consumer and the Distribution Licensee, or between the distribution licensees regarding interpretation of any provision of the Distribution Code, the matter shall be resolved according to the procedures set down in this Code in compliance with Section 54 of the Act. The Commission will be the final arbitrator whose decision shall be final and binding on both the parties.

1.10 Non-compliance

All Users are required to comply with the provisions of the Distribution Code. Where any person to whom these provisions apply finds himself unable to comply with any provision of the Distribution Code, the matter shall promptly be referred to the Distribution Licensee and/or the Commission, as the case may be, indicating the difficulty in complying with such provision. The Distribution Licensee/Commission looking into reasonableness of the cause allows relaxation for such period, as it may consider appropriate. Any continued noncompliance by a User, without reasonable grounds shall attract provisions of the Code for non-compliance, which may include restriction or disconnection from the Licensee's distribution system or such other action as provided in the Code.

Where non-compliance with the Distribution Code by any person or Licensee has occurred or is likely to occur due to a direction issued by the Government of Bangladesh (GOB) in accordance with Section 24 of the Act, the Commission shall publish such directions by the GOB on the Commission's website and the national newspapers and note that non-compliance has been caused by the directions issued by the GOB.

Chapter 2
DEFINITIONS AND GLOSSARY

2.1 DEFINITIONS

In the Distribution Code Regulations the following words and expressions shall, unless the subject matter or context otherwise requires or is inconsistent therewith, bear the meaning given hereunder:

"Act" means the Bangladesh Energy Regulatory Commission Act, 2003 (Act no. 13 of 2003).

"Active Power" means the product of voltage and the in-phase component of alternating current measured in units of watts and standard multiples thereof.

"Agreement" means with its grammatical variations and cognate expressions an agreement entered into by the Licensee and the consumer or User.

"Apparatus" means electrical apparatus and includes all machines, fittings, accessories and appliances in which conductors are used.

"Apparent Power" means the product of the root-mean-square (RMS) or effective value of the current and the root-mean-square value of the voltage. For AC circuits or systems, it is the square root of the sum of the squares of the active and reactive power and is measured in kilo volt-ampere (KVA) or multiples thereof;

"Area of Supply" means the area within which a Distribution Licensee is authorized by his license to supply electrical energy.

"BERC" means the Bangladesh Energy Regulatory Commission constituted under the Bangladesh Energy Regulatory Commissions Act, 2003 and which continues to be so under the Act, 2003 (Act no.13 of 2003). "BERC" and "Commission" are synonymous.

"Black Start" means the process of recovery from Total System Blackout using a Generating Unit with the capability to start and synchronize without an external power supply.

"Breakdown" means an occurrence relating to the equipment of the electric energy supply system including electrical line that prevents its normal functioning.

"Captive Generating Plant" means a power plant set up by any person to generate electricity primarily for his own use and includes a power plant set up by any co-operative society or association of persons for generating electricity primarily for use of members of such cooperative society or association.

"Circuit" means an arrangement of conductor or conductors for the purpose of conveying energy and forming a system or branch of a system;

"Circuit Breaker" means a device, capable of making and breaking the circuit under all normal conditions, and unless otherwise specified, so designed to break current automatically under abnormal conditions;

"Commission" means the Bangladesh Energy Regulatory Commission constituted under the Bangladesh Energy Regulatory Commissions Act, 2003 and which continues to be so under the Act, 2003 (Act no.13 of 2003). "BERC" and "Commission" are synonymous.

“Commissioning” means putting into service a new or idled Equipment that has passed all required tests.

“Competent person” means a person with delegation for approving matters included in this Code and/or Electricity Rules.

“Conductor” means any wire, cable, bar, tube, rail or plate used for conducting electrical energy and so arranged as to be electrically connected to a system.

“Connection Agreement” means an agreement setting out terms relating to a connection with the Distribution System (excluding any such agreement with the System Operator).

“Connection Point” means the point of commencement of supply from or to the Grid or the Distribution System by the User.

“Designated Person” means suitably authorized persons having responsibility for duties and safety required in this Code;

“Consumer” means a person who receives energy supplied by licensee in the premises or installation, owned or possessed, under relevant laws, rules, regulations, bylaws or any document which has the force of law

“Demand” means the power at a given instant or averaged over a specified interval of time that is actually delivered or is expected to be delivered by an electrical equipment or supply system expressed either in Kilo-Volt Ampere (kVA), or Kilo-Watts (KW) or KVAr and multiples thereof.

“Demand Control” means any or all of the methods of achieving reduction in Demand;:

- Consumer Demand Management initiated by Users;
- Consumer voltage reduction initiated by Users resulting into reduction of load (other than following an instruction from the NLDC);
- Consumer Demand Reduction by Disconnection implemented by Users (other than following an instruction from the NLDC);
- Consumer Demand Reduction instructed by the NLDC;
- Automatic Under-frequency Demand Disconnection or Automatic Load shading;
- Emergency Manual Demand Disconnection or Manual Load shading (MLS).

“Disconnection” means the opening of an electrical circuit to isolate an electrical system or equipment from a power source.

“Dispatch” means the apportioning of the total demand on a power system among the various generating plants to achieve the objectives of system operations.

“Dispute Resolution Panel” means a panel appointed by the Distribution Coordination Committee to deal with specific disputes related to the provisions of the Distribution Code.

“Dispute Resolution Process” means the procedure for the settlement of disputes between or among parties under the Grid Code or Distribution Code.

“Distribution of Electricity” means the conveyance of electric power by a distribution utility through its distribution system.

“Distribution Code or Code” means the set of rules, requirements, procedures, and standards approved by the Commission governing electric utilities in the operation and maintenance of their distribution systems, and which defines and establishes the relationship of the distribution systems with the facilities or installations of the parties connected thereto.

"Distribution Licensee" means a licensee authorized to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply and any of its successor entity deemed with a distribution license under the provisions of Section 27 of the Act.

"Distribution Coordination Committee" means a committee constituted by the Commission, with equitable representation from the electric power industry participants and end users, whose primary function is to monitor the implementation of the Distribution Code.

"Distribution Operations (DO)" means the rules and procedures to be followed by all Users of the Distribution System to ensure that reliable distribution services are achieved for all distribution Consumers. Sections on Demand Control, Emergency Operations, Safety Coordination, Testing and Monitoring, System Test, Maintenance Procedures, Operational Liaison, Operational Reports and Equipment Numbering and Nomenclature are likewise included in these guidelines.

"Distribution Planning (DP)" specifies the technical and design criteria and procedures to be applied in planning the development or reinforcement of a Distribution System. Sections on the demand forecasts and required technical studies are likewise included in this Chapter.

"Distribution System" means the system of wires and associated facilities between the delivery points on the transmission lines or the generating station connection and the point of connection to the installation of the consumers.

"Electricity System" means a system under the control of a generating company or licensee, as the case may be, having one or more

(a) Generating Stations; or
(b) Transmission lines; or
(c) Distribution lines and substations

and when used in the context of a Utility, the entire electricity system within the territories thereof.

"Embedded" means having a direct electrical connection to a Distribution System or the System of other Users to which Consumers and/or Power Stations are connected but with no other connection to the Grid.

"Embedded Generator" means a person or entity who generates electricity and whose Generating Units are directly connected to a Distribution System and includes Consumer Captive Generating Plants.

"End-User" refers to any person or entity requiring the supply and delivery of electricity for its own use.

"Equipment" means all apparatus, machines, etc. used as part of, or in connection with, an electrical installation.

"Extra High Voltage" means voltage(s) of 132 kV or higher at which the Transmission System operates.

"Extra High Voltage Consumer" means a consumer to whom electricity supply is arranged by the Distribution Licensee from the Transmission system at extra high voltage. The EHV Consumer is a consumer of the Distribution Licensee.

"Event" means an unscheduled or unplanned occurrence of an abrupt change or disturbance in the System due to fault, equipment outage or adverse weather condition.

"Fault Level" means the current expected to flow into a short circuit at a stated point on the System, and which may be expressed in kA or in MVA.

"Frequency" means the number of complete cycles of alternating current or voltage per unit time, usually measured in cycle per second or Hertz.

"Generate" means to produce electricity from a generating station for the purpose of giving supply to any premises or enabling a supply to be so given.

"Generating Company" means any company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person, which own or operate or maintains a generating station.

"Generator" has the same meaning as Generating Company.

"Generating Station or station" means any station for generating electricity, including any building and plant with step-up transformer, switch-gear, switch yard, cables or other appurtenant equipment, if any, used for that purpose and the site thereof; a site intended to be used for a generating station, and any building used for housing the operating staff of a generating station, and where electricity is generated by water-power, includes penstocks, head and tail works, main and regulating reservoirs, dams and other hydraulic works, but does not in any case include any substation.

"Generating Unit" means a conversion apparatus including auxiliary and associated equipment, functioning as a single entity, used to produce electric energy.

"Generation of Electricity" means the production of electricity by a generation company or a co-generation facility.

"Grid" means the high voltage backbone system of inter-connected transmission lines, substations and generating plants. Also known as the Transmission System.

"Grid Code" means the set of rules, requirements, procedures approved by the Commission covering all material technical aspects relating to connections to and the operation of the Grid, the use of a Distribution System, or (in so far as relevant to the operation and use of a Distribution System) the operation of electric lines and electrical plant connected to the Distribution System, the Distribution Systems, or the system of any Supplier, and shall include the Interim Grid Code.

"Grid Standards" means the standards specified by the Commission.

"Grounding" means a conducting connection, whether intentional or accidental, by which an electrical circuit or equipment is connected to the ground or to some conducting body of relatively large extent that serves in place of the ground.

"High Voltage" means a voltage, which is equal or higher than 33,000 Volts 3 phase 50 Hertz under normal conditions and does not exceed ± 5% of nominal value at any time.

"High Voltage Consumer" or "High Tension Consumer (HT Consumer)" means a consumer who obtains supply from the Distribution Licensee at High Voltage.

"High Voltage Line" means an electric line or cable which operates at High Voltage under normal conditions.

"Isolation" means the electrical separation of a part or component from the rest of the electrical system to ensure safety when that part or component is to be maintained or when electric service is not required.

"Large Consumer" means a Consumer with sanctioned load of 5 MW or above.

“Load” means an entity or electrical equipment that consumes electrical energy.

“Low Voltage” means a voltage, which is 230/ 400 Volts 1-phase/ 3-phase 50 Hertz under normal conditions and does not exceed ± 5% of nominal value at any time.

“Low Voltage Consumer” or “Low Tension Consumer” means a consumer who obtains supply from the Distribution Licensee at Low Voltage.

“Manual Load Shedding (MLS)” means the manual disconnection of a User’s circuit by tripping Under-frequency Relays or otherwise to remove the circuit’s load from the System.

“Material Effect” A resulting condition that would require works or change in the normal Operation of the Plant and/or Equipment at the Connection Point or site of connection which would involve considerable incremental cost as agreed between the Distributor and Users.

“Medium Voltage” means a voltage which is equal or higher than 6,350/ 11,000 volts 1-phase/ 3-phase 50 Hertz under normal conditions and does not exceed ± 5% of nominal value at any time.

“Minimum Generation” means the minimum stable Demand that a Generating Unit can safely maintain for an indefinite period.

“NLDC” means the National Load Dispatch Centre located in the control room of the Transmission Licensee operating round the clock for the purpose of managing the integrated operation of power system and coordinating the generation, transmission, distribution and load requirements.

“Normal Operating Frequency” means the frequency band specified in the Grid Code for secured and reliable Grid Operation. The System normally operates between 49 Hz to 51 Hz.

“Occupier” means the owner or person in legal occupation of the premises where Electrical Energy supplied by the Licensee is used or proposed to be used.

“Operation” means a scheduled or planned action relating to the Operation of a System.

“Open Access” means the non-discriminatory provision for use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission.

“Open Access Consumer” means a consumer who is eligible to receive supply of electricity from a person other than the distribution licensee of his area of supply.

“Open Access Customer” means a person using or intending to use the transmission system or the distribution system or both of the licensees for transmission or wheeling of electricity.

“Operational Boundary” means the boundary between the Equipment operated by the Distributor or a User and the Equipment operated by another, as specified in the relevant site responsibility schedules.

“Operational Effect” means any effect on the Operation that causes the Systems of the Distributors, the System Operator or a User to operate differently from the way in which they would be or may have normally operated.

“Outage” means the state of a component, such as an equipment or a plant, when it is not available to perform its intended function due to some event directly associated with that component.

“Out-of-Synchronism” means the condition where a System or Generating Unit cannot meet the requirements for it to be Synchronized with the Grid.

“Ownership Boundary” means the boundary between the Equipment owned by one Distributor or User and the Equipment owned by another.

“Planned Maintenance” means an outage of a Generating Plant, of part of the Grid, or of part of a Distribution System due to maintenance, coordinated by the System Operator, Distributor, or Generators, as the case may be.

“Plant” means fixed and movable items, other than an Equipment, used in the Generation, Supply, and/or Transmission of Electricity.

“Point of Commencement of Supply” means the point at the incoming terminal of the cut-out /other isolating device installed by the consumer after the meter.

“Power Factor” means the ratio of Active Power to Apparent Power.

“Power Station” has the same meaning as Generating Plant.

“Power System” means all aspects of generation, transmission, distribution and supply of electricity and includes one or more of the following, namely: generating stations; transmission or main transmission lines; substations; tie-lines; load despatch activities; mains or distribution mains; electric supply lines; overhead lines; service lines; works;

“Primary Distribution System” means a system in the Licensee’s distribution system consisting of cables, service lines and overhead lines, and metering equipment having an operating voltage of 11KV used for transporting electricity to the consumers from the 33/11KV substations of the Distribution Licensee.

“Reactive Energy” means the integral of the reactive power with respect to time measured in VArh, or multiples thereof.

“Reactive Power” means the component of electrical power representing the alternating exchange of stored energy (inductive or capacitive) between sources and loads or between two systems, measured in VAr, or multiples thereof. For AC circuits or systems, it is the product of the RMS voltage and the RMS value of the out-of-phase component of alternating current. In a three-phase system, it is the sum of the reactive power of the individual phases.

“Regulations” means regulations made by the Commission under the provisions of the Act.

“Rules” mean the Electricity Rules 1937 and any rules made under the Electricity Act 1910;

“Safety Code” means the Code for Safety specified by the Commission for the Distribution Licensee.

“Secondary Distribution System” means a system in the Licensee’s distribution system consisting of service lines and overhead lines having an operating voltage of 230/400V used for transporting electricity from the distribution transformers to the service mains of the consumers.

“Schedule Day” means the period from 0000Hrs to 2400Hrs in a day.

"Significant Incident" means an event on the Distribution System or the System of the User that has a significant effect on the other's system.

"Substation" means a station for transforming or converting electricity for the transmission or distribution thereof and includes transformers, converters, switchgears, capacitors, synchronous condensers, structures, cable and other appurtenant equipment and any building used for that purpose and the site thereof.

"Sub-Transmission System" means the intermediate system between the Transmission System and Primary Distribution System of the Total Power System consisting of high voltage electric lines being operated at high voltage (excluding generator interconnection facilities) owned and/or operated by the Distribution Licensee for the purposes of distribution of electricity from one substation to another substation or to a consumer or from any external interconnection equipment up to the interconnection with the distribution system, and any plant and apparatus and meters owned or used by the Licensee in connection with the transmission and distribution of electricity;

"Synchronized" means the state where connected alternating current systems, machines, or a combination of these operate at the same frequency, and where the phase angle displacements between voltages in them are constant or vary about a steady and stable average value.

"System Control" means the administrative and other arrangements established to maintain the proper operation, safety, and security of the System.

"System Reliability" means the ability of a power system to continuously supply power to its consumers despite the occurrence of multiple credible contingency events.

"Total System" means the Grid and all User Systems connected to it.

"Total System Blackout" means the situation existing when all generation has ceased and, therefore, the Total System has Shutdown such that it is not possible for the Total System begin functioning again without the System Operator's directions relating to a Black Start.

"Transformer" means an electrical device or equipment that converts voltage and current from one level to another.

"Transmission of Electricity" means conveyance of electricity through the high voltage backbone system/Grid System.

"Transmission System" means the system consisting of extra high voltage electric lines being operated at EHV (excluding generator interconnection facilities) owned and/or operated by the Transmission Licensee for the purposes of the transmission of electricity from one power station to a substation or to another power station or between substations or to or from any external interconnection equipment up to the interconnection with the distribution system, any plant and apparatus and meters owned or used by the Transmission Licensee in connection with the transmission of electricity, but shall not include any part of the Licensee distribution system.

"Transmission Utility" means the utility having license from the Commission for Transmission of electricity.

"User" means a person, including generating companies, Distribution Licensee and open access customers who uses the Distribution System or Transmission System and related facilities and include a person to whom the Distribution Code and/or Grid Code apply.

"User System" means any System owned or operated by a User of the Grid (or Distribution System) where the User is involved in Generation and/or Distribution of Electricity and is connected to the Grid.

"Voltage" means the electromotive force (emf) or electric potential difference between two points, which causes the flow of electric current in an electric circuit.

All other words and expressions used herein and not defined have the meanings respectively assigned to item in the Act or any Code/ Regulations made by the Commission.

2.2 ABBREVIATIONS

AC	Alternating Current
BERC	Bangladesh Energy Regulatory Commission
BPDB	Bangladesh Power Development Board
BSTI	Bangladesh Standard and Testing Institution
CEO	Chief Executive Officer
CPM	Critical Path Method
CPP	Captive Power Plant
DCC	Distribution Coordination Committee
DESCO	Dhaka Electric Supply Company Limited
DISCO	Distribution Company
DO	Distribution Operations
DOM	Distribution Operation Manual
DP	Distribution Planning
DPDC	Dhaka Power Distribution Company Limited
DSM	Demand Side Management
EAct	The Electricity Act 2003
EGC	Electricity Grid Code
EHV	Extra High Voltage
HV	High Voltage
Hz	Hertz (Cycles per seconds)
IDMT	Inverse Definite Minimum Time
KA	Kilo Ampere
kW	KiloWatt
kWh	Kilowatt-hour
LT	Low Tension
LV	Low Voltage
MLS	Manual Load Shedding
MV	Medium Voltage
MVA	Mega Volt-ampere
MVAr	MegaVAr
MVArh	Mega-VAr-hour
MW	Megawatt
MWh	Megawatt-hour
NDR	Neutral Displacement Relay
NLDC	National Load Despatch Centre
PBS	Pally Bidyut Samity
PERT	Program Evaluation & Review Technique
PGCB	Power Grid Corporation of Bangladesh Limited
REB	Rural Electrification Board
TS	Transmission System
TU	Transmission Utility
UFR	Under-frequency Relay
W	Watt
Wh	Watt-hour
WZPDC	West Zone Power Distribution Company Limited
X/R	Reactance/Resistance

Chapter 3
DISTRIBUTION CODE COORDINATION

3.1 Objectives

(a) To ensure that Distribution Licensee and all Users of the Distribution System are represented and involved in setting standards and procedures for distribution system management and operations; and
(b) To specify the process for the settlement of disputes that may arise when a provision of the Distribution Code is misapplied or violated.

3.2 Scope

The Distribution Code Coordination applies to all participants of Distribution System including:

1. Distribution Licensee;
2. Open Access Customers connected to Distribution Systems;
3. Other Distribution Licensee connected to the Distribution System;
4. Embedded Generators;
5. Large Consumers; and

3.3 Distribution Coordination Committee- Functions

A Distribution Coordination Committee (DCC) shall be constituted to ensure that Distribution Licensee and all Users of the Distribution System participate and involved in setting standards and procedures for distribution system management and operations. The Distribution Coordination Committee shall carry out the following functions:

1. Coordinate Distribution Code enforcement;
2. Review the Distribution Code, associated standards and their implementation;
3. Provide guidance to Distribution Licensee and Users in the implementation, performance, and interpretation of the Distribution Code and its provisions;
4. Review proposals for revision of the Distribution Code and recommend appropriate action to BERC; and
5. Monitor and report on overall distribution system operation.

3.4 Members of the DCC

The Distribution Coordination Committee shall be composed of the following members, who shall be appointed by BERC:

1. CEO of each Distribution Licensees functioning as Distribution Utilities
2. CEO of the Transmission Licensee functioning as Transmission Utility
3. One member nominated by the BERC
4. One member representing Captive Generators;
5. One member representing open access customers;
6. One member representing commercial & Industrial consumers;
7. One member representing domestic consumers groups;

8. One member nominated by the Institution of Engineers, Bangladesh.
9. One member from Consumers Association of Bangladesh.

3.5 Terms of Office of the DCC Members

The Chairman of the Distribution Coordination Committee shall be from amongst the CEOs of Distribution Licensee and shall be appointed by the Commission for two years term on rotation basis. The Distribution Coordination Committee shall however be perpetual under the Distribution Code. All other members of the Distribution Coordination Committee shall hold office until changed/ replaced by the respective parent organization.

3.6 DCC Support Staff and Operating Cost

The CEO Distribution Licensee holding the office of Chairman of DCC at a given time shall provide secretarial staff required to support DCC operations. The cost associated with such secretarial assistance shall also be borne by that Distribution Licensee.

3.7 DCC Rules and Procedures

The Distribution Coordination Committee shall establish and observe its own rules and procedures relating to the conduct of its business. The procedures shall include:

a) Establishment of a regular meeting schedule at frequencies sufficient to do the business of the Committee;
b) Developing and submitting an annual Distribution Systems Operating Report to BERC; and
c) Monitoring of compliance to the Distribution Code and to the established technical standards.

The Committee is expected to operate on a consensus or near consensus basis rather than by simple majority voting.

3.8 Distribution Coordination Sub-Committees

Distribution Coordination Committee shall establish sub-Committees, as it may consider appropriate for various functional area. The following is the suggestive list of the subcommittees that may be established:

.1 Distribution Technical Standards Sub-committee
This sub-committee shall assist the DCC in the following functions

a. Distribution planning;
b. Distribution connectivity criteria;
c. Distribution operating procedures; and
d. Distribution performance standards.

.2 Distribution Protection and Reliability Sub-committee
This sub-committee shall assist the DCC in the following functions:

a. Coordinating and recommending standards for distribution protection systems;

b. Reviewing and recommending distribution reliability performance standards; and
c. Coordinating data compilation and submission by Distribution Licensees to Commission and other agencies.

.3 Distribution Metering and Settlements Sub-committee

This sub-committee shall assist the DCC in the following functions:

a. Reviewing Distribution Metering Code and standards and recommending changes; and
b. Acting as the dispute resolution panel for metering related disputes.

The above functional sub-committee shall have one member from each Distribution Licensee and Transmission Licensee. The Distribution Coordination Committee shall select the members of the functional sub-committees. The rules and procedures relating to the conduct of business shall be prepared by the Sub-Committee itself and which shall be approved by the DCC. The DCC can refer any matter for sub-committee for examination and advice. However, the Distribution Coordination Committee is not bound to accept the recommendations of the sub-committee.

3.9 Distribution Code Revision Process

No change in the Distribution Code however small or large shall be made without being deliberated upon and agreed by the Distribution Coordination Committee and thereafter approval of the Commission. If any Distribution Licensee or User believes that changes in the Distribution Code are necessary, they shall submit the proposed changes and supporting arguments and data to the Distribution Coordination Committee. The Distribution Coordination Committee either can deliberate the proposed changes itself or to refer the matter to the appropriate sub-committee. Any revisions to the Distribution Code, which the Distribution Coordination Committee recommends shall be submitted to BERC for approval.

If the Distribution Coordination Committee or its appropriate sub-committee rejects the proposed changes, it shall justify its decision in writing to the party proposing the changes. Those parties have the right to appeal the decision to the BERC.

3.10 Distribution Code Disputes

In the event of any dispute between any User/Consumer and/or the Licensee(s) regarding interpretation of any regulations provided in the Distribution Code, the matter shall be resolved according to the procedures set down in this Code. The Distribution Code dispute resolution process outlined in this clause applies to the Distribution Licensee and all Users of the Distribution Systems.

3.11 Arbitration

Where any matter is directed to be determined by the arbitration, the Commission on application by either party shall nominate Arbitrator in accordance with Section 40 of the Act. The decision of the arbitration shall be final and binding on both the parties.

3.12 Distribution Code Dispute Resolution Panel

The Distribution Coordination Committee shall appoint a Distribution Code Dispute Resolution Panel to deal with specific disputes. The Dispute Resolution Panel shall have one member from each distribution licensee and one representative from the Commission. The panel shall include members who have the technical background to understand and judge the technical merits of disputing parties' arguments.

The panel shall hold formal meetings to hear and receive testimony from the parties. The positions of the parties and the panel's decision shall be documented and provided to both parties and maintained as part of the Distribution Coordination Committee records. The cost of resolution dispute by Dispute Resolution Panel shall be borne by the parties as may be decided by the Panel.

3.13 Dispute Resolution Process

Distribution Code dispute resolution process includes the following steps:

(a) When a dispute arises between parties which is not resolved informally, one of the parties shall, if he wishes, register the dispute in writing to the other party or parties;

(b) The parties shall meet to discuss and attempt to resolve the dispute. If resolved, the resolution shall be documented, and a written record shall be provided to all parties;

(c) If the dispute is not resolved, a committee of representatives from both parties shall be formed to discuss and attempt to resolve the dispute. If resolved, the resolution shall be documented and a written record provided to all parties; and

If the dispute is not resolved at step (c), the committee shall, at the request of one or both parties, refer the dispute to the Distribution Coordination Committee for resolution. The Distribution Coordination Committee may, at its option, refer the dispute to the Distribution Code Dispute Resolution Panel.

3.14 Appeals of Dispute Resolution Decisions

If one or both parties object to the Distribution Code Dispute Resolution Panel's decision, an appeal can be filed with BERC. The BERC shall hear such appeals only when the parties can make a strong showing that Distribution Code provisions have been violated or misinterpreted.

3.15 Distribution Management Reports

1. Annual Reports

The Distribution Coordination Committee shall issue an annual summary of Distribution Operations Report for the previous year before the end of June of the current year.

2. Significant Incident Reports

Within one month following a significant Incident in the Distribution System, the involved Distribution Licensee shall prepare a disturbance report and submit to the DCC and BERC.

The disturbance report should describe the cause of the disturbance or event, the amount and duration of any outages and recommendations (if any) for changes in operating procedures, or Code provisions. In cases where any User has knowingly violated provisions of the Distribution Code, sanctions may be recommended as part of the disturbance report. The DCC shall define what constitutes a Significant Incident.

3. Special Reports

The Distribution Coordination Committee shall prepare Special reports as may be directed by the Commission and/or appropriate authority.

Chapter 4
DISTRIBUTION PLANNING

4.1 Introduction

The chapter specifies technical and design criteria and procedures to be followed for planning and development of the distribution system.

The Distribution System may necessitate extension or reinforcement for meeting of long-term demand estimation and/or requirement of the User system. In some cases the extension or reinforcement of capacity of Distribution system at the connection point may be needed for reasons mentioned below:

(a) A development in User's system connected to Distribution system.
(b) Introduction of a new connection point between the User's system and the Distribution System of the Licensee;
(c) To increase the capacity of the Distribution System for meeting the security standards, removal of constraints in operation etc. and to accommodate a general increase in demand.
(d) The reinforcement or extension of the Licensee's distribution system in view of above requirement may involve work at the following locations:
(e) At a connection point between a User's system and a Licensee's distribution system.
(f) On the distribution system or other facilities, which join a connection point to the remainder of the Licensee's system.
(g) At or between points on the distribution system remote from connection points.

4.2 Scope

The Planning Code applies to the Distribution Licensee and all other users connected to and utilizing Distribution System including other licensees, embedded Generators, Open Access Customers and Large Consumers, in so far as they affect the Distribution System.

4.3 Objectives

Objectives of the Distribution Planning code are:

(a) To enable planning, design and construction of Distribution System for a safe and economical operation with specified degree of reliability conforming to the following standards:
    – Safety requirements for the Distribution System,
    – Bangladesh Energy Regulatory Commission Act 2003, Electricity Act 1910, codes, standards, rules & regulations made there under,
    – Construction Standards and manuals of the Distribution Utilities.
(b) To facilitate use of Distribution System by a User and consumer connected to or seeking connection with it,

(c) To formulate technical conditions to be followed by respective Licensees and Users in meeting the standards for an efficient operation of common electrical interface,
(d) To formulate procedure for exchange of system planning data between licensee and Users,
(e) To provide required information to Users for connection, planning and development of their own systems and make them compatible with the Distribution System,
(f) To enable the licensee in furnishing required data detailed in the Grid Code for the purpose of planning.

4.4 Development of Distribution Planning Procedure (DPP)

1. Well-documented procedures are essential for adopting orderly and consistent approach in planning and development of Distribution System on a long-term basis. Adherence to these procedures will enable Distribution Licensee to produce a long-term plan of five years to develop and maintain an efficient coordinated and economical distribution system to satisfy requirements of future demand.
2. Distribution Licensee shall develop and maintain the Distribution Planning Procedures in respect of following:
   (a) Database Management
   (b) Load Data Research
   (c) Long Term Demand Estimation Procedure
   (d) Opportunity Statement
3. The Distribution Licensee shall furnish the copy of Distribution Planning Procedures to the Commission in compliance.

4.5 Criteria for Development of Distribution System

1. All Distribution Systems shall conform to the statutory requirements and license conditions. The Distribution Licensee shall develop and maintain an efficient, secure and coordinated system of electricity supply that is economical, reliable and safe.
2. The development of the Distribution System shall be planned sufficiently in advance allowing for adequate time to obtain required statutory clearances, consents or way leaves and detailed engineering, design and construction work to be carried out. Action shall be initiated to augment/renovate existing elements of the distribution system whenever load on it exceeds its specified capacity. The management techniques such as PERT and CPM may be applied to coordinate activities in an efficient manner at the planning stage.
3. The Distribution Licensee while planning Distribution System shall take the following criteria into consideration:
   (a) Optimum network of sub-transmission system, primary distribution, LT feeders and substation location and feeder development;
   (b) Optimum distribution feeder voltages and conductor sizes;
   (c) Optimum reactive compensation

Requisite Investment approval and other applicable sanctions shall be obtained from the Commission.

4.6 Database management

1. The availability of accurate and reliable data is essential for planning and development of the Distribution System on long-term basis. Data management system facilitates storage, retrieval and updating of data for complying with the requirements of the Distribution Code and for other purposes like power system studies.
2. The User of Distribution System including embedded generators and large consumers (above 5 MW) shall furnish required data in prescribed manner as at *Annexure 4* for long term planning by Distribution Licensee. Distribution Licensee shall supply system data to the Users, embedded generators and large consumers, upon formal request for their planning purpose.

A well maintained Data Management System would facilitate exchange of data between Users and Distribution Licensee required for long-term planning and distribution operation in an accurate and reliable manner. This will also help in Users, Large Consumers, open access customers and embedded generators to have access to data, which they may require for their planning purpose.

4.7 Load Data Research

1. The Distribution Licensee shall develop load data and load curves for the area fed by the concerned substation of the transmission licensee based on the metering data available at the inter-connection point. This data shall be compiled for the entire area of supply by combining the load curves of each substation feeding its Distribution System.
2. The Distribution licensee shall create a load database for each consumer category for the distribution system as a whole and update it on annual basis.
3. Actual energy consumption in the distribution system shall be worked out based on energy recorded in the meters installed at inter-connection points, energy exported to other Distribution Licensees and Users and the energy generation by embedded generating stations. The Distribution Licensee shall work out the distribution losses based on energy consumption in the Distribution System and energy billed to the Consumers.
4. Distribution losses computed from this data shall be furnished to BERC every month.
5. A consumer seeking connection with a demand of 5 MW and above shall furnish load data to the licensee as detailed in *Annexure-1*. The licensee shall carefully monitor actual development of load in respect of any consumer desiring to avail load of 5 MW and above at a single point. If required by the consumer the licensee shall furnish relevant system data as detailed in *Annexure 2*. The licensee shall furnish relevant system data of the whole Distribution Licensee area of supply, if required by a consumer, on payment as detailed in *Annexure 3*. The Distribution Licensee shall update the system data at least once a year.

4.8 Long Term Demand Estimation

1. The licensee shall formulate a ESU (Electric Supply Unit) / PBS wise long-term demand forecast considering the previous financial year as base and projecting demand for the succeeding five years. In the process review of status of load as per previous load forecast, past trends & pending applications shall be carried out.
2. Energy sales in each tariff class shall be projected for succeeding five years over the corresponding figures relating to the base year by adopting an appropriate statistical model.
3. The projections shall take into account assumed normal growth for non-specific loads, specific and identified loads of 1 MW and above and impact of Demand Side Management (DSM) and energy conservation.
4. Aggregate energy and peak load requirement at each connection point shall be estimated taking into account the distribution losses.
5. The licensee shall forward long-term demand forecast in the month of December each year for each connection point for his area of supply, on annual basis to the transmission licensee and BERC along with assumption data and methodology used for the forecast;
6. The licensee shall have a thorough knowledge of the usage of electricity by the consumers and the way they use electrical energy and other alternative sources of energy in its area. Load forecasting shall take into account all these along with other conservation programs and the demand side management or off-peak usage programs which the licensee may sponsor, resulting in reduction of energy and peak demand of the consumers over the years.
7. The licensee shall implement load research program for systematic collection of data describing consumer' energy usage patterns and analysis of data and demand forecast for all categories of consumers.
8. The pattern of energy consumed by each category of consumer and the load demand, period of peak demand etc. shall be developed on sample surveys taking representative samples from each sector for its different seasonal requirements. A suitable questionnaire shall be prepared for these sample surveys and data obtained shall be analyzed using suitable statistical models. Based on this, load profiles shall be drawn for implementing Demand Side Management techniques to match availability.
9. The licensee shall also maintain records of captive power plants of assessed capacity of 125 kVA and above already established in area of supply. Type of fuel used and the capacity of captive power plants shall be taken into account for reduction of contract demand from licensee's supply so as to correctly assess the industrial demand in its area. Such information shall be compiled yearly and furnished to the Commission.

4.9 Opportunity Statement

This statement provides the potential users with future power scenario for five years in distribution system. Opportunity statement helps in deciding potential for connection to

the system, creation of new generation capacities and load on system. This statement serves as the basis for the selection of the best place to connect new load or a new generator.

Distribution Licensee shall prepare an Opportunity Statement as a part of its Annual Report and shall submit to Commission.

4.10 Technical and Design criteria

The licensee shall prepare ESU (Electric Supply Unit)/ PBS wise plan for distribution system and develop a system on the basis of technical and design criteria such that demand of all the existing consumers connected or seeking connection with it shall be met for the next five years. All the apparatus and circuits shall have adequate capacity to cater to their need of electricity in a safe, economical and reliable manner.

The load research program shall assess the following:

(a) Demand at the time of system peak-daily, monthly, annual and seasonal,
(b) Hourly demand for the day of the system peak- daily, monthly, annual and seasonal,
(c) Category wise Diversity Factor or the Coincidence Factor and Load Factor,
(d) Total energy consumption for each category- daily, monthly, annual and seasonal,
(e) Category wise non-coincident peak demand.

Based on the results of such research the five year demand forecast shall be made using appropriate modern forecasting tools. Optimum circuit loading and maximum number of circuits at any electrical interface between distribution and transmission system shall conform to requirement of all relevant codes and standards.

As far as practicable and only when it is justified on a benefits/costs basis, separate circuits shall be provided for the following:

(a) Urban non-industrial power supply other than for agriculture supply
(b) Industrial power supply,
(c) Agriculture Supply.
(d) Separate circuits preferably for rural industrial power supply as well as rural domestic and non-domestic supply to avoid single phasing during peak load hours.

The load shall be arranged in discrete load blocks to facilitate load management during emergency operations. Load blocks shall depend upon availability of separate circuits.

Technical Feasibility Report shall prepare to finalize location of 33/11 kV substations, capacitor installations, and distribution transformers and to contain voltage variation and energy losses within reasonable limits. Distribution Licensee shall standardize the technical requirements and specifications of main equipments including but not limited to following:

1. Main equipments and materials
   (a) Power Transformers,
   (b) Distribution Transformers,
   (c) Circuit Breakers/ Reclosers/ Switchgear/ Control Gear
   (d) Voltage Regulators

(e) Instrument Transformers,
(f) Earthing equipment
(g) Lightning Arresters,
(h) Control Panels,
(i) Station Batteries,
(j) Fire Extinguishers and other safety devices
(k) Line material (conductor, insulator, cross arms, spacers ,connector etc)
(l) Service Line material and accessories.
(m) Meters, Meter box and meter panel

2. Construction Practices:
   The Distribution Licensee shall standardize the construction and maintenance practices and adopt standard design layouts for lines and substations. Standard construction practices shall be developed amongst other for the following:
   (a) 33 kV substation layout and construction
   (b) 11 kV substations
   (c) Sizes of Bus Bar
   (d) Line construction
   (e) Service line construction

Planning of the distribution system shall always keep in view the cost effectiveness of achieving the distribution network performance standards and reduction in energy losses without sacrificing the requirements of Safety Standards mentioned above.
The licensee while planning the distribution system expansion and reinforcement shall incorporate the latest technology and keep the following in view

(a) Economic Ratio of HT and LT line lengths,
(b) Use of Aerial Bunched Conductors,
(c) Underground Cables,
(d) Increasing number of 33/11 kV & 11/0.4 kV transformers and their location at load centers.
(e) Use of capacitors and capacitor banks.
(f) Balancing of load between the three phases

4.11 Voltage Regulation

The Distribution Licensee shall plan and develop distribution network so as to achieve and maintained the distribution system in accordance with the Distribution Licensee Performance Standards specified by the Commission. The voltage regulation (VR) on 11 kV and 33 kV feeders shall not exceed such value, which makes the consumers voltage below the prescribed value when the voltages at injunction point into distribution system are within the norms.

Whenever, the voltage regulation of 11 kV or 33 kV feeders exceeds such value, so that it is difficult to maintained the consumers' voltage within prescribed limits, the Distribution Licensee shall take action to bring the VR within the prescribed limit by either bifurcation of load or by drawing additional feeder(s) or augmenting transmission capacities etc. as may be considered techno economically viable. Similarly capacity of distribution substation or 33 kV S/S shall be augmented when the load exceeds rated capacity of the substation. A new 33/11 kV S/S shall be created at the load centre in the area where voltage regulation of various 11 kV feeders are above prescribed limit and proposal is technically and financially viable i.e. benefit to cost ratio is acceptable.

4.12 Energy Audit

1. The licensee shall carry out energy audit of the total distribution system. The licensee shall create 'Responsibility Centre' at each operating Division/ Commercial Unit/ Zonal Office. A particular area fed by a 33/11 kV substation or an Industrial area may also have a Responsibility Center. Energy sent out on each 11 kV feeder from a substation shall be metered at 11kV terminal switchgear. Monthly feeder meter readings shall be compared with energy sales to all consumers on that feeder as per their meter readings to work out distribution feeder losses.
2. Responsibility Centre shall carry out determination of loss on each feeder. Based on these losses of a Division/ Commercial Unit/ Zonal Office, hierarchy circle and zone shall be compiled and an analysis of data generated at utility level shall be carried out and reported to the Commission.

Chapter 5
CONNECTION CONDITIONS

5.1 Objective

(a) To ensure that the technical, designed and operational criteria specified in the Distribution Code and Distribution Performance Standards are fully complied with for new connections or augmentation of existing connections with Distribution System;

(b) To establish the general requirements for all Users seeking to connect to the Distribution System, or seeking to modify an existing connection;

(c) To specify the technical arrangements required at the interface boundary between the Distribution System and the User's plant and equipment that are applicable at all voltage levels;

(d) To ensure that a new connection to the distribution system does not exert any adverse effects on the existing Users nor shall a new connection suffer adversely due to existing Users;

(e) To specify the requirements that are applicable to all existing or prospective embedded generators, including Consumer Captive Generating Plants; and

(f) To facilitate data exchange between the Users, who are connected to the Distribution System.

5.2 Scope

Connection conditions apply to all entities/ consumers, using or intending of using Distribution System including:

(a) Distribution Licensees;
(b) Open Access Customers connected to Distribution Systems;
(c) Other Distribution Licensees connected to the Distribution System;
(d) Embedded Generators; and
(e) Large Consumers

5.3 Electricity Supply Procedures

Electricity Supply Procedures covering various aspects of connection procedures and customer services are laid down in a separate chapter which mainly contains:

(a) Classification of Customer;
(b) Power Supply;
(c) Apparatus on Consumer's Premises;
(d) Meters;
(e) Contract Demand;
(f) System of Supply;
(g) Tariff and Charges for Supply;
(h) Payment of Bills;
(i) Force Majuere and Restriction of Power Supply;
(j) Prohibitions; etc.

5.4 Responsibility for operational safety

Distribution Licensee and the user shall be responsible for safety as indicated in Site Responsibility Schedules for each connection point.

1. Site Responsibility Schedule

   For each new Connection with Distribution System or modification of existing connection required, Distribution Licensee shall prepare a Site Responsibility schedule indicating the following for each item of equipment installed at the Connection site as per format specified at *Annexure 5*.
   (a) The ownership of equipment.
   (b) The responsibility for control of equipment.
   (c) The responsibility for maintenance of equipment.
   (d) The responsibility for operation of equipment.
   (e) The coordinator at the site.
   (f) The responsibility for all matters relating to safety of persons at site.

2. Procedure for Site Access, Site Operational Activities and Maintenance Standards
   The connection agreement will also indicate the procedure for the site access, operational activities at site and maintenance standards for equipments at inter-connection site in distribution system and at user/ consumer premises.

5.5 Connection Agreement

The connection agreement lay down the terms and conditions for connection to and use of the Distribution System. The connection agreement shall include (but not limited to), as appropriate, the following terms and conditions:

(a) A condition is requiring both parties to comply with the Distribution Code
(b) Details of connection, technical requirements and commercial arrangements including the schedule of tariff for access and use of the distribution system.
(c) Details of any capital expenditure arising from necessary reinforcement or extension of the system and demarcation of the same between the concerned parties.
(d) Site operational procedures & break down rectification obligations
(e) Minimum requirement on protection.

5.6 Connection Points and Boundaries

1. Connection to Transmission System

   The Distribution Licensee shall comply with Connectivity Conditions laid down in the Grid Code.

2. Connection of Generators with distribution systems

   Voltage for inter-connection with Generators shall be 11 kV/33 kV or as agreed with Distribution Licensee.

   Unless specifically agreed with Distribution Licensee, the Connection point shall be the incoming of the circuit breaker of the generating station through which the generating station is connected to the system of distribution licensee Generating

Company/Generator shall maintain all the terminals, communication and protection equipment provided within the perimeter of generating station.

The provision, ownership, operation & maintenance of the metering system between Generating Company/Generator and Distribution Licensee at inter-connection point shall be specifically agreed upon by the both parties and agreement shall be submitted to the Commission.

The Distribution Licensee shall maintain all electrical equipment and other assets from the outgoing feeder gantry onwards.

3. Consumers

The voltage shall be as provided in Electricity Supply Procedures.

The inter-connection boundary, metering system and its ownership, operation & maintenance shall be as per the Electricity Supply Procedures.

5.7 Connected Equipment Requirement

The equipment connected to the Distribution System shall meet the following requirements:

(a) All equipment connected to the Distribution System shall be of such design and construction as to satisfy the requirements of the relevant BSTI Standard Specification. Where no BSTI exists the appropriate IEC Standard or equivalent International Standard will apply.

(b) Installation and commissioning of all electrical equipment/works shall comply with this Code.

(c) For every new connection sought, the Distribution Licensee shall specify the connection point and the voltage of supply, along with the metering and protection requirements as specified in the Metering and Protection Sections.

(d) The system frequency excursions shall be as per this Code.

(e) Voltage variation on the Licensee's System shall be in accordance with the This Code.

(f) Insulation co-ordination of the Users' equipment shall conform to applicable International Standards/Codes. Rupturing capacity of switchgear shall not be less than that specified by the Distribution Licensee in the Protection Manual.

(g) Protection and Metering arrangement of the connected equipment shall be as detailed in the relevant Sections of the Distribution Code.

(h) Generators running in synchronization with grid having salient pole alternators shall install filters to reduce harmonics.

5.8 Connected Plant Restrictions

Users connected to the distribution system can produce power disturbances, which propagate into the distribution system. If these disturbances are severe, the distribution system and other Users on the system will be adversely affected. To ensure system integrity and fairness to all Users, restrictions and controls have to be stipulated for compliance by the Users.

Protection issues are dealt in a separate chapter of the Distribution Code.

1. Safety
   All equipment of the Users including cables, wiring and overhead lines shall be compatible with safety standards in respect of
   (a) Manufacture quality.
   (b) Erection and location of installation
2. Insulation
   The Users' systems must be designed with proper basic insulation level (BIL). Insulation of all components in service must have adequate insulation strength for the system operating voltages at all times.
3. Clearances
   All overhead lines, equipment and facilities must have adequate horizontal and vertical clearances with respect to ground and with respect to one another as provided in this Code or other applicable standards.
4. Earthing
   All components of Users' systems must be properly earthed as per this Code. The bodies/cases/trucks/enclosures of all items of equipment shall be properly earthed, with the actual earthing arrangements depending on the machine ratings. Metallic supports of overhead lines and cable sheaths and shields shall also be earthed appropriately.
5. Motor Starters
   The starters provided for the motors of the Users shall be of such type and design that the starting current is less than six times the full-load current. The Licensee can advise the User to change over to "auto-transformer" starting if other type of starters for a particular motor causes unacceptable system distortions.
6. Access to Licensee
   The Licensees and their authorized personnel shall have the right to inspect the plant of the User or consumer to ensure conformity to standards and restrictions before charging the User's system and periodically thereafter. The Users shall facilitate timely access to the authorized personnel of the Licensees.

   The Distribution Licensee in accordance with provision of the Electricity Act 1910 shall have power to enter premises and to remove fitting or his other apparatus for the purpose of -

   (a) inspecting, testing, repairing or altering the electric supply lines, meters, fittings, works and apparatus for the supply of electricity belonging to the licensee; or
   (b) ascertaining the amount of electricity supplied or the electrical quantity contained in the supply; or
   (c) removing where a supply of electricity is no longer required, or where the licensee is authorized to take away and cut off such supply, any electric supply-lines, meters, fittings, works or apparatus belonging to the licensee.
7. Unintended and Unscheduled Back-Energization
   The Users shall take adequate precautions to ensure that no part of the distribution system is energized by the User's system or from another source via the User's system unless the Licensee as an exceptional arrangement requisitions it in writing. The switchgear and controls of the User's systems shall be so designed as to prevent

back-energization. This does not apply to CPPs and small Generating units intended for parallel operation with the Licensee's System.

8. Harmonic Current
   Equipment drawing harmonic currents such as furnaces, rolling mills and high power solid-state equipment adversely affects the distribution system and other Users connected to that part of the distribution system. Distribution Licensee shall incorporate necessary clause in connection agreement for restricting the harmonic induction by the consumer into distribution system.

9. Voltage Flicker generated by Consumers:
   Some Loads of the consumers such as arc furnaces create current fluctuations, which in turn produce Voltage Flicker. The illumination quality in the premises of other consumers connected to the same feeder suffers. Distribution Licensee shall incorporate necessary clause in connection agreement for restricting the consumers create current fluctuations and causing voltage flicker.

10. Power Factor
    Low power factor results in under utilization of capacities of equipment, machines, overhead lines and cables of the Licensees and generators and causes direct revenue loss. The Connection Agreement shall specify the limit of power factor of the loads. The Power Factor at which energy is imported by any entity as measured at the connection point shall not be less than 90%. The onus for maintaining the power factor (by installing shunt capacitors if necessary) lies with the energy receiving entity.

11. Efficiency of Machines in Respect of Energy Consumption
    All machines and devices shall be efficient and their efficiency shall not be less than the values acceptable in current sound industrial practices. The Licensees have a role in energy conservation and shall prevent wastage of energy by the Users.

5.9 Interface with Generators and CPPs

If the Distribution Licensee has an interface with any generating unit including CPP and an Agreement for this purpose exists, the Distribution Licensee and the concerned owner of the generating unit shall abide by the following provisions in addition to the provisions contained in this code as applicable to all the Users:

(a) The Generator/CPP shall provide suitable protection at the interface to protect his system from any damage due to normal and abnormal conditions in the distribution system.
(b) The Generator/CPP shall install separate metering for the reactive load draw, in addition to operational metering.
(c) If the generator is an induction generator, the owner shall take adequate precautions to limit the system disturbance, when the induction generator is synchronized. Generators having induction generators shall install adequate capacitors to compensate the reactive power drawl.
(d) Whenever the power is found very low during starting period and causes voltage dip in the Licensee's system and Licensee may advice the owner to install capacitors and the Generator/CPP shall comply.
(e) The Generating Company/ CPP shall also comply with the provisions of the Grid Code. The owner of generating unit shall enter into an agreement with the Distribution Licensee and if required with Transmission Licensee.

Chapter 6
DISTRIBUTION OPERATION PROCEDURES

6.1 Introduction

This chapter establishes rules, procedures and arrangements for efficient and safe operations of distribution system and provides guidelines to the Distribution Licensee and other Distribution system participants with regards to following:

(a) Demand estimation;
(b) Outage Planning;
(c) Contingency Planning;
(d) Demand Management and Load Shedding;
(e) Interface with small generating plants including CPPs;
(f) Monitoring and control of voltage, frequency and power factor;
(g) Safety Coordination;
(h) Major Incident and Accident reporting;
(i) Maintenance and testing;
(j) Tools and spares; and
(k) Training.

6.2 Objectives

The objective of distribution Operation Procedures is to achieve the following:

(a) To establish rules, procedures and arrangements for efficient and safe Distribution Operations;
(b) To enable the Distribution Licensee to coordinate and integrate the operation and maintenance with other users, embedded generating stations, open access customers and large consumers connected to Distribution System;
(c) To ensure safety of persons and properties while work is being done on the Distribution System; and
(d) To provide for the exchange of information for operation actions and/or significant events.

6.3 Operating Manuals

1. To ensure the compliance of provisions of this Code, the Distribution Licensee shall develop and maintain documented Operating Manuals.
2. Distribution Licensee shall document the following Distribution Operating Manuals (DOMs) so that the each operating personnel work in consistent and coordinated manner to provide an efficient, reliable and safe distribution system.

(a) Demand Estimation Manual
(b) Demand Control Manual
(c) Outage Planning Manual
(d) Contingency Planning and System Restoration Manual
(e) Safety Manual
(f) Significant Incident and Accident Reporting Manual

3. The Distribution Licensee shall furnish the copies of such Distribution Operating Manuals to the Commission in compliance this requirement.

6.4 Demand Estimation

1. The Distribution licensee shall estimate demand for Distribution System on year ahead, month ahead and day ahead basis as per the Grid Code requirement on the basis of relevant load data and/or curves subject to modifications depending upon the communications received from any specific user or caused by any contingency. Demand estimation shall be made at an interval such as hourly or time block basis as may be required by NLDC.
2. Concerned major users identified by the distribution licensee shall furnish required data pertaining to the demand of their installations to the licensee. Distribution Licensee shall consolidate the requirement for entire Distribution System and shall furnish the same to NLDC as per requirement of the Grid Code.

6.5 Demand Control

1. Temporary load shedding may be effected as per instructions of NLDC for maintaining load-generation balance, loss of any circuit or equipment or any other operational contingency.
2. The Distribution Licensee shall estimate loads that may be shed in discrete blocks at each inter-connection point in consultation with the users/ consumers supplied through independent circuits as required and submit the same to the NLDC. Such users/ consumers shall cooperate with the Distribution Licensee in this regard. The Distribution Licensee shall work out the sequence of load shedding operation and the detailed procedure shall be furnished to the NLDC and to the person in-charge of substation concerned where such load shedding has to be carried out. In case of automatic load shedding through under frequency or any other relays, the circuits and the amount of load to be interrupted with corresponding relay settings shall be intimated to the NLDC and person in charge of the substations of the licensee as necessary.
3. If the duration of planned load shedding to any part of the Distribution System exceeds a day it shall be notified to public through the media. Wherever possible, in case of emergency load shedding, consumers with contract demand of 1 MW and above and essential services such as Radio/ TV stations, Telecommunication organizations, Railways, Hospitals, Public Water Works etc. shall be intimated over the telephone also.

6.6 Outage Planning

1. The Distribution licensee shall furnish a proposed outage program of the Distribution System where aggregate generation or demand exceeds 5 MW to the NLDC for next financial year by 15th November of each year.
2. The outage program affecting aggregate generation or demand exceeding 5 MW shall contain identification of lines and equipment of distribution system proposed to be

taken out of service, date of start of outage, duration of outage and quantum of load restricted at any interconnection point during outage. Further the licensee shall confirm the information published in newspapers about the shut downs of the system at least one day prior to its occurrence.

3. The Licensee shall release the outage plan for distribution system based on final outage plan agreed with NLDC by 31st March of each year.
4. Before any lines or equipment is taken out of service, the licensee shall obtain consent of the designated officer of the NLDC even though the same is already included in the approved plan.
5. In addition to the above, in case of lines and equipment of 132 kV or above, specific concurrence of NLDC shall be obtained.
6. The above procedure shall not apply under the following circumstances:
   (a) In cases where the estimated draw at interconnection point is not affected;
   (b) Emergency situations to save plant and machinery;
   (c) In case of unforeseen emergency situations requiring isolation of line or equipment to save human life; and
   (d) Disconnection to be effected on any user or consumer's installation due to violation of a connection or electricity supply agreement.
7. In such cases the NLDC shall be informed wherever the load to the extent of 5 MW or more is affected.

6.7 Contingency Planning

A contingency situation may arise in the event of a total or partial blackout in the transmission system. A contingency may also arise in part of the distribution system due to local breakdowns in the distribution system itself. It may also arise due to a breakdown in the apparatus of the transmission licensee at or before the point of interconnection.

Contingency procedure shall be documented unambiguously to achieve the restoration of the total system and associated demand, and re-synchronization of parts of the total system, which have become out of synchronism with each other, at the shortest possible time.

1. Transmission system failure:

   In case of a total blackout at any point of inter-connection, the Distribution Licensee shall follow the step-by-step instructions of NLDC on system restoration, prioritizing essential and non-essential loads and black start procedures of embedded generators as required in the Grid Code.

   The Distribution licensee shall sectionalize the distribution system into discrete blocks of demand. The Distribution licensee shall inform the NLDC about the extent of load in MW likely to be picked up on switching each demand block.

   The Distribution licensee shall prepare a schedule of essential and non-essential load in order of priority at each interconnection to be picked up during the restoration process and shall be intimated to NLDC in the format prescribed at *Annexure 6*.

   The Distribution licensee shall ensure and maintain load generation balance under the direction of the NLDC as per Grid Code.

Till normalcy is restored the Distribution licensee shall maintain direct communication links with the NLDC as per Grid Code.

The Distribution licensee shall furnish the names, designations of the person(s) and their telephone numbers and stations, authorized to deal with contingency operations, to the NLDC as per Grid Code.

2. Distribution System Failure:

    a) Interruption of power supply in any part of the distribution system lasting for more than two hours due to breakdown in any part of the Distribution system may be termed as a distribution system failure.
    b) The Distribution Licensee shall coordinate with NLDC for restoration process, which shall be as per Grid Code.
    c) The Distribution Licensee shall designate a Nodal officer to coordinate with NLDC for transmission system restoration process.

3. Failure of the Apparatus of the transmission licensee:

    The Distribution Licensee shall immediately contact the authorized person at the grid substation of the transmission licensee and assess the probable period of restoration and the probable restriction of load draw from the affected substation. The Distribution Licensee shall affect the demand management plan accordingly.

6.8 Monitoring and Control of Voltage, Frequency and Power Factor

1. The Distribution Licensee shall operate and maintain his system such that power availability to consumers in terms of quality, continuity and reliability is in accordance with the Distribution Performance Standards laid down by the Commission.
2. The Distribution Licensee shall monitor the voltage, frequency and power factors in the distribution system at various substations during peak and off-peak hours and take reasonable measures for improvement of the same in coordination with the consumers having Demand of more than 1 MW, and the transmission licensee.
3. The Distribution Licensee shall take power factor improvement measures at strategic points in the distribution system by carrying out system studies and installing required reactive compensation equipments.
4. Voltage in the distribution system may vary depending upon the available generation, system demand and the configuration of transmission and distribution system at any time.

    Under normal operating conditions the Distribution Licensee shall exercise proper voltage management in the distribution system beyond the point of interconnection with the transmission system to maintain voltage at all levels according to the Distribution Performance Standards. The Capacitors, wherever required shall be provided at the 33 kV substations to maintain power factor within acceptable limits of 0.9 lagging. The distribution licensee shall provide the reactive compensation looking to 11 kV and 33 kV bus-voltages at 33 kV substations through application of capacitors wherever available.

5. Users/ Consumers having loads with high harmonic content, fluctuations and power factor below set limit by BERC shall install appropriate correction equipment to meet the minimum connectivity conditions with distribution system.
6. The Distribution Licensee shall abide by the instructions issued by the NLDC from time to time on load management for maintaining the frequency of supply within the specified limits.

6.9 Operational Coordination

In the case of an operation on the User's system, which may have an operational effect on the distribution system, the concerned User shall notify the Distribution Licensee in accordance with procedure laid down in this Code. Similarly the distribution licensee shall also notify the affected User(s) in the case of an operation on the distribution system, which may have an operational effect on the User's System. Further the distribution operation may be caused by an Operation on another System. In such case, the information to be provided by the Distribution Licensee and/or the User shall reflect the linkage between the operations.

While in no way limiting the general requirement for advance notification, the following are examples of situations where notification shall be required, since they may have or have had an effect on the operation of the Distribution System or another System:

(a) The implementation of a Scheduled Maintenance Program of Plant and/or Equipment, which has been arranged;
(b) The Operation of any Circuit Breaker or Disconnect Switch or any sequence or combination of the two including any temporary overstressing or Generating Unit synchronizing; and
(c) Voltage control.

1. Safety Management Systems:

   The Distribution Licensee and Distribution System Participants shall maintain a Safety Management System, which specifies the principles and procedures to ensure safety of persons and properties, while work is being done on the Distribution System

2. Operational Boundary:

   At sites or locations where an Operational Boundary exists, the Distribution Licensee and Users shall jointly agree on the adoption of a Safety Management System. This shall include the provision of personnel of the Licensee and/or user involved in work at operation site and public and property involved.

3. Safety Coordinator:

   Distribution Licensees and each Users shall nominate a person or persons who shall be responsible for the coordination of safety precautions at each Connection Point when work is to be carried out on a System on which safety from the system is required.

   Each User prior to working on inter-connection point with Distribution System shall give notice in writing to the Safety Coordinator of the Distribution Licensee and inform the name of person(s), who shall be responsible for the coordination of work at operational boundary.

Distribution Licensees also prior to issue authorization to any User to work on interconnection point shall inform to that User of the identity of its designated officer who shall issue the permission to user to connect to distribution system and issue work permit for connection work at operational boundary.

4. Safety Precautions Document:

   The Distribution Licensees and Users shall maintain a suitable system of documentation, which records all relevant operational events that have taken place on the Distribution System or any other System connected to it and the coordination of relevant safety precautions for work. All documentation in this regards and safety precautions taken for work or test shall be preserved at least for one year for any evidential purpose including any investigation of any accident.

   The Distribution Licensee and the Users shall observe the safety requirements as mentioned in the Safety Code while working at inter-connection boundary of the distribution system.

   There shall be coordination between persons of the Distribution Licensee and the Users/ consumers, between persons of two distribution licensees having electrical interfaces, for carrying out the work on any apparatus or lines etc. belonging to either party at the point of interconnection.

   The provisions of the Grid Code shall be followed at interconnection points in coordination with the transmission licensee.

   The disconnecting device(s) at each electrical interface, which shall be capable of effectively disconnecting the system of the licensee and Users/consumers and the grounding devices of the respective systems at the control boundary shall be identified and marked by the licensee and the respective Users/consumers. These shall be maintained in good condition at all times.

   To prevent inadvertent switching operations by unauthorized persons, such disconnecting devices shall be provided with interlocks.

   If a Consumer installs an emergency power supply system, either an electronic system with storage batteries or with generation, the arrangement shall be such that the same cannot be operated without clearly isolating the system from the supply mains. The possibility of a feed back from these devices to the distribution system from any of the conductors including the neutral conductor shall be clearly ruled out.
   Appropriate control person at electrical interface shall issue permission in writing to a counterpart for carrying out work on any apparatus, switchgear or lines beyond the electrical interfaces. Such permissions shall be termed as “Line Clear Permits” (LCP). The format for LCP shall be standardized by the licensee and shall be used by all concerned.

5. Safety Manual:

   The Distribution Licensee shall observe measures relating to safety in electricity supply as specified in the Electricity Act 1910. The Distribution Licensee shall observe the General Safety Requirements as laid down in the Electricity Rules, 1937 for construction, installation, protection, operation and maintenance of electric supply lines and apparatus.

   Every person who is working on a electric line or apparatus or both shall be provided with tools and devices such as gloves, rubber shoes, safety belts ladders, earthing devices, helmets, line testers, hand lines and like for protecting him from mechanical

and electric injury. Such tools and devices shall always be maintained in sound and efficient working conditions.

Distribution Licensee shall develop its Safety Manual taking into consideration the safety requirements for the construction, operation and maintenance of electrical plants and electric lines as may be specified by the Electricity Act, Electricity Rules and this Distribution Code. The copy of Safety Manual shall be furnished to the Commission.

6.10 Major incident or Accident Reporting

Any of the following events that could affect the Distribution System requires reporting:

(a) Major Blackout in power supply
(b) Failure of Power Transformer affecting power supply in large area
(c) Accidents-Fatal and Non-Fatal
(d) Major fire incidents
(e) Major failure of protection
(f) Major breakdowns in the distribution system
(g) Loss of major Generating Unit
(h) Major break down in sub-transmission line
(i) Serious equipment problem i.e. major circuit breaker, transformer or bus bar etc.
(j) Any other incident which the licensee or the User may consider worth reporting in view of its repercussions on the safe and reliable operation of the distribution system
(k) Major breakdowns of Equipment supplying power to the User's System

The Distribution licensee shall report to the BERC occurrence of any of the above incident in prescribed time and in specified format.

1. Reporting Procedure:

   All reportable incidents occurring in lines and equipment of 11 kV and above at the 33 kV substations shall be reported within 15 minutes of the incident telephonically by the Distribution Licensee whose equipment has experienced the incident, to all other significantly affected Users identified by the licensee and the NLDC. The reporting Distribution Licensee should submit a report in writing to NLDC within one hour of such telephonic report. If the incident is of major nature, the report shall be submitted within two hours duly followed by a comprehensive report within 48 hours of the incident. In other cases, the reporting distribution licensee shall submit a report within five working days to the NLDC.

   NLDC shall call for a report from any Distribution Licensee on any reportable incident affecting other consumers in case a consumer whose equipment might have been a source of the reportable incident does not report the same. However, this shall not absolve any User from obligation to report events in accordance with Electricity Rules.

2. Reporting Form:

   All reportable incidents except the accident cases shall be reported in standard format attached at *Annexure 7*.

   The format for such a report shall be approved by the Distribution Code Coordination Committee and shall typically contain the following:

   a) Location of the incident;
   b) Date and time of the incident;
   c) Plant or Equipment involved;
   d) Supplies interrupted and the duration wherever applicable;
   e) Amount of Generation lost, wherever applicable;
   f) System Parameters before and after the incident (voltage, frequency, load, generation, etc.);
   g) Network configuration before the incident;
   h) Relay indications and performance of protection;
   i) Brief description of the incident;
   j) Estimated time of return to service;
   k) Any other relevant information;
   l) Recommendations for future improvement; and
   m) Name and designation of the reporting person.

   The Distribution Coordination Committee shall review any new requirement of reporting an incident and shall review the format as the need arise.

3. Accident Reporting:

   Reporting of accident shall be in accordance with section 33(1) of the Electricity Act 1910. If an accident occurs in the distribution system resulting in or likely to have resulted in loss or injury to human or animal life, the Distribution Licensee shall send a telephonic report to the concerned authorities immediately after knowledge of such occurrence. This shall be followed by a report in writing in the form set out in *Annexure 8* within 48 hours of the knowledge of occurrence of fatal and other accidents.

6.11 Maintenance and Testing

The level of performance of all line and substation equipment shall meet the standards of performance for the Distribution Licensee specified by the Commission.

1. Construction & Maintenance Practices:

   All electric supply lines and apparatus shall be of sufficient ratings for power, insulation and estimated fault current and of sufficient mechanical strength, for the duty which may be require to perform under the environmental conditions of installation, and shall be constructed, installed, protected, worked and maintained in such a manner as to ensure safety of human beings, animals and property.

   The relevant code of practice of the Bangladesh Standard and Testing Institution (BSTI) including National Electrical Code if any may be followed. The material and

apparatus used shall conform to the relevant specification of BSTI where such specifications have been already laid.

The Licensee, if already not have, shall prepare and observe the Construction & Maintenance Manuals for various equipment/ works like 33 kV Lines, 11 kV Lines, LT Lines, 33 kV substation, 11 kV Pole Mounted and other types of substations. The Construction & Maintenance Manual shall be prepared taking into consideration the following:

(a) Technical Standards for construction of electrical plants, electric lines and connectivity to the grid specified by the Commission;
(b) Safety requirements for construction, operation and maintenance of electrical plants and electric lines specified by the Commission and/or a competent authority;
(c) Construction Standards and Standard design layouts of the Licensee;
(d) Institution of Engineers, Bangladesh (IEB) Publications on Code of Practices, if any;
(e) Code of Practices issued by a competent authority including BSTI for various equipment and maintenance practices; and
(f) Instruction Manuals for installation, operation and maintenance issued by standard equipments by manufacturer concerned.

The standard tables for conductor size, fuse size, wire gauge, electrical clearance, ground wire size, insulation resistance and earth resistively etc. shall be included in the Construction and Maintenance manual. Distribution Licensee shall ensure that its construction and maintenance staff strictly observe these Manuals. The copy of Construction & Maintenance Manual shall be furnished to the Commission.

2. Preventive Maintenance Schedule and Inspection Manual:

The Distribution Licensee shall prepare a Preventative Maintenance Schedule and Inspection manual for various line and substation equipment installed in distribution system. The Preventive Maintenance Schedule and Inspection Manual shall include the following important equipment:

a) Power Transformers and Distribution Transformers installed indoor;
b) Power Transformers and Distribution Transformers outdoor installed;
c) Pole Mounted Distribution Transformers;
d) 11 kV & 33 kV Circuit Breakers;
e) 11 kV & 33 kV Overhead Lines including Gang Operated Switches & Drop Out Fuses;
f) 11 kV & 33 kV Overhead Lines including Gang Operated Switches & Drop Out Fuses;
g) 11 kV & 33 kV Cable & Cable Boxes;
h) LT Lines; and
i) Service Connection.

The Preventive Maintenance Schedule and Inspection Manual shall have sections covering the following:

(a) Recommended Schedule for inspection;
(b) Recommended Schedule for preventive maintenance; and
(c) Recommended Schedule for overhaul.

The inspection schedule and preventive maintenance schedule shall have daily, weekly, monthly quarterly and annual periodic activity to be carried out for various equipments.

3. Maintenance Record:

   The Distribution Licensee shall maintain records of periodic inspections carried out in the standard formats prescribed in Preventive Maintenance Schedule and Inspection Manual. Records shall be maintained in respect of following amongst others:

   (a) Power Transformers and Large Distribution Transformers installed indoor
   (b) Pole Mounted Distribution Transformers
   (c) 11 kV & 33 kV Circuit Breakers;
   (d) 33 kV and 11 kV Lines

   Regular testing of all the equipments such as transformers, switchgear, protective relays, etc., should be carried out as recommended by the manufacturer and the relevant code of practice issued by the competent authority. These shall be carried out at the prescribed intervals and the test results shall be recorded in the maintenance registers. Wherever the test results indicate a decline in the insulation resistance and/or deterioration of the equipment, preventive maintenance shall be carried out to ensure serviceability, safety and efficiency.

   The Distribution Licensee shall maintain well trained hot-line personnel and all the required tools in good condition and conduct maintenance work by using hot-line technique, wherever possible, to reduce period of interruption.

   The consumers shall maintain their apparatus and power lines at all times conforming to the Electricity Rules, 1937 and these shall be suitable for connection to distribution system in a safe and reliable manner.

6.12 Tools and Spares

The Distribution Licensee shall ensure availability of proper tools and tackles. at all work places for carrying out the maintenance. The tools and tackles shall be checked from time to time and their serviceability shall be ensured. The Distribution Licensee shall maintain an inventory of spares required for maintenance and replacement purposes at suitable locations according to a clear policy to be laid down by the licensee.

6.13 Training

The Distribution Licensee shall impart necessary training to its officers/staff in distribution system operation and maintenance practices so as to implement the provisions of this Code.

The Distribution Licensee shall make appropriate arrangements for imparting training in both cold line and hot-line work to workmen and supervisory staff, incorporating up-to-date techniques of distribution system design, construction and maintenance. Suitable syllabus shall be framed for this purpose.

6.14 Nomenclatures & Identification Coding

The Distribution Licensee shall prepared equipment nomenclatures and identification equipment for uniquely identifying various equipments in distribution system. The nomenclatures scheme shall be consistent with the scheme provided in the Grid Code.

6.15 Conservation of Energy

The Distribution Licensee and the other participants including consumers shall comply with the relevant provisions of Energy Conservation Act and/or Policy Guidelines as applicable to them and the notification issued to this effect by the competent authorities.

6.16 Operational Communication

Reliable communication links shall be established for exchange of data, information and operating instructions between NLDC and the Distribution licensee, embedded generators, users and large consumers with a Demand of more than 5 MW. The Distribution Licensee and the Users connected to its Distribution System shall designate officers and agree on communication channels for the exchange of information. Communication shall, as much as possible, be direct between the User and the operator of the Distribution System to which that User is connected.

List of telephone numbers and call signs shall be exchanged by the Distribution Licensee and concerned Users to enable control activities to be efficiently coordinated.

Chapter 7
DISTRIBUTION PROTECTION REQUIREMENT

7.1 Introduction

In order to safeguard Distribution System and prevent faults traveling into the Transmission System, it is essential that certain minimum standards for protection shall be specified for the Distribution Licensee and Users connected to Distribution System. This chapter describes these minimum standards.

7.2 Objective

The objective of this chapter is to define the minimum protection requirements for any equipment connected to the Distribution System, so that faulty distribution section can be isolated from rest of power system and thereby minimize disruption due to faults.

7.3 General Principles

1. No item of electrical equipment shall be allowed to remain connected to the distribution system unless it is covered by appropriate protection aimed at reliability, selectivity, speed and sensitivity of protective relays/devices. Distribution Licensee and users shall cooperate with Transmission Licensee to ensure correct and appropriate settings of protection to achieve effective, discriminatory removal of faulty equipment within the target clearance time specified in the Grid Code.
2. Protective relay settings shall not be altered or protection bypassed and/or disconnected without consultation and agreement of all the affected consumers and distribution licensee. In case the protection has been bypassed and/or disconnected by agreement, the same should be rectified and protection restored to normal condition as quickly as possible. If agreement is not reached all the electrical equipments shall be isolated forthwith.

7.4 Protection Manual

Distribution Licensee shall prepare and enforce standard manual of protection indicating minimum protection requirement within the distribution system and connected Users' system.

The Protection Manual shall cover protection of 33 kV & 11 kV Lines Power and Distribution Transformers. The Protection Manual shall be prepared taking into consideration the Grid Code Protection requirement on Distribution/User System and shall contain relevant data on fault levels at various places, guidelines for setting standard relays for over current and earth faults, fuse rating selection criteria etc. A copy of Protection Manual shall be furnished to Commission in compliance of this requirement.

7.5 Protection at Inter-connection Point of EHV GSS

All 33 kV and 11 kV lines emanating from EHV Grid Substation (GSS) shall be provided with a minimum of over-current and earth fault protection with or without directional features along with high set element as per the Grid Code requirement. Coordination with the originating EHV substation should be ensured to avoid major substation equipment/ EHV transmission lines from tripping on through faults due to delayed fault clearance in the distribution feeders.

Protection on 33 kV & 11 kV transformers and lines (or their sectionalizing points) of HV system of Distribution Licensee shall be coordinated with settings of protection provided on 33 kV & 11 kV feeders at EHV substations.

7.6 33 kV and 11 kV Line Protection

1. The settings of protective relays for 33 kV and 11 kV lines shall be such that a fault in any section does not affect the upstream section between the generating unit/feeding substation and the faulty section under all conditions. 33 kV radial lines shall have two over-current and one earth fault non-directional IDMT relay protection. The relays shall also have instantaneous over current element. Where 33 kV line is an interconnection between two substations or a generator unit and the substation, these relays shall have directional feature.
2. All 33 kV and 11 kV lines at connection points shall be provided with a minimum of over-current and earth fault relays as follows:
    a) Radial feeders-
    Non-directional time lag over current and earth fault relays with suitable settings to obtain discrimination between adjacent relays settings.
    b) Parallel/ring feeders and interconnected feeders-
    Directional time lag over current and earth fault relays.
    c) Long feeders/transformer feeders-
    These feeders shall incorporate a high set instantaneous element.

7.7 Transformer Protection

The Minimum protection requirements of transformers installed in distribution system shall be as under:

On primary side of transformers:

On primary side of transformers a linked switch of such capacity as to carry the full load current and to break only the magnetizing current of transformer provided the capacity of the transformer does not exceeds 1000 KVA.
Circuit Breaker/ Recloser of adequate capacity for transformers having capacity above 1000 KVA

On secondary side of transformers:

(a) All the transformers of capacity 630 KVA and above transforming MV/HV to EHV, MV or LV a Circuit Breaker/ Recloser of adequate rating shall be provided.

(b) In respect of transformers of capacity upto 630 KVA, a linked switch with fuse or Circuit Breaker/ Recloser of adequate rating shall be provided.

In addition to above transformers having high or extra high voltage on any side shall be provided with following protection:

(a) Gas pressure type and winding and oil temperature protection to give alarm and tripping shall be provided on all transformers of rating 1000 KVA and above.
(b) Transformers of capacity 10 MVA and above shall be protected against incipient faults by differential protection

7.8 Generator Protection

All generators with rating of 100 KVA and above shall be protected against earth fault/leakage. All generators of rating 1000 KVA and above shall be protected against faults within the generator winding using restricted earth fault protection or differential protection or both. The protection at interconnection point with Transmission Grid shall be in accordance with Grid Code requirements and connectivity criteria laid down therein.

7.9 Protection Coordination

1. The transmission licensee shall notify the initial settings and any subsequent changes to the Distribution Licensee and Users from time to time. Routine checks on the performance of protective relays shall be conducted and any malfunction shall be noted and corrected as soon as possible. The Distribution licensee shall decides the relay settings with the data collected from the transmission licensee and the Users on Fault Levels at various EHV Substations.

   Representatives of the generating companies, transmission licensees and distribution licensees shall meet periodically to discuss such malfunctions, changes in the system configuration, if any, and possible revised settings of relays.

2. NLDC shall be responsible for arranging periodical meetings between the generating companies, transmission licensee and the distribution licensees to discuss coordination of protection as per the Grid Code requirement. The transmission licensee shall investigate any malfunction of protection or other unsatisfactory protection issues. The distribution licensees shall take prompt action to correct any protection malfunction or activity in distribution system as discussed and agreed to in these periodical meetings.

Chapter 8
PERFORMANCE STANDARDS FOR DISTRIBUTION

8.1 Introduction

This Chapter applies to all Distribution System Users including the Distribution System Owner, Generators connected to the Distribution System, Open Access Customers/ Consumers and any other entity with a User System connected to the Distribution System.

8.2 Objective

(a) To ensure the quality of electric power in the Distribution System;

(b) To ensure that the Distribution System will be operated in a safe and efficient manner and with a high degree of reliability; and

(c) To specify safety standards for the protection of personnel in the work environment.

8.3 Power Quality Standards

1. Power Quality Problems

For the purpose of this Article, Power Quality shall be defined as the quality of the voltage, including its frequency and the resulting current, that are measured in the Distribution System during normal conditions.

A Power Quality problem exists when at least one of the following conditions is present and significantly affects the normal operation of the System:

(a) The System Frequency has deviated from the nominal value of 50 Hz;
(b) Voltage magnitudes are outside their allowable range of variation;
(c) Harmonic Frequencies are present in the System;
(d) There is imbalance in the magnitude of the phase voltages;
(e) The phase displacement between the voltages is not equal to 120 degrees;
(f) Voltage Fluctuations cause Flicker that is outside the allowable Flicker Severity limits; or
(g) High-frequency Over-voltages are present in the Grid.

2. Voltage Variations

For the purpose of this Section, Voltage Variation shall be defined as the deviation of the root-mean-square (RMS) value of the voltage from its nominal value, expressed in percent. Voltage Variation will either be of short duration or long duration.

A Short Duration Voltage Variation shall be defined as a variation of the RMS value of the voltage from nominal voltage for a time greater than one-half cycle of the power frequency but not exceeding one minute. A Short Duration Voltage

Variation is a Voltage Swell if the RMS value of the voltage increases to between 110 percent and 180 percent of the nominal value. A Short Duration Voltage Variation is a Voltage Sag (or Voltage Dip) if the RMS value of the voltage decreases to between 10 percent and 90 percent of the nominal value.

A Long Duration Voltage Variation shall be defined as a variation of the RMS value of the voltage from nominal voltage for a time greater than one minute. A Long Duration Voltage Variation is an Under-voltage if the RMS value of the voltage is less than or equal to 90 percent of the nominal voltage. A Long Duration Voltage Variation is an Overvoltage if the RMS value of the voltage is greater than or equal to 110 percent of the nominal value.

The Distribution System Owner shall ensure that the Long Duration Voltage Variations result in RMS values of the voltages that are greater than 95 percent but less than 105 percent of the nominal voltage at any Connection Point during normal conditions.

3. Harmonics

For the purpose of this Section, Harmonics shall be defined as sinusoidal voltages and currents having frequencies that are integral multiples of the fundamental frequency. The Total Harmonic Distortion (THD) shall be defined as the ratio of the RMS value of the harmonic content to the RMS value of the fundamental quantity, expressed in percent.

The Total Demand Distortion (TDD) shall be defined as the ratio of the RMS value of the harmonic content to the RMS value of the rated or maximum fundamental quantity, expressed in percent.

The Total Harmonic Distortion of the voltage and the Total Demand Distortion of the current at any Connection Point shall not exceed the limits permitted by International Standards

4. Voltage Unbalance

For the purpose of this Section, the Negative Sequence Unbalance Factor shall be defined as the ratio of the magnitude of the negative sequence component of the voltages to the magnitude of the positive sequence component of the voltages, expressed in percent. For the purpose of this section, the Zero Sequence Unbalance Factor shall be defined as the ratio of the magnitude of the zero sequence component of the voltages to the magnitude of the positive sequence component of the voltages, expressed in percent.

The maximum Negative Sequence Unbalance Factor at the Connection Point of any User shall not exceed one (1) percent during normal operating conditions.
The maximum Zero Sequence Unbalance Factor at the Connection Point of any User shall not exceed one (1) percent during normal operating conditions.

5. Voltage Fluctuation and Flicker Severity

For the purpose of this Section, Voltage Fluctuations shall be defined as systematic variations of the voltage envelope or random amplitude changes where the RMS value of the voltage is between 90 percent and 110 percent of the nominal voltage.

For the purpose of this Section, Flicker shall be defined as the impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time.

In the assessment of the disturbance caused by a Flicker source with a short duty cycle, the Short Term Flicker Severity shall be computed over a 10-minute period.
In the assessment of the disturbance caused by a Flicker source with a long and variable duty cycle, the Long Term Flicker Severity shall be derived from the Short Term Flicker Severity levels.

The Voltage Fluctuation at any Connection Point with a fluctuating demand shall not exceed one percent (1%) of the nominal voltage for every step change, which may occur repetitively. Any large Voltage Fluctuation other than a step change may be allowed up to a level of three percent (3%) provided that this does not constitute a risk to the Distribution System.

The Flicker Severity at any Connection Point in the Distribution System shall not exceed short-term 1.0 unit and long-term 0.8 units.

8.4 Reliability Standards

1. Criteria for Establishing Distribution Reliability Standards

   The Commission shall impose a uniform system of recording and reporting of Distribution reliability performance.

   The numerical levels of performance (or targets) shall be unique and shall be based initially on the Licensee's historical performance.

   The Distribution System shall be evaluated annually to compare its actual performance with the targets

2. Distribution Reliability Indices

   The Commission shall prescribe reliability indices that will measure the total number of sustained power interruptions in the Distribution System. The Index definitions and determination will be in accordance with IEEE 1366.

   The Commission shall prescribe a reliability index that will measure the total duration of sustained power interruptions in the Distribution System.

   Initially the following indices will be applicable:

   (a) SAIFI - System Average Interruption Frequency Index

   (b) SAIDI - System Average Interruption Duration Index

   (c) CAIFI - Customer Average Interruption Frequency Index

   (d) CAIDI - Customer Average Interruption Duration Index

   (e) ASAI - Average Service Availability Index

   (e) ASIFI - Average System Interruption Frequency Index

After due notice and hearing, the Commission may impose other indices that will monitor the reliability performance of the Distribution System.

3. Inclusions and Exclusions of Interruption Events

A power Interruption shall include any Outage in the Distribution System which may be due to the tripping action of protective devices during faults or the failure of transmission lines and/or power transformers, and which results in the loss of service to a Distribution System Consumer/User or a group of Consumers/Users.

The following events shall be excluded in the calculation of the reliability indices:

(a) Outages that occur outside the Distribution System;

(b) Outages due to generation deficit;

(c) Planned Outages where the Users have been notified at least seven (7) days prior to the loss of power;

(d) Outages that are initiated by the System Operator or Market Operator during the occurrence of Significant Incidents or the failure of their facilities;

(e) Outages caused by Adverse Weather or Major Storm Disasters which result in the declaration by the government of a state of calamity; and

(f) Outages due to other events that the Commission shall approve after due notice and hearing.

4. Submission of Distribution Reliability Reports and Performance Targets

The Licensee shall submit every three (3) months the monthly Interruption reports for each Distribution System using the standard format prescribed by the Commission.

The Commission shall set the performance targets for each Distribution System after due notice and hearing.

8.5 System Loss Standards

1. System Loss Classifications

System Loss shall be classified into three categories: Technical Loss, Non-Technical Loss, and Administrative Loss.

The Technical Loss shall be the aggregate of conductor loss, the core loss in transformers, and any loss due to technical metering error.

The Non-Technical Loss shall be the aggregate of the Energy loss due to meter-reading errors and meter tampering.

The Administrative Loss shall include the Energy that is required for the proper operation of the Distribution System.

2. System Loss Cap

The Commission shall, after due notice and hearing, prescribe a cap on the System Loss that can be passed on by the Distribution System Owner to the Users. The cap shall be applied to the aggregate of the Technical and Non-Technical Losses.

The Licensee shall submit to the Commission an application for the approval of its Administrative Loss. The allowance for Administrative Loss shall be approved by the Commission, after due notice and hearing, based on connected essential load.

8.6 Safety Standards

1. Safety Compliance

   The Licensee shall develop, operate, and maintain the Distribution System in a safe manner and shall always ensure a safe work environment for their employees. This Code govern the safety requirements for electrical installation, operation, and maintenance which covers electrical Equipment and associated work practices employed by the electric utility. Compliance with these Codes is mandatory. Hence, the Distribution System Owner shall at all times ensure that all provisions of these safety codes are not violated.

2. Measurement of Performance for Personnel Safety

   Following pertinent matters are to be ensured for the measurement of performance for personnel safety that shall be applied to the Licensee:

   (a) Exposure to work injuries shall be measured by the total number of hours of employment of all employees in each establishment or reporting unit.

   (b) Employee-hours of exposure for calculating work injury rates are intended to be the actual hours worked. When actual hours are not available, estimated hours may be used.

   (c) The Disabling Injury/Illness Frequency Rate shall be based upon the total number of deaths, permanent total, permanent partial, and temporary total disabilities, which occur during the period covered by the rate. The rate relates those injuries/illnesses to the employee-hours worked during the period and expresses the number of such injuries in terms of a million man-hour units.

   (d) The Disabling Injury/Illness Severity Rate shall be based on the total of all scheduled charges for all deaths, permanent total, and permanent partial disabilities, plus the total actual days of the disabilities of all temporary total disabilities, which occur during the period covered by the rate. The rate relates these days to the total employee-hours worked during the period and expresses the loss in terms of million man-hour units.

3. Submission of Safety Records and Reports

   The Licensee shall submit to BERC copies of records and reports. These shall include the measurement of performance specified above.

8.7 Electric and Magnetic Field (EMF)

The Licensee shall calculate the intensity of Electric and Magnetic Field (EMF) at the edge of right of way for different line configuration and operating voltages. The values of Electric Field shall be determined in V/m and that of Magnetic Field in mT (milli-Telsa) or mG (milli-Gauss). Actual intensity shall practically be measured in accordance with IEEE Standard-644 (latest revision) and the finding shall be submitted to the Commission. Safety level with respect to human exposure to electromagnetic field shall also be determined and maintained in accordance with IEEE C95.1 thru IEEE C95.6 (2002 or latest revision).

8.8 Noise Level

Noise level having its source at Distribution System substations and other installations shall be in accordance with the Environmental laws of Bangladesh. International standards shall be followed if boundary conditions are missing in the pertinent laws of the country.

Chapter 9
ELECTRICITY SUPPLY PEOCEDURES

CLASSIFICATION OF CONSUMER

1. Primary classification of consumers into various categories will be in accordance with purpose of use of energy. Further classification under a particular category will depend on voltage level which is variable on the quantum of contract load. Classification of consumers will be uniform among the Licensees, however, the alphabetic symbol may vary Licensee to Licensee but this symbol shall be uniform within a particular licensee's zonal offices/sub-offices. Symbolic representation of a particular category may be single letter or maximum two letters and shall be approved by the Commission. Supply conditions and Tariff for each category shall be fixed by the Commission. The classification of general consumers of the Licensee will be as follows:

Category	Symbol	Suffix for Voltage Level					
		kV >>	0.23 & 0.4	11	33	132	230
		Load >=		50 kW	5 MW	15 MW	15 MW
Residential			No Suffix	1	-	-	-
Agricultural			No Suffix	1	2	3	-
Commercial			No Suffix	1	-	-	-
Non-residential/ Charitable Instt.			No Suffix	1	-	-	-
Small Industry			No Suffix	-	-	-	-
Large Industry/ Complex			-	1	2	3	4
Street Light			No Suffix	-	-	-	-
Water Pump			No Suffix	1	2	-	-
Temporary			No Suffix	1	-	-	-

Load exceeding 8 kW or exceeding 10 HP for Agricultural load shall be supplied through 3-phase connection.

Consumer shall provide his own substation, including transformer, high voltage control, protection and power factor correction equipment when the main supply/connection voltage exceeds 400 Volts.

Residential

This category applies to the electricity service through a single watt-hour meter for lighting and appliances used in a dwelling place, including related grounds and buildings.

Agricultural Pumping

This category applies to the electricity service through a single watt-hour meter for irrigation and drainage of land for the purpose of cultivation.

Small Industrial

This category applies to the electricity service through a single watt-hour meter for small industry where articles or substances are produced, adopted, manufactured, altered, repaired, ornamented, finished, packed or treated from raw materials with a view to their use, sale, transport, delivery and disposal.

Non Residential and Charitable Institution

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This category applies to the electricity service through a single watt-hour meter for hospitals, educational institutions, religious and charitable establishments and such type of consumers

Commercial

This category applies to the electricity service through a single watt-hour meter for offices, trading and commercial enterprises such as offices, shops, businesses, hotels, cinema chains and such other establishments.

Complexes

This category applies to the electricity service through energy and demand meters for certain complexes having horizontal spread (like Cantonment, Educational Institutions, mixed use premises of govt. semi-government and autonomous bodies, but excluding high rise residential/ multipurpose apartments, housing projects) where the consumer provides his own substation, including transformer, high voltage control, protection and power factor correction equipment. This tariff will be uniform irrespective of presence of bulk meters for different categories under the main connection.

Street Lights

This category applies to the electricity service through a single watt-hour meter for Pourasava, City Corporation or any public place for the purpose of street lighting.

Water Pumps

This category applies to the electricity service through a single watt-hour meter for WASA, Public Health and any local authority for the purpose of drinking water pumping stations.

Temporary Connection

Temporary connection applies to consumers like exhibition, fair, camps, meetings, camps/jamboree, parade, construction and such other purposes. Temporary connections for construction purposes shall be for periods in

multiple of quarters but not exceeding 1(one) year which may be extended for another 1(one) year, where necessary, by the next higher authority of the Licensee.

Combination of Categories

In case of combination of categories, the main account shall fall under the category having highest tariff of the combination. Separate sub-accounts for individual owners may be allowed provided that there will be only one meter for all commercial shops/establishments in that location. Where sub-accounts are allowed, each individual owner will fall under respective category as applicable above.

Unclassified, future - Railway Traction

This category relates to the electricity service for Railway Traction.

2. Electric Utility (Distribution Licensee)

Category	Symbol	Suffix for Voltage Level					
		kV >>	11	33	132	230	400
Service Area		Load >=		50 kW	5 MW	15 MW	15 MW
Metropolitan/ Urban			No Suffix	1	2	3	4
Rural			No Suffix	1	2	3	4
RAPSS			No Suffix	1	2	3	4

3. Consumers under Special Agreement

The Licensee may, having regard to the nature of supply and purpose for which supply is required, fix special tariff and conditions of supply for the consumers not covered by the classification enumerated in this Code. For such purpose Licensee may enter into special agreements with the approval of the Commission with suitable modifications in the Standard Agreement Form. The tariff in such cases shall be separately approved by the Commission.

4. Reclassification of Consumer

If it is found that a consumer has been classified in a particular category erroneously or the purpose of supply as mentioned in the agreement has changed or the consumption of power has exceeded the limit of that category or any order of reduction or enhancement of contract demand has been obtained the *Licensee* may reclassify him under appropriate category after issuing notice to him to execute a fresh agreement on the basis of the altered classification or modified contract demand. If the consumer does not take steps within the time indicated in the notice to execute

the fresh agreement the *Authorized Officer* may, after issuing a clear 7(seven) days show cause notice and after considering his explanation, if any, may disconnect the supply of power. In case of mixed use in LV connection, (other than Category **F**) the customer shall be reclassified in the category having highest tariff.

Power Supply

Application for Supply

5. Application for initial supply or subsequent additional supply of power shall be made in the prescribed format in duplicate. Application forms may be obtained from the local offices of the Licensee at nominal costs, as determined by the Licensee for different categories.

   Temporary connection shall not be converted to a regular connection. If regular connection is required at the location, application in the prescribed format shall be made, which will be processed by the Licensee on settlement of temporary connection account.

   Load demand for new connection or extension of load shall be in integer and shall be 1(one) KW minimum. Any decimal shall be rounded to next integer.

6. Notwithstanding anything contained in the Regulations the Licensee may grant connection to the premises of any applicant and the Licensee at his discretion may dispense with documentary evidence of lawful occupation of the premises including land ownership/ purchase/ government allotment deeds. If the applicant is a tenant then no objection certificate from the land owner shall be submitted additionally. In cases where such documentary evidence of lawful occupation of the premises is dispensed with, any documentary evidence regarding electricity connection or payment of bills raised by the Licensee for consumption of electricity will not constitute evidence for the purpose of lawful occupation of the premises in any municipal/City Corporation record, revenue record or any court of law.

7. Explanation: Any consumer who has been granted connection under this provision shall be deemed to be an occupier for the purposes of the Licensee notwithstanding that his occupation is found by any court Tribunal or other authority to be not bona fide or lawful.

8. All applications for supply of power shall be filed at least 15(fifteen) days before the expected date of supply, where distribution mains have been laid and power supply commenced. In case of high voltage service or service extension of the Licensee's distribution mains the prospective consumer shall submit his notice/ application not less than 45(forty five) days in advance provided that application for load in excess of 5 MW at Medium Voltage or High Voltage shall be made 1(one) years in advance.

9. Any applicant who is not the owner of the premises occupied by him, shall execute an indemnity bond, indemnifying the Licensee against any damages payable on account of any dispute arising out of supply of power to the premises.

10. When the applicants premises have no frontage on a street and the service hook from the Licensee's mains has to go over or under the adjoining premises of any other person (whether or not the adjoining premises is owned jointly by the applicant and such other person) the Licensee shall have the right of access over that land. Any extra expenditure incurred in placing the service line in accordance with the above shall be borne by the applicant.

11. The service connection to an applicant for industrial or commercial purpose may be given without prejudice to his liability to obtain permission or sanction etc. from any other authority or body.

12. If the applicant in respect of an earlier agreement executed in his name or in the name of his spouse or successor or in the name of a firm or company with which he was associated either as a partner, Director or Managing Director is in arrears of electricity dues or other dues for the same premises payable to the Licensee, the application for supply shall not be considered by the Licensee or Authorized Officer until the arrears are paid in full.

13. Applications for domestic or commercial purpose for a load demand of 3KW or less within a radius of 0.5 km from existing 6.35/0.230 KV, 11/0.4 KV or 33/0.4 KV substation shall be treated as viable and feasible. Viability and feasibility will be examined in other cases. However, service distance i.e., distance from service take off at pole to the service entry point of the premises shall not exceed 30 meter. Service distance exceeding 30 meter will require extension of LV lines in accordance with the Licensee's standard provisions.

    Where network extension is needed for providing supply to a housing or other complex, the same will be taken up on Deposit work basis and the Licensee will provide an estimate based on field survey and feasibility study.

14.

    1) Within 15 (fifteen) working days of receipt of the application for supply to LV consumers, inspection of the premises and fixation of the point of entry of supply mains and the position of mains, cut-outs or circuit breakers and meters shall be completed by the Licensee by sending notice to the applicant requesting his or his representative or his licensed contractor's presence. The Licensee will in no case fix meters and main cut-outs nor will allow the same to remain in any position which entails entry of the Licensee's employees into private or religious quarters.

    2) The Licensee shall respond to the application for supply to MV/ HV consumers within 15(fifteen) days stating whether the connection is feasible or not. If feasible, the Licensee shall intimate voltage at which supply will be given and point of commencement of supply.

    3) The Licensee shall forward the application for supply at EHV to the transmission Licensee within 7(seven) days of its receipt for its further processing in terms of provisions in the Grid Code. The Licensee shall obtain the final reply regarding feasibility from the Transmission Licensee and communicate the same to the applicant within 60(sixty) working days of receipt of application.

Demand Note

15. 1.

(a) After the point of entry of the supply mains and the position of mains, cutouts or circuit breakers and meters have been settled as provided for in the Regulation above, the Licensee shall supply to the applicant within a period of one week an estimate of the cost of carrying out the work along with security deposit required. The Licensee also shall forward the form of licensed contractors' completion and test report to the applicant. Before the work of laying the service line is taken up, the applicant shall pay in full the cost of laying the service line as per estimate prepared by the Authorized Officer.

(b) If supply is requested at MV or HV the Licensee shall intimate the applicant the estimated charges and time required for providing new connection within 30(thirty) working days of notifying feasibility of supply as provided in the Regulation above. The Licensee also shall forward the form of Licensee contractors' completion and test report to the applicant. Before the work of laying the service line is taken up, the applicant shall pay in full the cost of laying the service line as per estimate prepared by the Authorized Officer.

For clause 13(a) and 13(b), Rates/ charges for installation of line and equipment will be fixed by the Commission from time to time, which will be uniform for all the Distribution Licensees.

(c) After the deposit has been duly made, orders for taking up the work shall be issued within a period of 3(three) working days from the date of deposit. The amount deposited by the applicant shall be subsequently adjusted, if necessary, on compilation of the figures of the actual cost of the service lines. The balance amount, if any, shall be refunded to the consumer. The applicant shall pay any expenditure incurred in excess of the amount deposited, by the applicant, within 15(fifteen) working days or on demand.

Service lines for temporary connections shall be laid by the Licensee where possible and the estimated cost for laying and removing such service lines together with estimated energy charge, meter rents, material depreciation, etc. shall be paid by the applicant in advance on demand by the Licensee.

Where any difference or dispute arises as to the cost or fixing of the position of service lines, the matter shall be referred to BERC for decision.

Licensee's Obligation to Supply

16. The supply of power shall be made, if it is available in the system, technically feasible and beneficial (financially and/or socially) as per the norms fixed by the Licensee with the approval of the Commission and the applicant enters into an agreement in the Standard Agreement Form (Form No.1) or Form of Requisition (Form No.2) in Annexure 9 and Annexure 10 respectfully accepting the terms relating to tariff and other conditions of supply of the Licensee.

In case the scheme of supply is not remunerative, as above, the applicant shall be required to bear the portion of charges to make the scheme remunerative.

Licensee shall supply no additional power unless all arrear charges for the existing power supply have either been paid in full or paid in accordance with an instalment facility granted by the Licensee for unconditionally paying the arrears within the stipulated time.

Agreement

17. Every person whose application for initial supply or subsequent additional supply of power has been processed by the Licensee shall before taking such supply execute an agreement in the standard format prescribed in Form No.1 of this Code and will deposit security amount as may be prescribed by the Licensee. In the case of non-remunerative schemes, portion of charges as indicated in the Regulations, will also have to be deposited. Such agreement shall not be required for domestic and commercial consumers and their applications for power supply in the form prescribed in Form No.2, if accepted, shall constitute the agreement between the Licensee and the consumer. The duplicate copy of the application in Form No.2 shall be handed over to the applicant with endorsement of acceptance for his reference and record.

18. Whenever the Government, under the Act or the Electricity Act 1910, imposes restriction on power supply and power purchased from other agencies is supplied to the consumer on special request a supplementary agreement shall be executed which shall remain in force for the period of such restriction.

Deemed Termination of Agreement

19. If power supply to any consumer remains disconnected for 90(ninety) days for non payment of charges or dues or non compliance of any direction under this code no effective steps are taken by the consumer for removing the cause of disconnection and for restoration of power supply, the agreement of the Licensee with the consumer for power supply shall be deemed to have been terminated on expiry of the said period of 90(ninety) days, without notice.

20. On termination of the agreement the Licensee shall be competent to remove the service line and other installation for supply of power from the premises of the consumer.

Record of Disconnection and Reconnection

21. The Licensee shall maintain a record of disconnection and reconnection. The Licensee shall intimate the date and the reason of the disconnection to the consumer at the time of disconnection.

Security Deposit

22. Any person entering into an agreement with the Licensee for supply of power

shall deposit such amount to cover charges for supply of two months or less (rounded Taka to next 50) as may be determined by the Licensee from time to time for the relevant consumer category based on Load factor as under :

Load Factor for different categories of user:

Domestic	: 30%	Water Pump	: 50%
Commercial	: 40%	Irrigation	: 33%
Small Industry (LV)	: 45%	Public Lighting	: 50%
Steel Mills	: 60%	Railway Traction	: 40%
Large/Heavy Industry	: 75%	General Purpose	: 50%

Alternatively, the Licensee may fix Security Deposit per KW of sanctioned load (Contract demand) for different categories with approval of the Commission.

In case of addition or adjustment of load, no adjustment on the prevailing security deposit against already approved load shall be claimed by the Licensee.

For Temporary connection, the advance bill for the estimated unit based on sanctioned load (minimum 1 KW), period applied for, Load factor (General purpose) and applicable tariff shall be considered as security deposit which will be deposited in the shape of Pay Order by the consumer and will be refunded to the consumer on realisation of electricity consumption bills and other receivables.

23. The security deposit shall be paid in cash or by bank draft. It may also be paid by cheque or by credit card where specifically allowed by the Licensee or in any other method adopted by the Licensee.

24. No interest shall be payable on the security deposit during the subsistence of the agreement unless otherwise decided by the Licensee.

25. The security deposit shall be returned to the consumer only after termination of the agreement and after adjustment of outstanding dues if any, within a period of one month from the date of termination. In case of non-refund of such security deposit during the aforesaid period, it shall carry an interest payable to the consumer at the prevailing rate for surcharge/ late payment charge of electricity bills. Before termination of the agreement, the Licensee is entitled to adjust the whole or part of the security deposit towards arrears payable by the consumer. During continuation of the agreement, when the Licensee adjusts the security deposit towards arrears, the consumer is liable to make up the security deposit or the part of the security deposit so adjusted by the Licensee.

Service Line

26. Upon compliance of all conditions including technical feasibility and viability, the Licensee shall lay a service line, portion of which up to a maximum distance 35(thirty five) meter from the nearest distribution mains up to a convenient point on the boundary of the applicants property to which power is proposed to be supplied.. The proportionate cost of LV line, poles and fittings, if any, in excess of the 35(thirty five) meter service distance shall be borne by the applicant, unless

line extension is done by the Licensee under development program or departmentally. However, the maximum Service distance for temporary connection may exceed 35 meter, but such service distance shall not be regularised during processing of regular/ permanent connection.

Provided that in case of temporary supply, the Licensee's estimated cost of laying the line at the time of connection and removing of service line at the time of disconnection shall be borne by the applicant.

The energy meters, kVAr meters where necessary shall be inserted and sealed by the Licensee on payment of installation charges to the consumer on submission of the wiring certificate.

The service connection shall be connected directly to the meter first then to other switches/ protective devices. There shall be no provision for disconnection in between the service take-off at pole and the metering arrangement.

Irrespective of the voltage level, there shall be only one service line for a building or a holding having one/ several building/ occupancy or a premises having one/ several building/ occupancy. In case of several owner for a particular building or holding or premises, separate accounts may be allowed for each owner but the service line will be only one adequate to cater total load and all the meters shall be installed on a single location.

Service drop shall generally be visible upto the point of supply. However, the Licensee may allow underground cable service line by setting specific requirements.

27. In case of a MV or HV feeder directly taken to the consumer's premises for his exclusive use from the Licensee's substation or from the transmission Licensee, the metering arrangement shall be done at the Licensee's/source substation or, if agreed by the Licensee, at the consumer's premises. In case of a MV or HV consumer supplied from Licensee's network, the consumer shall provide its own substation and metering arrangement will be done at consumer's premises. When the metering arrangements are installed in the consumer's premises, the position of the cut-outs or circuit breakers shall be so fixed as to permit easy access to the employee's of the Licensee at any time.

    An applicant requiring medium, high or extra high voltage supply must provide and maintain at his expense a locked and weather proofed enclosure of a design approved by the Licensee for the purpose of housing the Licensee's metering equipment. The applicant for his own metering equipment may use such an enclosure.

28. Where the shifting of the service line within the same premises or at any other location to serve applicant's own interest, is undertaken on the request of the consumer, the entire charge on account of shifting including the cost of additional materials and labour if any shall be borne by the consumer and be payable within stipulated time and the Licensee shall commence the work within 7(seven) days after the deposit. In other cases, where shifting is necessary in public interest or for convenience of the Licensee, the consumer shall extend full co-operation but shall not be required to pay any charges.

29. The entire service line notwithstanding that a portion thereof has been paid by the consumer, shall be the property of the Licensee and shall be maintained by the Licensee who shall always have the right to use it for the supply of energy to any other person unless the line has been provided for the exclusive use of the consumer through any special arrangement agreed to in writing.

Point of supply

30. Unless otherwise agreed to, the supply shall be at a single point at the out-going terminals of the Licensee, that is,

    (a) At the meter terminals in the case of low voltage consumers, and

    (b) At control switch gear or circuit breaker installed at Licensee's premises or at metering unit installed in the consumer's premises as mutually agreed in the case of medium voltage or high voltage consumers subject to provisions of this Code.

Wiring on Consumer's Premises

31. For the protection of the consumer and the public it is necessary that the wiring on the consumer's premises should conform to this Code. The material used for wiring shall comply with the standards laid down in that behalf by the Bangladesh Standards and Testing Institute (BSTI) or equivalent.

Apparatus on Consumer's Premises

Installation of equipments and Apparatus of the Consumer

32. All transformers, switchgear and other electrical equipment belonging to the consumer and connected to the mains of the Licensee shall be maintained by the consumer to the reasonable satisfaction of the Licensee.

33. Low voltage consumers shall in all cases and at their cost provide a safety device in the form of linked quick break main switch and a main fuse on each phase other than the earthed neutral at the point of commencement of supply. The switch shall be fixed as near as possible to the meter board or meter box, but after the meter.

34. In the case of medium or high voltage consumer, suitable protective devices approved by the Licensee shall be used so as to afford full protection to the Licensee's apparatus placed on the consumer's premises. In case of a high voltage or extra high voltage consumer is directly connected to a Transmission Licensee's substation, the Distribution Licensee shall obtain the concurrence of the Transmission Licensee before giving approval as above. A medium voltage consumer or high voltage consumer requiring a supply of 500KVA and above shall install at his cost suitable MV/HV switchgear with circuit breakers of approved make with sufficient rupturing capacity as specified by the Licensee on the incoming side of his load fitted with automatic protective devices, so adjusted that the circuit breakers supplied by the consumer operate before terminal Circuit

breaker or the isolating apparatus of the Licensee is activated. A medium voltage consumer requiring supply below 500 KVA shall provide on the high tension incoming side of his load a gang operated triple pole isolating switch of approved make with high voltage fuses of fast blowing characteristics or circuit breaker of adequate rupturing capacity which should be so adjusted that they blow off or operate before the protective devices in the Licensee's terminal circuit breaker or isolating apparatus operate.

Any applicant seeking medium or high voltage connection from the Licensee's supply system, shall install own substation at a location having adequate space and accessibility. Layout plan, location, protective and metering arrangement of the customer substation shall be approved by the Licensee at appropriate stage of processing of the application seeing power supply.

35. Medium and high voltage consumers shall install step-down transformers of vector group DYn11 with neutral terminal brought outside suitably and effectively earthed. The impedance shall not exceed 5%.

36. Supply to the consumer may be cut off if the wiring, apparatus, equipment or installation is found to be defective at any time or if the consumer uses any apparatus or appliance or uses the energy in such manner as to endanger the service lines, equipment, electric supply mains and other works of the Licensee or interferes with the efficient supply of energy to other consumers. In case of leakage in the consumer's premises, provision of this Code shall apply.

AC Motor Installation

37. No AC motor shall be connected to the low or medium voltage system of the Licensee unless the motor and the installation thereof have suitable devices to limit starting current as detailed in the clause below.
Power supply shall not be given to any applicant at low voltage and for utilizing in induction motors of capacity of three HP and above or welding transformers of capacity one KVA and above, unless shunt capacitors of appropriate rating are installed by the consumer across the terminals of such motor(s) or welding transformers to achieve average monthly power factor as specified in this Code.

38. Motors of low voltage shall be provided with control gear so as to prevent satisfactorily the maximum current demand from the consumer's installation exceeding the limits given in the following schedule at any time under all possible conditions

Nature of supply	Size of installation	Limit of maximum Current Demand
Single phase/ Three phase	Up to and including 1 HP	Six times full load current.
	Above 1 HP and up to and including 10 HP	Three times full load current
	Above 10 HP and up to and including 15 HP	Twice full load current
	Above I5 HP	1.5 times full load current.

Failure to comply with these regulations will render the consumer liable to disconnection from the supply on account of interference with the supply to other consumer. The Licensee depending on the location and condition of working may relax starting current limit.

Motor circuits shall be controlled by triple pole linked switch protected by a no-volt release and triple pole fuses (or overload releases). The release shall be maintained in thorough working order. Wiring for motors shall be run with all three phase wires bunched in a single metallic conduit, which shall be efficiently earthed throughout and connected to the frame of the motor from which two separate earth wires shall be run. The minimum size of the earth wire permitted is No.14 Standard Wire Gauge Copper. All motors shall comply in every respect with the Electricity Rules, 1937 in force from time to time. Motors above one HP shall be wound for three-phase, 400 volts between phases.

Installation of Equipment and Apparatus of the Licensee

39. The Licensee may ask the applicant to provide accommodation to install the Licensee's equipment and apparatus, which may be considered necessary by the Authorized Officer for effecting power supply to the applicant. After such accommodation has been provided by the applicant for fixing the equipment and apparatus, the said installation shall continue on his premises with full control vested in the Licensee. The installation shall remain in the premises for a reasonable period not exceeding six months even after the termination of the agreement without payment of any compensation to the owner of the premises to enable the Authorized Officer to ensure the supply of power to existing consumers receiving supply through the said installation.

Inspection and Testing for New Connections

40. After compliance with the provision of' this Code by the applicant and upon receipt of the completion report and the test report by designated person, the Authorized Officer will give 3(three) clear days notice to the applicant of the time and the date when his representative proposes to inspect and test the installation. It shall then be the duty of the applicant to arrange his licensed contractor or other representative to be present during the inspection to give the Licensee or his representative any relevant information required by him concerning the installation. On due compliance by the applicant the Authorized Officer shall complete the inspection of applicant's installation within a period of 7(seven) days from the date of receipt of the test report of the licensed contractor.

41. The Licensee shall levy no charge for the first test excepting declared fee of the licensed contractor, but for subsequent tests, if required, charge shall be payable as may be prescribed by the Licensee.

42. In case of low voltage consumers:

Before taking the insulation tests of installation, wirings must be complete in every respect. All fittings such as lamps, fans, cookers, motors, etc. must be

connected up, fuses inserted and all switches placed in the 'ON' position before the tests are carried out. Temporary wires or fittings or dead ends, shall not be included in the installation and no part of the work shall be left incomplete. The insulation resistance of the entire installation to earth shall be tested from the load side of the Licensee's terminals.

The Licensee shall not connect the installation on the applicant's premises with its works unless it is reasonably satisfied that the installation shall not at the time of making connection cause leakage exceeding one five thousandth part of the maximum current supplied to the applicant's premises. Any defects if noticed by Licensee's Authorized Officer shall be intimated within 7(seven) days from the date of inspection to the applicant.

The insulation resistance shall be measured between earth and the whole system of conductors or any section thereof with all fuses in place and all switches closed and except in case of earthed concentric wiring all lamps in position or both poles of the installation otherwise electrically connected together. The insulation resistance in mega-Ohms of an installation shall not measure less than 50 divided by the number of points on the circuit provided that the whole installation have an insulation resistance greater than one mega Ohms. Heating and power appliances and electric signs may if desired be disconnected from the circuit during the tests but in that event the insulation resistance between the case or frame work and all live parts of each appliance shall not be less than that specific in the relevant Standard.

The insulation resistance shall also be measured between all conductors connected to one pole phase conductor and all the conductors connected to the middle wire or to the neutral or to the other pole or phase conductor of the supply. Such a test shall be made after removing all metallic connections between the two poles of the installation and in these circumstances insulation resistance between the two terminals of the installation shall not be less than that specified above.

43. In case of high voltage consumers and EHV consumers:

Manufacturer’s test certificates in respect of all HV or EHV apparatus shall be produced if required.

In addition, the Licensee may test the HV or EHV installation, as the case may be, by applying standard test voltage in accordance with this Code and the Bangladesh Standards and Testing Institute or International Electro-technical Commission.

Testing of a High Voltage or EHV installation shall however be taken up by the Licensee only after the HV or EHV consumer obtains certificates of inspection of the installation from the competent person.

Approval of Consumers installation

44. Before any wiring or apparatus of the applicant including transformers, switch gear, etc. are connected to the Licensees distribution system, the same shall be

subject to the inspection and approval of the Licensee and no connection shall be made without such approval. In addition all MV or HV installation shall have to be approved by the competent authority as required under this Code.

45. Power supply shall commence when the Licensee is satisfied that
    (a) installation is in accordance with the Completion and Test Report as approved by the Authorized Officer, and
    (b) installation complies with other conditions of this Code.

    The Authorized Officer shall notify the applicant in writing of any defect noticed by him within 7(seven) days of inspection. In such cases the Authorized Officer may allow commencement of supply only after the defects in the installation are rectified to his satisfaction. If the applicant receives no intimation within 7(seven) days of inspection the installation shall be deemed to have been approved.

Commencement or Supply

46. Within 7(seven) days of approval of the applicant's installation, the Licensee shall commence supply of power to the applicant under intimation to him. If the applicant fails to avail of the power within the period of 60(sixty) days from such intimation, he shall be liable to pay the demand charges and minimum monthly charges as applicable. The designated authority of the Licensee may, in special circumstances extend the above period of 60(sixty) days.

Licensee's Supply Mains and Apparatus

47. All equipment such as metering equipment and tamper proof boxes etc. for the purpose of metering, except the meter, materials and service shall be included in the service connection estimate and the cost thereof realised from the applicant. The applicant shall have the option of supplying an appropriate meter to the specification of the Licensee and approved by the Licensee.

    In case the applicant requires the Licensee to provide the meter, the Licensee shall do so on such terms and conditions as decided by the Licensee with the approval of the Commission.

    Notwithstanding the fact that the meter, metering equipment and other apparatus as indicated above are supplied by the applicant, or paid for by the applicant, the same shall remain under the control of the Licensee so long as the agreement is in force.

48. Without prejudice to any other action available under the law and under this Code, supply may be disconnected forthwith if the consumer interferes with any of the Licensee's apparatus installed in the consumer's premises or the service line provided by the Licensee, if such interference constitutes an immediate danger to the safety of the installation or personnel.

49. The consumer shall compensate the Licensee for any damage caused to the mains, apparatus or instruments or any other property of the Licensee in the consumer's

premises, occasioned by any act, omission, lapse or negligence on the part of the consumer or his servants, agents or employees and if supply of power has been disrupted or disconnected on account of such damage, the supply may be restored after the damage is assessed and the cost of restoration is deposited by the consumer. The Licensee's decision in regard to the damage caused and the compensation payable assessed on the basis of current market rate and the cost of restoration as assessed shall be final and binding subject to the result of the appeal, if any. The consumer may represent to the designated authority of the Licensee in regard to the determination of damage and cost fixed by the Licensee. No damage shall be imposed and no demand for payment of cost shall be raised without giving clear 7(seven) days notice to the consumer and reasonable opportunity to him to make representation, if any.

50. The Licensee shall, in consultation with the consumer, be entitled to lay necessary overhead and underground mains and install substations, equipment, transformers, etc. in accordance with the Electricity Rules, 1937 on the private property of the consumer, required for the purpose of supply of power to him. The consumer shall not be entitled to interfere with or alter any such installation of the Licensee in his premises at any time for any reasons whatsoever. Upon request by the consumer, the Authorized Officer may effect any alteration, if feasible, at the cost of the consumer.

51. The Licensee in turn shall maintain its installation in good order. The conductors and poles shall be maintained in such order as not to cause any electrical or mechanical accidents or damage to consumer's property and public property or endanger human life. Prompt action shall be taken by the Licensee to repair or replace the damaged parts immediately on getting intimation of damage or danger to life.

Fuse Failure

52. If at any time, the Licensee’s service fuse or circuit breaker fails, intimation thereof may be sent to the nearest complaint centre, call center or section office having jurisdiction over the area for rectifying the defects or replacing the fuse. None other than the authorized employees of the Licensee may replace the fuse in the Licensee's apparatus.

Access to Consumer’s Premises

53. With a view to check un-authorized addition and alteration of equipment, theft and misappropriation of energy, diversion of power, bypassing of meter for consumption of electricity and for carrying out general inspection and testing, the Licensee or his staff authorized by him shall be entitled to enter the premises of a consumer after informing the consumer. If the consumer refuses to allow access or obstructs the Licensee or his staff from entering into his premises, the Licensee or Authorized Officer shall, without prejudice to other modes of action available in law, disconnect the supply of power of the premises in accordance with the Electricity Act, 1910.

Preparation of Inventory of Licensee's Installation or Inspection Report

54. During the checking and verification of the electrical installation in the premises of the consumer, including the supply line and meter, a complete inventory shall be prepared of all connected equipment apparatus, machineries, forming integral part of the installation in the premises of the consumer. The consumer or his representative shall be requested to sign the inventory or inspection report. If the consumer or his representative refuses to sign the inventory or the inspection report an endorsement to that effect shall be made by the Authorized Officer on the body of the report. A copy of the said report shall be affixed at the consumer's premises. In such cases, the consumer shall be deemed to have been served with a copy of the report. Within one month of service of the report as aforesaid, the consumer shall be entitled to complain against the correctness of the inventory or the result of the inspection to the designated authority of the Licensee, who shall enquire into the matter of the complaint and decide on the correctness or otherwise of the report.

Addition and Alteration of Consumer Installation

55. Additions or alterations to the consumer's approved installation shall be made only by a licensed electrical contractor, in case such addition or alteration results in case of the connected or contract load of the consumer, prior approval of the Licensee shall be as laid down as in the Regulations.

METERING

56. Initial power supply shall not be given without a correct meter. Meters will be installed at the point of' supply or, if not possible, at a suitable place as the Licensee may decide. The same shall be fixed preferably in the basement or ground floor of multistoried buildings where it will be easily accessible for reading and inspection at any time. If there is more than one meter, all the meters shall be located at the same place, easily accessible and outside the rooms, irrespective of the account’s ownership. There shall be only one service line for a building or a holding having one/ several building/ occupancy or premises having one/ several building/ occupancy. The consumer shall run his wiring from such point of supply and shall be responsible for the safety of the meter or metering equipment on his premises from theft, damage or interference.

    All the commercial shops/ establishments in a market/ holding/ building/ premises shall be under a single meter.

    Prepaid meters shall be located in similar manner. However, the interface units (if any) may be located inside the room. If individual and exposed service drop is designed for prepaid meter connection, the restriction of single service per premises/ holding may be relaxed.

    In case of MV and HV connection, the metering at consumer’s premises shall be placed in a separate room or a space properly partitioned having minimum dimension 2 meter x 2.5 meter.

    Meter and where applicable, associated equipment and accessories shall be

supplied by the consumer or by the Licensee on rental arrangement. It will be optional on the part of the consumer to purchase meter from Licensee's stores. All meters shall be tested by the Licensee prior to installation.

57. In the case of Medium or High Voltage supply, if a MV/ HV metering set cannot be readily provided and installed, LV metering set shall be provided and connected on the LV side of the consumer's transformers. To the reading of such metering set, will be added the average losses in the transformers calculated as follows:

    (a) Energy loss in transformer in units per month = (730 x Rating of Transformer in KVA) ÷ 100

    (b) Demand loss in transformer in KVA = One percent of the rating of the transformer in KVA

58. The meters and associated equipment shall be properly sealed by the Authorized Officer and acknowledgement obtained. The seals, nameplates, distinguishing numbers or marks affixed on the said equipment or apparatus shall not be interfered with, broken, removed or erased by the consumer. The meter, metering equipment, etc. shall on no account be handled or removed by any one except under the authority of the Licensee. The Authorized Officer can do so in the presence of the consumer or his representative. An acknowledgement shall be taken from the consumer or his representative when the seal is broken. Supply shall not be restored/ commenced in absence of such acknowledgement.

59. The consumer may, after giving notice to the Licensee, have a check meter tested by the Licensee installed at his own expense in his incoming line by the side of the Licensee's meter. In case of difference in readings between the Licensee's meter and consumer's check meter, the readings of the Licensee's meter shall be taken to be conclusive. The consumer may demand the Licensee's meter to be tested by an authorized officer of the Commission whose decision shall be final and binding on the consumer and the Licensee. The consumer shall be required to pay a fee for such testing. If the meter is found incorrect after testing, the Licensee shall refund the fee paid by the consumer.

    In case of installations having more than 8(Eight) meters, the customer shall be required to install a check meter to record total consumptions of the installation. The difference of readings of the check meter and summation of individual meters shall be billed by the Licensee at the highest tariff among the other meters. The check meter shall bear an account number and sanctioned load excluding contract load of other meters.

60. The Licensee prior to their commissioning in the service shall inspect the meter and associated equipment. If the Authorized Officer has reason to believe that the meter is incorrect, he may at any time after giving 7(seven) days notice to the consumer remove the existing meter for the purpose of testing in accordance with the Electricity Rules, 1937. The consumer shall not be entitled to object to such removal.

    In case the consumer has supplied the meter, if the meters become defective in

service or found to be missing, the consumer shall on such defects or loss being noticed by him or notified to him by the Authorized Officer, remove the defects or, as the case may be, replace the meter within a period not exceeding 30(thirty) working days. The Authorized Officer within 7(seven) working days of noticing the defect or loss shall advise the consumer for necessary test, repair or replacement of the meter should the consumer desire to get the meter tested or rectified in the Licensee's testing laboratory, he may do so by depositing the fees prescribed by the authority and the Licensee shall have it tested within a period of 7(seven) working days from the date of deposit. Failure to rectify or replace the meter within the above period shall result in disconnection after 7(seven) clear days notice to the consumer.

Where the Licensee has supplied the meter and the meter becomes defective in service, the Licensee shall remove the meter and test the same as provided under the Regulations.

If after testing, the meter it found defective not due to tampering or deliberate damage, the defective meter shall be replaced by another tested meter without any charge to the consumer within 10(ten) days from the date of removal of meter from consumer's premises.

If the meter is found to be missing or after inspection or testing if the meter is found to have been tampered with or damaged, the Licensee may call upon the consumer to deposit the cost of replacement of meter along with other normal and penal charges within 7(seven) working days. The Licensee shall install a tested meter within 7(seven) working days of deposit by the consumer.

Should the consumer dispute the accuracy of any meter which is not his own property, he may, upon giving notice and paying the prescribed fee, have the same tested by the Licensee within a period of one month of the date of deposit of such fee.

a) Due notice to the consumer shall be served by the Licensee to be present during the test. The Licensee shall have the option to carry out and conclude the test in absence of the consumer after expiry of the notice period. The billing for the period the meter remains defective or unavailable from the date of reporting to the date of its installation after repair or replacement shall be revised in accordance with the Regulations. The accuracy tolerance of the meter under test shall be in accordance with relevant IEC or BDS.

b) If the meter is found to be incorrect after testing, fees paid by the consumer shall be returned to the consumer.
   If the meter is found incorrect after test, the electricity bills may be adjusted beyond the acceptable range for a maximum period of last 3(three) months bill.

c) The repair or adjustment of a meter found to be defective should be done so as to bring the percentage of the error within the prescribed limits of accuracy in accordance with relevant IEC or BDS. In case the adjustment or repair is not possible, another tested meter shall replace the defective meter within a period of 7(seven) working days.

d) In the event of any difference or dispute on the accuracy of any meter, the same shall be decided on an application by either party to the Commission.

61. For the period the meters other than that of domestic, commercial, small industry, irrigation pumping and agricultural consumers remained defective or was lost, the billing shall be done on the basis of average meter reading for the consecutive six billing periods preceding the billing period in which the defect or loss was noticed:

    Provided that if the meter becomes defective or is lost before expiry of six billing periods from the date of commencement of supply, the bill shall be prepared on the basis of average of readings of six consecutive billing periods after the meter is rectified or replaced.

62. In case of defective or lost meters of commercial, small industry, irrigation pumping and agriculture consumers, the billing for the period the meter remained defective or lost shall be done on the basis of the prevailing tariff and existing regulation.

63. In case of domestic consumers

    (a) if a working meter is reported as defective within three months of such defect being detected either by the consumer or by Licensee, billing for the period shall be done based on the average of readings for the preceding six consecutive billing periods.

    (b) if the defect or loss of meters is not reported within three months of the defect, billing shall be done on the basis of the three months average from prevailing or following bills which is the higher**.**

64. If the readings of meter working in association with Current Transformers (CT) and Potential Transformers (PT) and other auxiliary equipment, if any, are found to be incorrect on account of wrong connection or disconnection of such CTs or PTs and other equipment or on account of omissions or commissions in regard to multiplying factor, erroneous adoption of CT ratio, PT ratio, the billing in such cases shall be done as prescribed in the Regulations.

65. Qualified persons authorized by the Licensee at intervals of two month shall take Reading of meters or the Licensee may notify less. The meter readers shall have access to the consumer's premises at all reasonable times for the purpose of meter readings. The readings of each meter shall be entered by such reader in the meter reading book and the signature of the consumer or his representative will be obtained therein except where meters have been installed on the ground floor for a group of apartments or a group of houses in a common area. The Licensee may adopt alternative technically advanced practices for consumer's information of meter readings. The meter reader should be supplied by the Licensee with a photo identity card, which he shall show to the consumer on demand.

    (a) If for any reason whatsoever, the meter installed in the consumer's premises is not accessible and meter reading cannot be taken, the bills shall be raised provisionally on the basis of consumption last recorded

subject to subsequent revision on the basis of actual meter reading.

(b) If the Authorized Officer apprehends that the consumer is deliberately avoiding the inspection of meter and meter reading, he may give 7(seven) clear days notice by Registered Post or by special messenger to the consumer to remain present in the premises on the date and time mentioned in the notice. If the consumer defaults, the Authorized Officer may take steps for disconnection of supply after giving entry four hours notice to the consumer.

66. If a meter or metering equipment has been found to have been tampered or there is resistance by the consumer to the replacement of obsolete or defective meters by the Licensee, the Authorized Officer may disconnect the supply immediately and at the same time shall give the consumer in writing the reason for such disconnection.

Fees for Testing:

To maintain uniformity among the Distribution Licensees, the fee rates for testing of meter, CT, PT, Transformer, and other associated equipment will be set by the Commission time to time.

Loss Accounting:

Transformer loss on the basis of methods stated in this Code will be added to bill units as per provisions of this Code.

If the meter for MV or HV or EHV consumer is not installed at the source point, Line loss will be added to the billing units, by an amount in percentage set by the Commission.

If any feeder/line is shared by more than one Licensee, the Line loss for any period will be shared in proportion to kWh-Km, where kWh is the import at substations of respective Licensee and distances are from feeder/line origin to the substations.

Line loss, if applicable, will be additional to Transformer loss, if any.

Contract Demand

Connected Load and Contract Demand

67. Contract demand for a connected load below 100 KW shall be the same as the connected load. Contract demand for loads of 100 KW and above shall be as stipulated in the agreement and may be different from the connected load.

Prior to actual connection, load may be retained for a certain period in multiples of quarters but not exceeding 1(one) year through a Contract in between the Licensee and prospective customer. The fees may be calculated based on Contract Demand in KW, Duration of load retention and Rate per unit load as determined by the Licensee time to time.

Reduction of Contract Demand

68. Every application for reduction of contract demand shall be made to the designated authority of the Licensee.

69. No application for reduction in contract demand shall be entertained within three months from the date of commencement: of initial or revised supply unless the agreement provides otherwise.

70. Contract demand above 20 KW shall not be allowed to be reduced more than once within a period of thirty-six months from the date of initial supply or from the date of last reduction. Contract demand of 20 KW and below shall not be allowed to be reduced more than once within a period of twelve months from the date of initial supply or from the date of last reduction. The designated authority of the Licensee may for reasons to be recorded, allow such reduction more than once within the aforesaid period of thirty six months or twelve months as applicable.

71. Every application for reduction of contract demand shall he accompanied by

    (a) such processing fees as may be notified by the Licensee for the particular category of consumer.
    (b) test report from the licensed contractor where alteration of installation is involved.
    (c) meter reading of the previous three months, and
    (d) letter of approval of competent authority wherever applicable.

72. No permission shall he granted to reduce the contract demand if on a consideration of the investment made by the Licensee for effecting power supply to the consumer, the reduction is likely to result in the investment becoming not remunerative according to the norms fixed by the Licensee with the approval of the Commission, unless the consumer is agreeable to bear the financial burden of making the investment viable due to such reduction.

    Decision on a consumer's application for reduction of contract demand shall be taken by the designated authority within 60(sixty) days of receipt of complete application. No application shall be rejected without recording reasons. The order on the application shall be communicated to the consumer by registered post.

73. When the designated authority of the Licensee permits reduction of contract demand, the effective date of such reduction shall be reckoned from the first day of the month following the month in which the Authorized Officer received the application, complete in all respects.

Enhancement of Contract Demand

74. Every application for enhancement of demand shall be made to the designated authority of the Licensee and accompanied by:-

(a) such processing fee as notified by the Licensee for the particular category of the consumer.
(b) test report from the licensed contractor where alteration of the installation is involved, and
(c) letter of approval of competent authority wherever app1icab1e.

75. An application for the enhancement of the contract demand may not be considered if

(a) the additional power cannot be supplied at the existing voltage of supply of the Licensee and the consumer is not willing to avail the power at higher voltage at which Licensee is able to supply, or

(b) the consumer is not agreeable to bear that part of the estimated cost of necessary additions or alterations in the system as is required to make it remunerative according to the norms fixed by the Licensee with the approval of the Commission, or

(c) the consumer is in arrears of payment of Licensee's dues.

76. If, as a result of the enhancement of contract demand the classification of the consumer changes, the designated authority of the Licensee before allowing the application may call upon the consumer to execute fresh agreement, subject to compliance of other conditions as prescribed under this Code.

SYSTEM OF SUPPLY

System of Supply

77. The declared frequency of A.C. supply is 50 Hz.

78. The declared voltage of A.C. Supply (expressed as nominal system voltages) are as follows:

i. Low Voltage - single phase, 230 V, between phases and neutral and three phase 400 V between phases.
ii. Medium Voltage - Three phase 11 KV between phases or 6.35 KV between phases and neutral or ground.
iii. High Voltage - Three phase 33 KV between phases, also at 25 KV single phase for railway traction.
iv. Extra High Voltage - Three phase more than 33 KV between phases also at two phases 132 KV/230 KV for railway traction

The Licensee shall, depending on the contract demand of the consumer, determine the voltage of supply. The supply voltage for the contract demands shall normally be as follows.

For contract demand not exceeding 8 KW, excepting in the case of irrigation pumps and agricultural services, supply shall be at single phase, two wires and 230 volts. For contract demand in the ranges 4 KW to 8

KW, with the exception of rural consumers, the consumer also has the option of single phase 230 volts or 3 phase 400 volts.

For irrigation pumping and agricultural service load of 10HP and below, supply shall be at single phase, two wire and 230 volts, between phase and neutral, or 3 phase, 3 or 4 wires and 400 volts between phases,

For contract demands of the range 8 KW to 50 KW supply shall be 3 phase 400 volts, 3 or 4 wires.

For contract demand above 50 KW but below 1,000 KVA supply shall be at 3 phase, 3 or 4 wires at 6350 volts to neutral/ ground or 11000 volts phase to phase provided that the consumer already connected at LT may be allowed to continue to receive power.

For contract demand of 1,000 KVA and above but below 5000 KVA supply may be given at 3 phase, 3 or 4 wires at 11,000 volts or 33,000 volts phase to phase depending on the convenience of the Licensee,

For contract demand of 5,000 KVA up to 25,000 KVA supply shall be at 3 phases, 3 wires at 33000 volts;

For contract demand of 25,000 KVA and above supply shall be at 3 phase, 3 wires EHV,

Provided that Licensee, at its discretion, may also supply at any other voltage depending on system availability or condition. In case of connection to another Licensee, the capacity limit may be relaxed/ extended.

Power Factor

79. The consumer of applicable category declared by the Commission shall so arrange his installation that the average power factor of his load during any billing period is maintained not less than 0.95 lagging or any other limit set by the Commission. Power factor penalty with or without capping limit as set by the Commission shall be levied if there is a breach of the aforesaid requirement, however, the supply of power shall be disconnected serving 7(seven) days notice for rectification if the average power factor in 3 consecutive billing cycle falls below 0.70 :

Provided that there shall be no disconnection without giving the consumer 7(seven) clear days notice in writing to show cause to the Authorized Officer why the supply of power should not be disconnected. If, after considering the reply to the show causes notice, the Authorized Officer decides to disconnect, he shall communicate his order to the consumer and disconnect supply after 7(seven) days of such communication.

Power Factor shall be determined for the entire billing period by utilizing kWh and kVArh for the respective months. Instantaneous Power Factor reading may be recorded for monitoring but shall not be used for billing purpose. Power Factor penalty shall not be applicable where kVArh meter is not available or functional.

However, Power Factor of Master/Mother/Check Account shall be determined by deducting the Σ kWh and Σ kVArh of Child/Supplementary/Sub-Account(s). In absence of Σ kVArh of Child/Supplementary/Sub-Account(s), the kVArh of Master/Mother/Check meter shall be calculated in proportion of kWh.

Balance of Load

80. A consumer taking two or three phase supply shall balance his load in such a way that the difference in loading of each phase does not exceed 5% of average loading between the phases. If the unbalanced current in phases is more than 20%, the supply/ service connection may be disconnected with prior notice for rectification of the unbalanced current.

Parallel Operation with Licensee's System

81. The consumer shall arrange plant, machinery and apparatus of his generating station including any extension of or addition to the same to operate in an isolated mode from the Licensee's system. Parallel operation is permissible only with the consent of the Commission following clearance of PGCB. National Load Despatch Centre (NLDC) shall be informed in time before synchronization with the national grid for parallel operation of any generating station. Any generator connected to national grid shall be under the control of NLDC.

    In cases where such consent has been given, the consumer shall so arrange his installation that the Licensee or the Authorized Officer does not become liable for any damage caused to the consumer's plants, machinery, and apparatus on account of such parallel operation, or any adverse consequences arising there from.

Charges for Supply

Tariffs and charges

82. Tariffs and charges for supply of electricity shall be applied by the Licensee as determined and approved by the Commission under the Act. Such tariff, tariffs or charges shall take effect as indicated by the Commission and any tariff change shall be published in at least two daily newspapers having circulation in the area of supply. The charges may include

    (a) Minimum monthly charges
    (b) Demand charges
    (c) Energy charges, and
    (d) Other charges.

Minimum Monthly Charges

83. Every consumer, during continuance of agreement under the Regulations, shall be liable to pay minimum monthly charges even if no electricity is consumed for any

reason whatsoever or supply has been disconnected due to default of the consumer. Minimum charge includes energy charge and demand charge but excludes service charge, VAT and rents, if any.

Demand Charges

84. Monthly demand charges shall be payable by the consumer on the basis of maximum demand and contract demand as determined in the tariff notification. In case maximum demand meter is not provided or the meter has become defective, the monthly demand charges shall be payable on the basis of contract demand as determined in the tariff notification.

    Such monthly demand charges shall be payable during the continuance of the agreement even if no electricity is consumed for any reason whatsoever or supply has been disconnected due to default of the consumer.

    During statutory power-cuts and power restrictions imposed by the Licensee, if the restriction on demand is imposed for a period exceeding sixty hours in a month, the monthly demand charges shall be prorated in accordance with the period and quantum of demand restrictions imposed. In all other cases the consumer shall be liable to pay the full demand charges.

    If demand meter is absent or not functional, the billing demand shall be determined as under :

First 75 kW	: 100%
Next 75 kW	: 85%
Next 75 kW	: 75%
Next 75 kW	: 65%
Rest kW	: 60%

Energy Charges

85. Energy charges as prescribed in the Licensee's tariff shall be payable by the consumer on the basis of actual consumption of the energy.

Other Charges

86. The Licensee may levy other charges including customer charges, connection charges, re-connection charges delayed payment surcharge, fuel surcharge, power purchase surcharge and power factor penalty as approved by the Commission from time to time.

Wheeling Charges

87. Wheeling charges shall be payable by the consumers receiving power at EHV directly to the Transmission Licensee (PGCB) as per prevailing rates.

Statutory Levies

88. Statutory levies such as electricity duty or value added tax (VAT) shall be payable by the consumer on demand.

Prepaid meters

89. Category of customer will be same for prepaid meters. However, there shall be rebate on energy charges as approved by the Commission.

Rounding of Charges

90. All charges shall be rounded to next Taka while any fraction of VAT shall be rounded to next Taka.

PAYMENT OF BILLS

91. It would be the duty of the Licensee or his authorized agent to ensure that the bills are dispatched within 10(ten) days from the end of billing cycle and records of such dispatch are duly maintained.

92. The charges payable by a consumer for supply of electrical power and other sums payable to the Licensee shall be billed on pro rata monthly basis indicating the period for which charges have been levied and the consumer shall pay the bill amount by the due date indicated on the bill or within a period of 7(seven) days from the date of receiving the bill which is the later. If for any reason the consumer does not receive the bill for the billing cycle within two weeks of the end of the billing cycle, it would be the obligation of the consumer to approach the Authorized Officer and collect a duplicate bill (without any alteration of charges and dates). When supply to a new consumer is commenced or an agreement is terminated on a day other than the first day of a month, demand charges and other charges as applicable under tariff notification shall be levied pro rata for the number of days during the month for which supply shall have been given or agreement shall have been in force.

    The consumer has to make full payment of bill within the due date even if he raises a dispute regarding the correctness of the bill, Provided that a consumer with connected load of 10 KW or less shall pay at least the undisputed amount of the bill or 50% of the bill whichever is higher, pending Licensee's decision on the dispute.

    For prepaid meters, by nature, the customer has to pay first then use. Realization of charges other than energy charges, applicable for a billing cycle, shall be ensured by suitable implementation scheme, preferably within the meters.

93. The Licensee shall resolve the dispute within 15(fifteen) days and take action under the Regulations.

94. If the Licensee finds the bill to be erroneous, a revised bill shall be furnished to the consumer indicating a revised due date. Excess amount paid by the consumer shall be refunded by way of adjustment in the subsequent bill.

    If the Licensee finds the bill to be correct, the consumer shall be intimated accordingly and notified to pay the balance, if any, within 15(fifteen) days with

interest at the prevailing rate for surcharge or late payment charge from the due date. If the Licensee does not resolve the dispute within two months stipulated in the Regulations, the consumer will not be liable to pay the interest on the balance amount. However, if the dispute is not resolved due to negligence or non-cooperation of the consumer, the consumer will be liable to pay interest.

95. Failure to make payment as provided under this procedure shall merit action as provided in Electric Supply Procedure 98.

96. The billed amount shall be paid by the consumer either in cash or by bank draft or banker's cheque, or where specifically allowed by the Licensee, by account payee cheques or credit / ATM cards or bank transfer (electronic/ manual) or web-online or cell-phone flexi or any other method adopted by the Licensee.

    If the due date indicated in the bill for payment of the amount is a public holiday, the amount may be paid on the succeeding working day, without any surcharge or late payment charge.

    Numeric Token, Smart Card, GSM/SMS recharge/refill and any other suitable system of recharging adopted by the Licensee shall also constitute bill payment facilities.

97. The amount paid by the consumer shall be first adjusted towards electricity duty provided that in case of part payment by the consumer, the proportionate share of the duty from the total collection shall be adjusted first. Out of the balance, adjustments shall be made in the following order of priority:

    Current electricity charges,
    Current miscellaneous charges,
    Arrear electricity charges.
    Arrear miscellaneous charges,
    Delayed payment surcharge.

98. Where a consumer neglects to pay the charges or dues or any part of the charges or dues, the Authorized Officer may after giving him not less than 10(ten) days notice in writing and without prejudice to the other rights and modes available for realization of the amount, disconnect the supply until the charges or dues and reconnection charges are paid by the consumer. Failure to take steps for clearance of the dues, within a period of two months from the date of service of bill shall render the agreement liable to termination provided that initial period of agreement is over.

Rebate

99. Payment of the billed amount in time shall entitle categories of consumers, specified in the tariff order under the Act to a rebate on such amount for the current billing period. Every bill shall indicate the amount payable by the relevant category of consumer if payment is made within the prescribed due date and the amount payable if the payment is made beyond the prescribed due date. The categories of consumers who are entitled to a rebate and the rate or rates of such rebate shall be determined by the Licensee from time to time as part of the tariff as

approved by the Commission.

Consumers having prepaid meters may be allowed rebate, the rate or rates of such rebate shall be determined by the Licensee from time to time as part of the tariff as approved by the Commission.

Delayed Payment Surcharge

100. Category of consumers to whom delayed payment surcharge is applicable as per tariff order shall be liable to pay such delayed payment surcharge at the rate of 5(five) per cent for default in payment by due date. There shall be no surcharge over surcharge.

Installment Facilities

101. Payment of bills by installments may be granted by the Licensee to the senior citizens and disabled in the domestic category on request and on production of proof. In respect of others, the facility may be granted at the discretion of the designated authority of Licensee. Grant of installments shall not affect the liability of the consumer to pay delayed payment surcharge till full clearance of the arrears. Consumers using installment facilities shall not be eligible to avail rebate. The Licensee may designate the authority to grant installment facilities. However, electricity bill for any month shall not be split in allowing installments.

Recovery of Arrears

102. In addition to other modes of recovery available under the law, the Licensee shall be entitled to take recourse to proceedings for realisation of the Licensee's dues if such dues are treated as public demand.

PROHIBITIONS

Assignment without Permission

103. No consumer shall assign the agreement or transfer or part with the benefits under the agreement in favor of any other person without the express consent or approval of the Licensee in respect of domestic and commercial consumers and the designated authority of the Licensee in respect of other categories of consumers, in case of death of a consumer who is an individual, his legal heir or successor in interest or legatee may be given recognition as a consumer in place of the deceased.

104. Any connection which has been transferred or parted with without authorization shall be liable for disconnection of supply after a 7(seven) days notice calling for his explanation and considering the explanation submitted, if any, by him. This may be in addition to any other action the Licensee is authorized to take under law and this Code.

Re-sale, Transfer, Dishonest Abstraction and Theft of Energy

105. No consumer shall sell or transfer or divert power to any person or premises unless the agreement so provides.
106. No consumer shall make use of power in excess of the approved contract demand or use power for a purpose other than the one for which agreement has been executed or shall dishonestly abstract power from the Licensee's system.

Penal Charges

107. On detection of unauthorized use in any manner by a consumer, the load connected in excess of the authorized load shall be treated as unauthorized load. If the meter is found accurate and not tampered the quantum of unauthorized consumption shall be determined in the same ratio as the unauthorized load stands to the authorized load.

    When there is interference with the meter, the energy quantum will be calculated based on total connected load, which is authorized plus unauthorized load; period of unauthorized use and the Load Factor given in this Code.

    The period of unauthorized use shall be determined by the Licensee as one year prior to the date of detection or from the initial date of supply is less than one year from the date of detection. If the consumer provides evidence to the contrary, the period may be varied according to such evidence. The Authorized Officer may levy penal charges in addition to the normal charges for aforesaid period of unauthorized use. Where addition of the unauthorized installation or sale or diversion would result in a reclassification according to this Code, the whole of the power drawn shall be deemed to have been drawn in the reclassified category. The consumer shall also be required to execute a fresh agreement under the reclassified category.

    The penal energy charges for unauthorized use of power shall be 3(three) times the charges applicable to the particular category of consumer.

    The penal demand charges for unauthorized use of power shall be calculated on unauthorized connected load expressed in KW multiplied by two times the rate of demand charges applicable.

Force Majeure and Restriction on Power Supply

108. The Licensee or the consumer shall not be liable for any claim for loss, damage or compensation whatsoever arising out of failure of supply when such failure is due either directly or indirectly to mutiny war, civil commotion, riot, strike, lockout, fire, flood, tempest, lightning, earthquake or other force accident or cause beyond his control.

In the event of restriction on power supply imposed by the Government under the Act or the Electricity Act, 1910, the Licensee shall be under no obligation to supply energy contracted for.

109. The consumer shall curtail or stagger or altogether stop using electricity when so directed by the Licensee or the designated authority of Licensee if the power supply position or any other emergency in the Licensee's system of supply warrants such a course.

110. The Licensee shall be entitled for the purpose of maintenance of its supply system to temporarily discontinue supply of power to any area for such period as may be reasonably necessary subject to such advance notice as may be feasible.

111. If at any time during the continuance of the agreement between the Licensee and the consumer, the plant or premises of the consumer is destroyed or damaged due to force majeure conditions referred to in the Regulations resulting in break-down or rendering the plant or the premises wholly or substantially unfit for occupation or use, the consumer may on giving 7(seven) days notice in writing to the Licensee of such break-down or unfitness take a reduced supply of power as may be necessary and feasible. In such a contingency he shall not be liable to pay the charges accordance with the agreement, but he shall pay minimum monthly charges, demand charges where such charges are payable on the basis of the maximum demand recorded in the demand meter and energy charges on the basis of actual energy consumed. The aforesaid period of reduced supply shall not count towards the initial period specified in the agreement and the period of the agreement shall be extended for a further period equal to the period of reduced supply.

Chapter 10
GENERAL SAFETY REQUIREMENTS

1. Construction, installation, protection, operation and maintenance of electric supply lines and apparatus-

(1) All electric supply lines and apparatus shall be of sufficient ratings for power, 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 shall be constructed, installed, protected, worked and maintained in such a manner as to ensure safety of human beings, animals and property.

(2) Relevant code of practice of the BSTI including National Electrical Code (NFPA 70) may be followed to carry out the purposes of this Code and in the event of any inconsistency, the provisions of this Code shall prevail.

(3) The material and apparatus used shall conform to the relevant specifications of the BSTI where such specifications have already been laid down.

2. Service lines and apparatus on consumer's premises

(1) The Licensee shall ensure that all electric supply lines, wires, fittings and apparatus belonging to him or under his control, which are on a consumer's premises, are in a safe-condition and in all respects fit for supplying energy and the Licensee shall take due precautions to avoid danger arising on such premises from such supply lines, wires, fittings and apparatus.

(2) Service-lines placed by the Licensee on the premises of a consumer which are underground or which are accessible shall be so insulated and protected by the Licensee as to be secured under all ordinary conditions against electrical, mechanical, chemical or other injury to the insulation.

(3) The consumer shall, as far as circumstances permit, take precautions for the safe custody of the equipment on his premises belonging to the Licensee.

(4) The consumer shall also ensure that the installation under his control is maintained in a safe condition.

3. Cut-out on consumer's premises

(1) The Licensee shall ensure a suitable cut-out or circuit breaker in lieu of is placed by the Consumer in each conductor of every service-line other than an earthed or earthed neutral conductor or the earthed external conductor of a concentric cable within a consumer's premises, in an accessible position. Such cut-out shall be contained within an adequately enclosed fireproof receptacle.

Where more than one consumer is supplied through a common service-line, each such consumer shall be provided with an independent cut-out at the point of junction to the common service.

(2) Every electric supply line other than the earth or earthed neutral conductor of any system or the earthed external conductor of a concentric cable shall be protected by a suitable cut-out by its owner.

4. Identification of earthed and earthed neutral conductors and position of switches and cut-outs therein

Where the conductors include an earthed conductor of a two-wire system or an earthed neutral conductor of a multi-wire system or a conductor which is to be connected thereto, the following conditions shall be complied with:-

(1) An indication of a permanent nature shall be provided by the owner of the earthed or earthed neutral conductor, or the conductor which is to be connected thereto, to enable such conductor to be distinguished from any live conductor. Such indication shall be provided-

(a) where the earthed or earthed neutral conductor is the property of the Licensee, at or near the point of commencement of supply;

(b) where a conductor forming, part of a consumer's system is to be connected to the Licensee's earthed or earthed neutral conductor, at the point where such connection is to be made;

(c) in all other cases, at a point corresponding to the point of commencement of supply or at such other points as may be approved by an Authorized Person.

(2) No cut-out, link or switch other than a linked switch arranged to operate simultaneously on the earthed or earthed neutral conductor and live conductors shall be inserted or remain inserted in any earthed or earthed neutral conductor of a two wire-system or in any earthed or earthed neutral conductor of a multi-wire system or in any conductor connected thereto with the following exceptions:-

(a) A link for testing purposes, or

(b) A switch for use in controlling a generator or transformer.

5. Earthed terminal on consumer's premises

(1) The Licensee shall provide and maintain on the consumer's premises for the consumer's use, a suitable earthed terminal in an accessible position at or near the point of commencement of supply as defined in this Code,

Provided that in the case of medium, high or extra-high voltage installation the consumer shall, in addition to the aforementioned earthing arrangement, provide his own earthing system with an independent electrode.

Provided further that the Licensee may not provide any earthed terminal in the case of installations already connected to his system on or before the date to be specified by the Commission in this behalf if he is satisfied that the consumer's earthing arrangement is efficient.

(2) The consumer shall take all reasonable precautions to prevent mechanical damage to the earthed terminal and its lead belonging to the Licensee.

(3) The Licensee may recover from the consumer the cost of installation on the basis of schedule of charges notified in advance and where such schedule of charges is not notified, the following procedure of estimate will apply.

(a) Cost of additional material used on the alteration giving due credit for the depreciated cost of the material which would be available from the existing line;

(b) Wages of Labor employed in affecting the alteration;

(c) Supervision charges to the extent of 15 per cent of the wages mentioned in clause (b); and

(d) Any applicable/statutory charges incurred by the Licensee in respect of such alterations.

6. Accessibility of bare conductors

Where bare conductors are used in a building, the owner of such conductors shall –

(a) ensure that they are inaccessible;

(b) provide in readily accessible position switches for rendering them dead whenever necessary; and

(c) take such other safety measures as are considered necessary by the Authorized Person.

7. Danger Notices

The owner of every medium, high and extra-high voltage installation shall affix permanently in a visible position a danger notice in Bengali and/or English with a sign of skull and bones and/or thunder sign on -

(a) every motor, generator, transformer and other electrical plant and equipment together with apparatus used for controlling or regulating the same;

(b) all supports of high and extra-high voltage overhead lines which can be easily climbed-upon without the aid of ladder or special appliances;

Explanation- Rails, tubular poles, wooden supports, reinforced cement concrete poles without steps, I-sections and channels, shall be deemed as supports which cannot be easily climbed upon for the purposes of this clause;

(c) luminous tube sign requiring high voltage supply, X-ray and similar high frequency installations:

Provided that where it is not possible to affix such notices or any generator, motor, transformer or other apparatus, they shall be affixed as near as possible thereto, or the word ‘danger’ and the voltage of apparatus concerned shall be permanently painted on it.

Provided further that where the generator, motor, transformer or other apparatus is within an enclosure one notice affixed to the said enclosure shall be sufficient for the purposes of this Code.

8. Handling of electric supply lines and apparatus

(1) Before any conductor or apparatus is handled adequate precautions shall be taken, by earthing or other suitable means, to discharge electrically such conductor or apparatus, and any adjacent conductor or apparatus if there is danger therefrom, and to prevent any conductor or apparatus from being accidentally or inadvertently electrically charged when persons are working thereon:

Every person who is working on an electric supply line or apparatus or both shall be provided with tools and devices such as gloves, rubber shoes, safety belts, ladders, earthing devices, helmets, line testers, hand lines and the like for protecting him from mechanical and electrical injury. Such tools and devices shall always be maintained in sound and efficient working conditions.

(2) No person shall work on any live electric supply line or apparatus and no person shall assist such person on such work, unless he is authorized in that behalf, and takes the safety measures indicated in this Code.

(3) Every telecommunication line on supports carrying a high or extra-high voltage line shall, for the purpose of working thereon, be deemed to be a high voltage line.

9. Supply to vehicles, cranes, etc.

Every person owning a vehicle, travelling crane, or the like to which energy is supplied from an external source shall ensure that it is efficiently controlled by a suitable switch enabling all voltage to be cut off in one operation and, where such vehicle, travelling crane or the like runs on metal rails, the owner shall ensure that the rails are electrically continuous and earthed.

10. Cables for portable or transportable apparatus

(1) Flexible cables shall not be used for portable or transportable motors, generators, transformer rectifiers, electric drills, electric sprayers, welding sets or any other portable or transportable apparatus unless they are heavily insulated and adequately protected from mechanical injury.

(2) Where the protection is by means of metallic covering the covering shall be in metallic connection with the frame of any such apparatus and earth.

(3) The cables shall be three core type and four core type for portable and transportable apparatus working on single phase and three phase supply respectively and the wire meant to be used for ground connection shall be easily identifiable.

11. Cables protected by bituminous materials

(a) Where the Licensee or the owner has brought into use an electric supply line (other than an overhead line) which is not completely enclosed in a continuous metallic covering connected with earth and is insulated or protected in situ by composition or material of a bituminous character-

(i) any pipe, conduit, or the like into which such electric supply line may have been drawn or placed shall be effectively sealed at its point of entry into any street box so as to prevent any flow of gas to or from the street box,; and

(ii) such electric supply line shall be periodically inspected and tested where accessible, and the result of each such inspection and test shall be duly recorded by the Licensee or the owner.

(b) It shall not be permissible for the Licensee or the owner after the coming into force of the Code, to bring into use any further electric supply line as aforesaid which is insulated or protected in situ by any composition or material known to be liable to produce noxious or explosive gases on excessive heating.

12. Street boxes

(1) Street boxes shall not contain gas pipes, and precautions shall be taken to prevent, as far as reasonably possible, any influx of water or gas.

(2) Where electric supply lines forming part of different systems pass through the same street box, they shall be readily distinguishable from one another and all electric supply lines at high or extra-high voltage in street boxes shall be adequately supported and protected so as to prevent risk of damage to or danger from adjacent electric supply lines.

(3) All street boxes shall be regularly inspected for the purpose of detecting the presence of gas and if any influx or accumulation is discovered, the owner shall give immediate notice to any authority or company who have gas mains in the neighborhood of the street box and in cases where a street box is large enough to admit the entrance of a person after the electric supply lines or apparatus therein have been placed in position, ample provision shall be made-

  (a) to ensure that any gas which may by accident have obtained access to the box shall escape before a person is allowed to enter; and

  (b) for the prevention of danger from sparking.

(4) The owners of all street boxes or pillars containing circuits or apparatus shall ensure that their covers and doors are so provided that they can be opened only by means of a key or a special appliance.

13. Distinction of different circuits

The owner of every generating station, substation, junction-box or pillar in which there are any circuits or apparatus, whether intended for operation at different voltages or at the same voltage, shall ensure by means of indication of a permanent nature that the respective circuits are readily distinguishable from one another.

14. Distinction of the installations having more than one feed

The owner of the every installation including substation, double pole structure, four pole structure or any other structure having more than one feed, shall ensure by means of indication of a permanent nature, that the installation is readily distinguishable from other installations.

15. Accidental Charge

The owners of all circuits and apparatus shall so arrange them that there shall be no danger of any part thereof becoming accidentally charged to any voltage beyond the limits of voltage for which they are intended.

Where A.C and D.C circuits are installed on the same support they shall be so arranged and protected that they shall not come into contract with each other when live.

16. Provisions applicable to protective equipment

(1) Fire buckets filled with clean dry sand and ready for immediate use for extinguishing fires, in addition to fire extinguishers suitable for dealing with electric fires, shall be conspicuously marked and kept in all generating stations, enclosed substations and switch

stations in convenient situation. The fire extinguishers shall be tested for satisfactory operation at least once a year and record of such tests shall be maintained.

(2) First-aid boxes or cupboards, conspicuously marked and equipped with adequate contents shall be provided and maintained in every generating station, enclosed substation and enclosed switch station so as to be readily accessible during all working hours. All such boxes and cupboards shall, except in the case of unattended substations and switch stations, be kept in charge of responsible persons who are trained in first aid treatment and one of such person shall be available during working hours.

(3) Two or more gas masks shall be provided conspicuously and installed and maintained it accessible places in every generating station with capacity of 5MW and above and enclosed substation with transformation capacity of 5 MVA and above for use in the event of fire or smoke;

Provided that where more than one generator with capacity of 5 MW and above is installed in a power station, each generator would be provided with at least two separate gas masks in accessible and conspicuous position;

Provided further that adequate number of gas masks would be provided by the Owner of every generating station and enclosed substation with capacity less than 5 MW and 5 MVA respectively, if so desired by the Commission.

17. Instructions for restoration of persons suffering from electric shock

(1) Instructions, in Bengali and/or English for the restoration of persons suffering from electric shock, shall be affixed by the owner in a visible place in every generating station, enclosed substation, enclosed switch-station and in every factory as defined in the Factories Act in which electricity is used and in such other premises where electricity is used as an Authorized Officer may, by notice in writing served on the owner, direct.

(2) The owner of every generating station, enclosed substation, enclosed switch-station and every factory or other premises to which this Code applies, shall ensure that all authorized persons employed by him are acquainted with and are competent to apply the instructions referred to in 17(1) above.

(3) In every manned medium voltage or high voltage generating station, substation or switch station, an artificial respirator shall be provided and kept in good working condition.

18. Precautions to be adopted by consumers, Owners, occupiers, electrical contractors, electrical workmen and Licensees

(1) No electrical installation work, including additions, alterations, repairs and adjustments to existing installations, except such replacement of lamps, fans, fuses, switches, low voltage domestic appliances and fittings as in no way alters its capacity or character, except by an electrical contractor licensed in this behalf by the appropriate authority and under the direct supervision of a person holding a recognized certificate of competency.

Provided that in the case of works executed for any public authority, electricity utility, industry, other organizations or in the case of installations in mines, oil fields and railways, by the departmental people designated/appointed for such works, the aforesaid requirements may be waived.

(2) No electrical installation work which has been carried out in contravention of 18(1) above shall either be energized or connected to the works of any Licensee.

19. Periodical inspection and testing of installation

(1) (a) Where an installation is already connected to the supply system of the Licensee, every such installation shall be periodically inspected and tested at intervals not exceeding three years by a competent person of the organization or a person holding a recognized certificate of competency.

(b) The periodical inspection and testing of medium voltage and high voltage installations belonging to Licensee, shall also be carried out at intervals not exceeding three years.

(c) Where the Licensee is directed by the Commission to inspect and test the installation the Licensee shall report on the condition of the installation to the consumer concerned and shall submit a copy of such report to the Commission.

(2) (a) The fees for such inspection and test shall be determined by the Commission in the case of each class of consumers and shall be payable by the consumer in advance.

(b) In the event of the failure of any consumer to pay the fees on or before the date specified in the fee-notice, supply to the installation of such consumer shall be liable to be disconnected. Such disconnection, however, shall not be made by the Licensee without giving to the consumer seven clear days notice in writing of his intention so to do.

(c) In the event of the failure of the owner of any installation to rectify the defects in his installation pointed out by the Licensee or by any authorized officer, such installation shall be liable to be disconnected after serving the owner of such installation with a notice.

Provided that the installation shall not be disconnected in case an appeal is made and the appellate authority has stayed the orders of disconnection;

Provided further that the time indicated in the notice shall not be less than 48 hours in any case;

Provided also that nothing contained in this clause shall have any effect on the application of the provisions for leakage on Consumer's premises.

(3) Notwithstanding the provisions of this clause, the consumer shall at all times be solely responsible for the maintenance of his installation in such condition as to be free from danger.

Chapter 11
GENERAL CONDITIONS
RELATING TO SUPPLY AND USE OF ENERGY

1. Testing of consumer's installation

(1) Upon receipt of an application for a new or additional supply of energy and before connecting the supply or reconnecting the same after a period of six months, the Licensee shall inspect and test the applicant's installation. The Licensee shall maintain a record of test results obtained at each supply point to a consumer.

(2) If as a result of such inspection and test., the Licensee is satisfied that the installation is likely to constitute danger, he shall serve on the applicant a notice in writing requiring him to make such modifications as are necessary to render the installation safe. The Licensee may refuse to connect or reconnect the supply until the required modifications have been completed and he has been notified by the applicant.

2. Installation and Testing of Generating Units

Where any consumer or occupier installs a generating plant, he shall give a thirty days' notice of his intention to commission the plant to the Licensee and well as to the Commission;

Provided that no consumer or occupier shall commission his generating plant without obtained license or waiver, as the case may be, from the Commission.

3. Precautions against leakage before connection

(1) The Licensee shall not connect with his works the installation or apparatus on the premises of any applicant for supply unless he is reasonably satisfied that the connection will not at the time of making the connection cause a leakage from that installation or apparatus of a magnitude detrimental to safety. Compliance with this clause shall be checked by measuring the installation resistance as provided below:

(i) All the electrical equipments shall have the "IR" values as stipulated in the relevant Standards.

(ii) At a pressure of 500 V DC applied between each live conductor and earth for a period of one minute the insulation resistance of low voltage equipments shall be at least 1 Mega ohm or as specified in the relevant Standard.

(iii) At a pressure of 2.5 KV DC applied between each live conductor and earth for a period of one minute, the insulation resistance of medium voltage equipments shall be at least 5 Mega ohm or as specified by in the relevant Standard.

(iv) When the supply is derived from three wires (AC or DC) or a poly-phase system, the neutral pole of which is connected to earth either directly or through added resistance the working voltage shall be deemed to be that which is maintained between the outer or phase conductor and the neutral.

(2) If the Licensee declines to make a connection under the provisions of 3(1) above, he shall serve upon the applicant a notice in writing stating his reason for so declining.

4. Leakage on consumer's premises

(1) If the Licensee has reason to believe that there is in the system of a consumer leakage which is likely to affect injuriously the use of energy by the Licensee or by other persons, or which is likely to cause danger, the Licensee may give the consumer reasonable notice in writing that he desires to inspect and test the consumer's installation.

(2) If on such notice being given-

(a) The consumer does not give all reasonable facilities for inspection and testing of his installation, or

(b) When an insulation resistance of the consumer's insulation is so low as to prevent safe use of energy the Licensee shall discontinue the supply of energy to the installation but only after giving to the consumer 48 hours notice in writing of disconnection of supply and shall not recommence the supply until the Licensee is satisfied that the cause of the leakage has been removed.

5. Supply and use of energy

(1) The energy shall not be supplied, transformed, converted or used or continued to be supplied, transformed, converted or used unless provisions as set out below are observed:-

(a) The following controls of requisite capacity to carry and break the current are placed after the point of commencement of supply as defined in clause 14 so as to be readily accessible and capable of being easily operated to completely isolate the supply to the installation, such equipment being in addition to any equipment installed for controlling individual circuits or apparatus:-

(i) a linked switch with fuse(s) or a circuit breaker by low voltage consumers.

(ii) a linked switch with fuse(s) or a circuit breaker by MV and HV consumers having aggregate installed transformer/apparatus capacity up to 1000 KVA to be supplied at voltage upto 11 KV and 2500 KVA at higher voltages(above 11 KV and not exceeding 33KV).

(iii) a circuit breaker by MV and HV consumers having an aggregate installed transformer/apparatus capacity above 1000 KVA and supplied at 11 KV and above 2500 KVA supplied at higher voltages (above 11 KV and not exceeding 33KV)

(iv) a circuit breaker by EHV consumer:

Provided that where the point of commencement of supply and the consumer apparatus are near each other, one linked switch with fuse(s) or circuit breaker near the point of commencement of supply as required by this clause shall be considered sufficient.

(b) In case of every transformer the following shall be provided:-

(i) On primary side for transformers a linked switch with fuse(s) or circuit breaker of adequate capacity.

Provided that the linked switch on the primary side of the transformer may be of such capacity as to carry the full load current and to break only the magnetizing current of the transformer.

Provided further that for all transformers:-

(i.a) having a capacity 5000 KVA and above and installed before the enforcement of this Code and

(i.b) having a capacity of 1000 KVA and above and installed before the enforcement of this Code; a circuit breaker shall be provided.

Provided further that the provision of linked switch on the primary side of the transformer shall not apply to the unit auxiliary transformer of the generator.

In respect of all transformers installed on or after the enforcement of this Code, on the secondary side of all transformers transforming HV to EHV, MV or LV; a circuit breaker of adequate rating shall be installed:

Provided that for Licensees' transformers of capacity upto 630 KVA, a linked switch with fuse or circuit breaker of adequate rating shall be installed on secondary side.

(c) Except in the case of composite control gear designed as a unit distinct circuit is protected against excess energy by means of suitable cut-out or a circuit breaker of adequate breaking capacity suitably located and so constructed as to prevent danger from overheating, arcing or scattering of hot metal when it comes into operation and to permit for ready renewal of the fusible metal of the cut-out without danger;

(d) The supply of energy of each motor or a group of motors or other apparatus meant for operating one particular machine is controlled by a suitable linked switch or a circuit breaker or an emergency tripping device with manual reset of requisite capacity placed in such a position as to be adjacent to the motor or a group of motors or other apparatus readily accessible to and easily operated by the person in-charge and so connected in the circuit that by its means all supply of energy can be cut off from the motor or group of motors or apparatus from any regulating switch, resistance of other device associated therewith;

(e) All insulating materials are chosen with special regard to the circumstances of its proposed use and their mechanical strength is sufficient for its purpose and so far as is practicable of such a character or so protected as to maintain adequately its insulating property under all working conditions in respect of temperature and moisture; and

(f) Adequate precautions shall be taken to ensure that no live parts are so exposed as to cause danger.

(2) Where energy is being supplied, transformed, converted or used the consumer, Licensee or the owner of the concerned installation shall be responsible for the continuous observance of the provisions of 5(1) above in respect of his installations.

(3) Every consumer shall use all reasonable means to ensure that where energy is supplied by a Licensee no person other than the Licensee shall interfere with service lines and apparatus placed by the Licensee on the premises of the consumer.

6. Additional provisions for supply in multi-storied building (6 and more story)

(1) Before making an application for recommencement of supply after an installation has been disconnected for a period of six months or more, the owner/occupier of a multi-storied building shall give not less than30 days notice in writing to the Licensee together with particulars. The supply of energy shall not be recommenced within this period, without the approval or otherwise in writing of the Licensee.

(2) The Licensee/owner of the installation shall provide at the point of commencement of supply a suitable isolating device with cut-out or breaker to operate on all phases except neutral in the 3 phase 4 wire circuit and fixed in a conspicuous position at not more than 2.75 meters above the ground so as to completely isolate the supply to the building in case of emergency.

(3) The owner/occupier of a multi-storied building shall ensure that electrical installations/works inside the building are carried out and maintained in such a manner as to prevent danger due to shock and fire hazards, and the installation is carried out in accordance with the relevant Codes of practices.

(4) No other service pipes shall be taken along the ducts provided for laying power cables. All ducts for power cables and other services shall be provided with fire-barrier at each floor crossing.

7. Provisions applicable to medium, high or extra-high voltage installations

The following provisions shall be observed where energy at medium, high or extra-high voltage is supplied, converted, transformed or used:

(1) (a) All conductors (other than those of overhead lines) shall be completely enclosed in mechanically strong metal casing or metallic covering which is electrically and mechanically continuous and adequately protected against mechanical damage unless the said conductors are accessible only to an authorized person or are installed and protected so as to prevent danger:

Provided that non-metallic conduits conforming to the relevant BSTI Standard Specifications may be used for low voltage installations, subject to such conditions as the authorized person may think fit to impose.

(b) All metal works, enclosing, supporting or associated with the installation, other than that designed to serve as a conductor shall be connected with an earthing system as per Standard in this regard and also in accordance with this Code.

(c) Every switchboard shall comply with the following provisions, namely:-

(i) a clear space of not less than 1 meter in width shall be provided in front of the switchboard;

(ii) If there are any attachments or bare connections at the back of the switchboard, the space (if any) behind the switchboard shall be either less than 20 centimeters or more than 75 centimeters in width, measured from the farthest outstanding part of any attachment or conductor;

(iii) If the space behind the switchboard exceeds 75 centimeters in width, there shall be a passage-way from either end of the switchboard, clear to a height of 1.8meters.

(d) In case of installations provided in premises where inflammable materials including gases and /or chemicals are produced, handled or stored, the electrical installations, equipment and apparatus shall comply with the requirements of flame proof, dust tight, totally enclosed or any other suitable type of electrical fittings.

(2) Where an application has been made to a Licensee for supply of energy to any installation, the Licensee shall not commence the supply or where the supply has been discontinued for a period of six months and above, recommence the supply unless the Licensee is satisfied that the consumer has complied with, in all respects the conditions of supply set out in this Code.

(3) Where a Licensee proposes to supply or use energy at a medium voltage the Licensee shall, before connecting the supply, ensure that appropriate license has been obtained from competent authority.

(4) If at any time after connecting the supply, the Licensee is satisfied that any provision of the Code is not being observed, shall give notice of the same in writing to the consumer, specifying how the provisions has not been observed and to rectify such defects in a reasonable time and if the consumer fails to rectify such defects pointed out, the Licensee may discontinue the supply after giving the consumer a reasonable opportunity of being heard and recording reasons in writing. The supply shall be discontinued only on written orders of an officer duly notified by the Licensee in this behalf. The supply shall be restored with all possible speed after such defects are rectified by the consumer to the satisfaction of the Licensee.

8. Appeal to Commission in regard to defects

(1) If any applicant for a supply or a consumer is dissatisfied with the action of the Licensee in declining to commence, to continue or to recommence the supply of energy to his premises on the grounds that the installation is defective or is likely to constitute danger, he may appeal to the Commission to inspect the installation and if the Commission or under its orders, any other officer appointed, is satisfied that the installation is free from the defect or danger complained of, the Licensee shall not be entitled to refuse supply to the consumer on the grounds aforesaid, and shall, within twenty-four hours after the receipt of such intimation from the Commission, commence, continue or recommence the supply of energy.

(2) Any inspection for which application has been made under the aforesaid provision 8(1) shall be carried out within fifteen days after the receipt of such application.

9. Cost of inspection and test of consumer's installation

(1) The cost of the first inspection and test of consumer's installation carried out in pursuance of the provisions of 1(1) above shall be borne by the Licensee and the cost of every subsequent inspection and test shall be borne by the consumer, unless in the appeal under 8(1) the Commission directs otherwise.

(2) The cost of any inspection and test made by the Commission or any officer appointed to assist the Commission, at the request of the consumer or other interested party, shall be borne by the consumer or other interested party, unless the Commission directs otherwise.

(3) The cost of each and every such inspection and test by whomsoever borne shall be calculated in accordance with the prevailing remuneration scale.

10. Declared voltage of supply to consumer

Except with the written consent of the consumer or with the previous sanction of the Commission, a Licensee shall not permit the voltage at the point of commencement of supply to vary from the declared voltage:

(i) in the case of low voltage, by more than 5 per cent, or;

(ii) in the case of Medium voltage, by more than 5 per cent on the higher side or by more than 8 percent on the lower side, or;

(iii) in the case of high voltage, by more than 5 per cent on the higher side or by more than 10 per cent on the lower side.

11. Declared frequency of supply to consumer

The Licensee shall not permit the frequency of an alternating current supply to vary from the declared frequency by more than 2 percent.

12. Sealing of meters and cut-outs

(1) A Licensee may affix one or more seals to any cut-out and to any meter, maximum demand indicator, or other apparatus placed upon a consumer's premises in accordance with the provisions of this Code, and no person other than the Licensee shall break any such seal.

(2) The consumer shall use all reasonable means in his power to ensure that no such seal is broken otherwise than by the Licensee.

13. Meters, maximum demand indicators and other apparatus on consumer's premises

(1) Any meter or maximum demand indicator or other apparatus placed upon a consumer's premises shall be of appropriate capacity and shall be deemed to be correct if its limits of error are within the limits specified by the Commission, and in absence by the BSTI or in the relevant international Standard and where no such specification exist, the limits of error do not exceed 2 per cent for low voltage and 1 per cent for medium and high voltage above or below absolute accuracy at all loads in excess of one tenth of full load and up to full load.

(2) No meter shall register at no load.

(3) Every Licensee shall provide and maintain in proper condition such suitable apparatus for the examination, testing and regulation of meters used or intended to be used in connection with the supply of energy.

Provided that the Licensee may with the approval of the Commission and shall, if required by the Commission, enter into a joint arrangement with any other Licensee for the purpose aforesaid.

(4) Every Licensee shall examine, test and regulate all meters, maximum demand indicators and other apparatus for ascertaining the amount of energy supplied before their first installation at the consumer's premises and at such other intervals as may be directed by the Commission.

(5) Every Licensee shall maintain a register of meters showing the date of the last test, the error recorded at the time of the test, the limit of accuracy after adjustment and final test, the date of installation, withdrawal, reinstallation, etc., for the examination of the Commission or its authorized representative.

(6) Where the Licensee has failed to examine, test and regulate the meters and keep records thereof as aforesaid, the Commission may cause such meters to be tested and sealed at the cost of the owner of the meters in case these are found defective.

14. Point of commencement of supply

The point of commencement of supply of energy to a consumer shall be deemed to be the point at the incoming terminal of the cut-outs installed by the consumer after the Meter.

15. Precautions against failure of supply, Notice of failures

(1) The layout of the electric supply lines of the Licensee for the supply of energy throughout his area of supply shall under normal working conditions be sectionalized and so arranged, and provided with cut-outs or circuit-breakers so located, as to restrict within reasonable limits the extent of the portion of the system affected by any failure of supply.

(2) The Licensee shall take all reasonable precautions to avoid any accidental interruptions of supply, and also to avoid danger to the public or to any employee or authorized person when engaged on any operation during and in connection with the installation, extension, replacement, repair and maintenance of any works.

(3) The Licensee shall send to the Commission notice of failure of supply of such kind as the Commission may from time to time require to be notified, and such notice shall be sent by the earliest practicable mode of delivery after the failure occurs or after the failure becomes known to the Licensee.

(4) For the purpose of testing or for any other purpose connected with the efficient working of the undertaking, the supply of energy may be discontinued by the Licensee for such period as may be necessary, subject (except in cases of emergency) to not less than 24 hours notice being given by the Licensee to all consumers likely to be affected by such discontinuance:

Provided that the supply of energy shall be discontinued during such hours as are likely to interfere the least with the use of energy by consumers and the energy shall not be discontinued if the Commission so directs.

Chapter 12
ELECTRIC SUPPLY LINES, SYSTEMS AND APPARATUS FOR LOW VOLTAGE

1. Test for resistance of insulation

(1) Where any electric supply line for use at low or medium voltage has been disconnected from a system for the purpose of addition, alteration or repair, such electric supply line shall not be reconnected to the system until the Licensee or the owner has carried out the test prescribed in this Code in Chapter: General Conditions Relating to Supply and Use of Energy.

(2) The aforesaid provision shall not apply to overhead lines except, overhead insulated cables.

2. Connection with earth

(1) The following provisions shall apply to the connection with earth of systems at low voltage in cases where the voltage normally exceeds 125 volts and of systems at low voltage:-

(a) Neutral conductor of a 3 phase, 4 wire system and the middle conductor of a 2 phase, 3-wire system shall be earthed by not less than two separate and distinct connections with a minimum of two different earth electrodes or such large number as may be necessary to bring the earth resistance to a satisfactory value both at the generating station and at the substation. The earth electrodes so provided, may be inter-connected to reduce earth resistance. It may also be earthed at one or more points along the distribution system or service line in addition to any connection with earth which may be at the consumer's premises.

(b) In the case of a system comprising electric supply lines having concentric cables, the external conductor of such cables shall be earthed by two separate and distinct connections with earth.

(c) The connection with earth may include a link by means of which the connection may be temporarily interrupted for the purpose of testing or for locating a fault.

(d) (i) In a direct current three wire system the middle conductor shall be earthed at the generating station only, and the current from the middle conductor to earth shall be continuously recorded by means of a recording ammeter, and if any time the current exceeds one-thousandth part of the maximum supply current immediate steps shall be taken to improve the insulation of the system.

(ii) Where the middle conductor is earthed by means of a circuit-breaker with a resistance connected in parallel, the resistance shall not exceed 10 Ohms and on the opening of the circuit-breaker, immediate steps shall be taken to improve the insulation of the system, and the circuit-breaker shall be reclosed as soon as possible.

(iii) The resistance shall be used only as a protection for the ammeter in case of earths on the system and until such earths are removed. Immediate steps shall be taken to locate and remove the earth.

(e) In the case of an alternating current system, there shall not be inserted in the connection with earth any impedance (other than that required solely for the operation of switchgear or instruments), cut-out or circuit-breaker, and the result of any test made to ascertain whether the current (if any) passing through the connection with earth is normal, shall be duly recorded by the Licensee.

(f) No person shall make connection with earth by the aid of, nor shall he keep it in contact with, any water main not belonging to him except with the consent of the owner thereof and of the Licensee.

(g) Alternating current systems which are connected with earth as aforesaid may be electrically interconnected:

Provided that each connection with earth is bonded to the metal sheathing and metallic armoring (if any) of the electric supply lines concerned.

(2) The frame of every generator, stationary motor, portable motor, and the metallic parts (not intended as conductors) of all transformers and any other apparatus used for regulating or controlling energy and all low voltage energy consuming apparatus shall be earthed by the owner by two separate and distinct connections with earth.

(3) All metal casings or metallic coverings containing or protecting any electric supply line or apparatus shall be connected with earth and shall be so joined and connected across all junction boxes and other openings as to make good mechanical and electrical connection throughout their whole length;

Provided that where the supply is at low voltage, this provision shall not apply to wall tubes or to brackets, switches, ceiling fans or other fittings (other than portable hand lamps and portable and transportable apparatus) unless provided with earth terminal and to apparatus/appliances;

Provided further that where the supply is at low voltage and where the installations are either new or renovated all plug sockets shall be of the three-pin type, and the third pin shall be permanently and efficiently earthed.

(4) All earthing system shall -

(a) consist of equipotential bonding conductors capable of carrying the prospective earth fault current and a group of pipe/rod/plate electrodes for dissipating the current to the general mass of earth without exceeding the allowable temperature limits as per relevant Standards in order to maintain all non-current carrying metal works reasonably at earth potential and to avoid dangerous contact potentials being developed on such metal works;

(b) Limit earth resistance sufficiently low to permit adequate fault current for the operation of protective devices in time and to reduce neutral shifting;

(c) be mechanically strong, withstand corrosion and retain electrical continuity during the life of the installation. All earthing systems shall be tested to ensure efficient earthing, before the electric supply lines or apparatus are energized.

(5) All earthing systems belonging to the Licensee shall in addition, be tested for resistance on dry day during the dry season not less than once every two years.

(6) A record of every earth test made and the result thereof shall be kept by the Licensee for a period of not less than two years after the day of testing and shall be available for the Commission’s inspection.

3. Earth leakage protective device

The supply of energy to every electrical installation other than low voltage installation below 8 KW, shall be controlled by an earth leakage protective device so as to disconnect the supply instantly on the occurrence of earth fault or leakage of current:

Provided that the above shall not apply to overhead supply lines having protective devices which are effectively bonded to the neutral of supply transformers and conforming to this Code.

4. Poly Phase Systems at low voltage

Where a poly phase voltage supply system is employed, the voltage between earth and any conductor forming part of the same system shall not, under normal conditions, exceed low voltage.

Chapter 13
ELECTRIC SUPPLY LINES, SYSTEMS AND APPARATUS FOR MEDIUM AND HIGH VOLTAGES

1. Approval of Installation

(1) Before commence or recommence supply after an installation has been disconnected for one year and above at medium or high voltage to any person, the Licensee shall ensure that the medium or high voltage electric supply lines or apparatus belonging to him are placed in position, properly joined and duly completed and examined. The supply of energy shall not be commenced by the Licensee unless and until the provisions laid down in this Chapter have been complied with and the approval in writing of the competent authority has been obtained:

Provided that the Licensee may energize the aforesaid electric supply lines or apparatus for the purpose of tests described in Clause 4 below.

(2) The owner of any medium or high voltage installation shall, before making application to the Licensee for approval of his installation or additions thereto, test every medium or high voltage circuit or additions thereto, other than an overhead line, and satisfy himself that they withstand the application of the testing voltage set out in 4(1) below and shall duly record the results of such tests and forward them to the Licensee and to the competent authority:

Provided that an Licensee may direct such owner to carry out such tests as deemed necessary or, if the Licensee thinks fit, accept the manufacturer's certified tests in respect of any particular apparatus in place of the tests required by this clause.

(3) The owner of any medium or high voltage installation who makes any additions or alterations to his installation shall not connect to the supply his apparatus or electric supply lines, comprising the said alterations or additions unless and until such alterations or additions have been approved in writing by the Licensee and/or competent authority.

2. Use of energy at Medium and High voltage

(1) The Licensee shall not commence supply or where the supply has been discontinued for a period of one year and above, recommence the supply at medium or high voltage to any consumer unless-

(a) all conductors and apparatus situated on the premises of the consumer are so placed as to be inaccessible except to an authorized person and all operations in connection with the said conductors and apparatus are carried out by an authorized person;

(b) the consumer has provided and agrees to maintain a separate building or a locked weather-proof and fire-proof enclosure of agreed design and location, to which the Licensee at all times have access for the purpose of housing his apparatus and metering equipment, or where the provision for a separate building or enclosure is impracticable, the consumer has segregated the aforesaid apparatus of the Licensee from any other part of his own apparatus:

Provided that such segregation shall be by the provision of fire proof walls, if the Licensee considers it to be necessary:

Provided further that in the case of an out-door installation consumer shall suitably segregate the aforesaid apparatus belonging to the Licensee from his own to the satisfaction of the Licensee;

(c) all pole type substations are constructed and maintained in accordance with clause 8 of this Chapter.

(2) The following provisions shall be observed where energy at medium or high voltage is supplied, converted, transformed or used:-

(a) (i) clearances as per Standard/ Code shall be provided for electrical apparatus so that sufficient space is available for easy operation and maintenance without any hazard to the operating and maintenance personnel working near the equipment and for ensuring adequate ventilation.

Provided that the owner of the transformer installation shall not allow any encroachment below such installations. The Licensee shall direct appropriate law enforcing authorities to remove such encroachments, if such encroachments pose a danger to the life of the operating personnel/public person or property.

(ii) the following minimum safety working clearances shall be maintained for the bare conductors or live parts of any apparatus in outdoor substations, excluding overhead lines, of medium, high and extra high voltage installations:-

System Voltage (kV)	Safety Working Clearance (Meters)
11	2.6
33	2.8
66	3.1
132	3.7
230	4.3
400	6.4
800	10.3

NOTES:

(1) The above values are valid for altitude not exceeding 1000 Meters (m.). A correction factor of 1.25 per cent per 100m. is to be applied for increasing the clearance for altitudes more than 1000m. and up to 3000m.

(2) The above safety working clearances are based on an insulation height of 2.44m which is the height of lowest point on the insulator (where it meets the earthed metal) from the ground.

(3) “Safety Working Clearance” is the minimum clearance to be maintained in air between the live part of the equipment on one hand and earth or any other piece of equipment or conductor on which it is necessary to carry out the work, on the other.

(4) The “Highest System Voltage” is defined as the highest rms phase to phase voltage which occurs under normal operating conditions at any time and at any

point of the system. It excludes voltage transients (such as those due to system switching) and temporary voltage variations due to abnormal system conditions (such as those due to fault conditions or the sudden disconnection of large loads).

(b) The windings of motors or other apparatus within reach from any position in which a person may require to be, shall be suitably protected so as to prevent danger.

(c) Where transformer or transformers are used, suitable provision shall be made, either by connecting with earth a point of the circuit at the lower voltage or otherwise, to guard against danger by reason of the said circuit becoming accidentally charged above its normal voltage by leakage from or contact with the circuit at the higher voltage.

(d) A substation or a switch station with apparatus having more than 2000 liters of oil shall not be located in the basement where proper oil draining arrangement cannot be provided.

(e) Where a substation or a switch station with apparatus having more than 2000 liters of oil is installed, whether indoor or outdoor, the following measures shall be taken namely:-

(i) The baffle walls of adequate fire rating shall be provided between the apparatus in the following cases:-

(A) single phase banks in the switch-yards of generating stations and substations;

(B) on the consumer premises;

(C) where adequate clearance between the units is not available.

(ii) Provisions shall be made for suitable oil soak pit and where use of more than 9000 liters of oil in any one oil tank, receptacle or chamber is involved, provision shall be made for the draining away or removal of any oil which may leak or escape from the tanks receptacles or chambers containing the same, special precautions shall be taken to prevent the spread of any fire resulting from the ignition of the oil from any cause and adequate provision shall be made for extinguishing any fire which may occur. Spare oil shall not be stored in any such substation or switch station.

(iii) All the transformers and switchgears shall be maintained in accordance with standard maintenance schedule and the authorized person shall keep a record thereof.

(iv) Notwithstanding anything contained in this Chapter, only dry type of transformers shall be used for installations inside the residential/commercial buildings onward from enforcement of this Code.

(f) (i) Without prejudice to the above measures, adequate fire protection arrangement shall be provided for quenching the fire in the apparatus;

(ii) Where it is necessary to locate the substation / switch station in the basement following measures shall be taken:-

(A) The room shall necessarily be in the first basement at the periphery of the basement;

(B) The entrances to the room shall be provided with fire resisting doors of adequate fire rating but minimum 2 hours. A curb (sill) of a suitable height shall be provided at the entrance in order to prevent the flow of oil from a

ruptured transformer into other parts of the basement. Direct access to the transformer room shall be provided from outside.

(C) The transformer shall be protected by an automatic high velocity water spray system or by carbon dioxide or BCF (Bromochloro-difluromethane) or BTM (Bromo-trifluromethane) fixed installation system or Nitrogen injection and drain method.

(iii) Oil filled transformers installed indoors shall not be on any floor above the ground or below the first basement.

(g) Cable trenches inside the substations and switch stations containing cables shall be filled with sand, pebbles or similar non-inflammable materials or completely covered with non-inflammable slabs;

(h) Unless the conditions are such that all the conductors and apparatus may be made dead at the same time for the purpose of cleaning or for other work, the said conductors and apparatus shall be so arranged that these may be made dead in sections, and that work on any such section may be carried on by an authorized person without danger.

(i) Only persons authorized shall carry out the work on live lines and apparatus.

(3) All HV apparatus shall be protected against lightning as well as against switching over voltages. The equipment used for protection and switching shall be adequately coordinated with the protected apparatus to ensure safe operation as well as to maintain the stability of the inter-connected units of the power system.

3. Additional provisions for use of energy at high and extra-high voltage

The following additional provisions shall be observed where energy at high or extra-high voltage is supplied, converted, transferred or used, namely:-

(1) Inter-locks – Suitable inter-locks shall be provided in the following cases:-

(a) Isolators and the controlling circuit breakers shall be inter-locked so that the isolators cannot be operated unless the corresponding breaker is in open position;

(b) Isolators and the corresponding earthing switches shall be inter-locked so that no earthing switch can be closed unless and until the corresponding isolator is in open position;

(c) Where two or more supplies are not intended to be operated in parallel, the respective circuit breakers or linked switches controlling the supplies shall be inter-locked to prevent possibility of any inadvertent paralleling or feedback;

(d) When two or more transformers are operated in parallel, the system shall be so arranged as to trip the secondary breaker of a transformer in case the primary breaker of that transformer trips;

(e) All gates or doors which give access to live parts of an installation shall be interlocked in such a way that these cannot be opened unless the live parts are made dead. Proper discharging and earthing of these parts should be ensured before any person comes in close proximity of such parts;

(f) Where two or more generators operate in parallel and neutral switching is adopted, inter-lock shall be provided to ensure that generator breaker cannot be closed unless one of the neutrals is connected to the earthing system.

(2) Protection – All systems and circuits shall be so protected as to automatically disconnect the supply under abnormal conditions.

The following protection shall be provided namely:-

(a) Over current protection to disconnect the supply automatically if the rated current of the equipment, cable or supply line is exceeded for a time which the equipment, cable or supply line is not designed to withstand;

(b) Earth-fault/ earth leakage protection to disconnect the supply automatically if the earth fault current exceeds the limit of current for keeping the contact potential within the reasonable values;

(c) Gas pressure type and winding and oil temperature protection to give alarm and tripping shall be provided on all transformers of ratings 1000 KVA and above;

(d) Transformers of capacity 10 MVA and above shall be protected against incipient faults by differential protection; and

(e) All generators with rating of 100 KVA and above shall be protected against earth fault/ leakage. All generators of rating 1000 KVA and above shall be protected against faults within the generator winding using restricted earth fault protection or differential protection or by both.

(f) High speed bus bar differential protection along with local breaker back up protection shall be commissioned and shall always be available at all 230 KV and above voltage substations and switchyards and generating stations connected with the grid.

4. Testing, Operation and Maintenance

(1) Before approval is accorded by the Licensee, the manufacturer's test certificates shall, if required, be produced for all the routine tests as required under the relevant Standard.

(2) No new medium or HV apparatus, cable or supply line shall be commissioned unless such apparatus, cable or supply line are subjected to site tests as per relevant international code of practice.

(3) No medium or HV apparatus, cable or supply line which has been kept disconnected, for a period of 6 months or more, from the system for alterations or repair shall be connected to the system until such apparatus, cable or supply line are subjected to the relevant tests as per international code of practice.

(4) Additionally the Licensee may require certain additional tests to be carried out before charging the installations or subsequently.

(5) All apparatus, cables and supply lines shall be maintained in healthy conditions and tests shall be carried out periodically as per the relevant international codes of practice.

(6) Records of all tests, tripping, maintenance works and repairs of all equipment, cables and supply lines shall be duly kept in such a way that these records can be compared with earlier ones.

(7) It shall be the responsibility of the owner of all medium and HV installations to maintain and operate the installations in a condition free from danger and as recommended by the manufacturer and/ or by the relevant codes of practice and/ or by the Licensee.

(8) Failures of transformers and reactors of 20 MVA and higher capacity shall be reported by the consumers and the Licensees within 48 hours of the occurrence of the failure, to the Commission. The reasons for failure and measures to be taken to avoid recurrence of failure shall also be sent to the Commission within one month of the occurrence.

5. Metal sheathed electric supply lines. Precautions against excess leakage

(1) The following provisions shall apply to electric supply lines other than overhead lines for use at medium or high voltage:-

(a) The conductors shall be enclosed in metal sheathing which shall be electrically continuous and connected with earth, and the conductivity of the metal sheathing shall be maintained and reasonable precautions taken where necessary to avoid corrosion of the sheathing:

Provided that in the case of thermoplastic insulated and sheathed cables with metallic armor the metallic wire or tape armor shall be considered as metal sheathing:

Provided further that this clause shall not apply to cable with thermoplastic insulation without any metallic screen or armor.

(b) The resistance of the earth connection with metallic sheath shall be kept low enough to permit the controlling circuit breaker or cut-out to operate in the event of any failure of insulation between the metallic sheath and the conductor.

(c) Where an electric supply-line as aforesaid has concentric cables and the external conductor is insulated from an outer metal sheathing and connected with earth, the external conductor may be regarded as the metal sheathing for the purposes of this clause provided that the foregoing provisions as to conductivity are complied with.

(2) Nothing in the provisions of aforesaid 5(1) shall preclude the employment in generating stations, substations and switch-stations (including outdoor substations and outdoor switch stations) of conductors for use at medium or high voltages which are not enclosed in metal sheathing or preclude the use of electric supply lines laid before the prescribed date to which the provisions of this Code apply.

6. Connection with earth.

(1) All non-current carrying metal parts associated with medium/HV installation shall be effectively earthed to a grounding system or mat which will:-

(a) limit the touch and step potential to tolerable values;

(b) limit the ground potential rise to tolerable values so as to prevent danger due to transfer of potential through ground, earth wires, cable sheath, fences, pipe lines, etc.

(c) maintain the resistance of the earth connection to such a value as to make operation of the protective device effective.

(2) In the case of star-connected system with earthed neutrals or delta connected system with earthed artificial neutral point:-

(a) The neutral point of every generator and transformer shall be earthed by connecting it to the earthing system as defined in this Code and hereinabove by not less than two separate and distinct connections:

Provided that the neutral point of a generator may be connected to the earthing system through an impedance to limit the fault current to the earth:

Provided further that in the case of multi-machine system, neutral switching may be resorted to, for limiting the injurious effect of harmonic current circulation in the system;

(b) In the event of an appreciable harmonic current flowing in the neutral connection so as to cause interference, with communication circuits, the generator or transformer neutral, shall be earthed through a suitable impedance;

(c) In case of the delta connected system the neutral point shall be obtained by the insertion of a grounding transformer and current limiting resistance or Impedance wherever considered necessary at the commencement of such a system.

(3) Single-phase medium or high voltage systems shall be earthed in a manner approved by the Commission.

(4) In the case of a system comprising electric supply lines having concentric cables, the external conductor shall be the one to be connected with earth.

(5) Where a Licensee proposes to connect with earth an existing system for use at high or extra-high voltage which has not hitherto been so connected with earth he shall give not less than fourteen days' notice in writing together with particulars to the telegraph-authority of the proposed connection with earth.

(6) (a) Where the earthing lead and earth connection are used only in connection with earthing guards erected under medium or high voltage overhead lines where they cross a telecommunication line or a railway line, and where such lines are equipped with earth leakage relays, the resistance shall not exceed 25 ohms.

(b) Every earthing system belonging to either the Licensee or the consumer shall be tested for its resistance to earth on a dry day during dry season not less than once a year. Records of such tests shall be maintained and shall be produced, if required before the Commission.

(7) In so far as the provisions of earth leakage protective device included in this Code are consistent with these provisions, all connections with earth shall also comply with the provisions of earth leakage protective device.

7. General conditions as to transformation and control of energy

(1) Where energy at medium or high voltage is transformed, converted, regulated or otherwise controlled in substations or switch-stations (including outdoor substations and outdoor switch-stations) or in street boxes constructed underground, the following provisions shall have effect:-

(a) Substations and switch-stations shall preferably be erected above ground, but where necessarily constructed underground due provisions for ventilation and drainage shall be made and any space housing switchgear shall not be used for storage of any materials especially inflammable and combustible materials or refuse.

(b) Outdoor substations except pole type substations and outdoor switch-stations shall (unless the apparatus is completely enclosed in a metal covering connected with earth, the said apparatus also being connected with the system by armored cables) be efficiently protected by fencing not less than 1.8 meters in height or other means so as to prevent access to the electric-supply lines and apparatus therein by an unauthorized person.

(c) Underground street boxes (other than substations) which contain transformers shall not contain switches or other apparatus, and switches, cut-outs or other apparatus required for controlling or other purposes shall be fixed in separate receptacles above ground wherever practicable.

(2) Where energy is transformed, suitable provisions shall be made either by connecting with earth a point of the system at the lower voltage or otherwise to guard against danger by reason of the said system becoming accidentally charged above its normal voltage by leakage from a contact with the system at the higher voltage.

8. Pole type substations

Where platform type construction is used for a pole type substation and sufficient space for a person to stand on the platform is provided a substantial hand rail shall be built around the said platform and if the hand rail is of metal, it shall be connected with earth:

Provided that in the case of pole type substation on wooden supports and wooden platform the metal hand-rail shall not be connected with earth.

9. Condensers

Suitable provision shall be made for immediate and automatic discharge of every static condenser on disconnection of supply.

10. Additional provisions for supply to medium voltage luminous tube sign Installation

(1) Any person who proposes to use or who is using energy for the purpose of operating a luminous tube sign installation, or who proposes to transform or who is transforming energy to a high voltage for any such purpose shall comply with the following conditions:-

(a) All live parts of the installation (including all apparatus and live conductors in the secondary circuit, but excluding the tubes except in the neighborhood of their terminals) shall be inaccessible to unauthorized persons and such parts shall be effectively screened.

(b) Irrespective of the method of obtaining the voltage of the circuit which feeds the luminous discharge tube sign, no part of any conductor of such circuit shall be in metallic connection (except in respect of its connection with earth) with any conductor of the supply system or with the primary winding of the transformer.

(c) All live parts of an exterior installation shall be so disposed as to protect them against the effects of the weather and such installation shall be so arranged and separated from the surroundings as to limit, as far as possible, the spreading of fire.

(d) The secondary circuit shall be permanently earthed at the transformer and the core of every transformer shall be earthed.

(e) Where the conductors of the primary circuit are not in metallic connection with the supply conductors, (e.g., where a motor-generator or a double-wound converter is used), one phase of such primary circuit shall be permanently earthed at the motor generator or converter, or at the transformer.

(f) An earth leakage circuit breaker of sufficient rating shall be provided on the low voltage side to detect the leakage in such luminous tube sign installations.

(g) A final sub-circuit which forms the primary circuit of a fixed luminous discharge tube sign installation shall be reserved solely for such purpose.

(h) A separate primary final sub-circuit shall be provided for each transformer or each group of transformers having an aggregate input not exceeding 1,000 volt-amperes, of a fixed luminous-discharge-tube sign installation.

(i) An interior installation shall be provided with suitable adjacent means for disconnecting all phases of the supply except the "neutral" in a three-phase four wire circuit.

(j) For installations on the exterior of a building a suitable emergency fire-proof linked switch to operate on all phases except the neutral in a three phase four wire circuit shall be provided and fixed in a conspicuous position at not more than 2.75 meters above the ground.

(k) A special "caution" notice shall be affixed in a conspicuous place on the door of every high voltage enclosure to the effect that the low voltage supply must be cut off before the enclosure is opened.

(l) Where static condensers are used, they shall be installed on the load side of the fuses and the primary (low voltage) side of the transformers.

(2) The owner or user of any luminous tube sign or similar medium/ high voltage installation shall not bring the same into use without approval of the Licensee.

11. Additional provisions for supply to high voltage electrode boilers

(1) Where a system having a point connected with earth is used for supply of energy at medium or high voltage to an electrode boiler which is also connected with earth, the following conditions shall apply:-

(a) The metal work of the electrode boiler shall be efficiently connected to the metal sheathing and metallic armoring (if any) of the high voltage electric supply line whereby energy is supplied to the electrode boiler.

(b) The supply of energy at medium or high voltage to the electrode boiler shall be controlled by a suitable circuit-breaker so set as to operate in the event of the phase currents becoming unbalanced to the extent of 10 per cent of the rated current consumption of the electrode boiler under normal conditions of operation:

Provided that if in any case a higher setting is essential to ensure stability of operation of the electrode boiler, the setting may be increased so as not to exceed 15 per cent of the rated current consumption of the electrode boiler under normal conditions of operation.

(c) An inverse time element device may be used in conjunction with the aforesaid circuit breaker to prevent the operation thereof unnecessarily on the occurrence of unbalanced phase currents of momentary or short duration.

(2) The owner or user of any medium or high voltage electrode boiler shall not bring the same into use without approval of the Licensee.

12. Supply to X-ray and high frequency installation

(1) Any person who proposes to employ or who is employing energy for the purpose of operating an X-ray or similar high-frequency installation, shall comply with the following conditions:-

(a) Mechanical barriers shall be provided to prevent too close an approach to any medium/high voltage parts of the X-ray apparatus, except the X-ray tube and its leads, unless such medium/ high voltage parts have been rendered shock-proof by being shielded by earthed metal or adequate insulating material.

(b) Where medium/ high voltage generators operating at 300 peak KV or more are used, such generators shall be installed in rooms separate from those containing the other equipment and any step-up transformer employed shall be so installed and protected as to prevent danger.

(c) A suitable switch shall be provided to control the circuit supplying a generator, and shall be so arranged as to be open except while the door of the room housing the generator is locked from the outside.

(d) X-ray tubes used in therapy shall be mounted in an earthed metal enclosure.

(e) Every X-ray machine shall be provided with a milli-ammeter or other suitable measuring instrument, readily visible from the control position and connected, if practicable, in the earthed lead, but guarded if connected in the high-voltage lead.

(f) Notwithstanding the provisions of clause (e), earth leakage circuit breaker of sufficient rating shall be provided on the low voltage side to detect the leakage in such X-ray installations.

(g) This provisions shall not apply to shock-proof portable units or shock-proof self contained and stationary units.

Note: The expression “shock proof”, as applied to X-Ray and high-frequency equipment, shall mean that such equipment is guarded with earthed metal so that no person may come into contact with any live part.

(2) (a) In the case of non-shock-proof equipment, overhead high-voltage conductors, unless suitably guarded against personal contact, shall be adequately spaced and high voltage leads on tilting tables and fluroscopes shall be adequately insulated or so surrounded by barriers as to prevent inadvertent contact.

(b) The low voltage circuit of the step up transformer shall contain a manually operated control device having overload protection, in addition to the over-current device for circuit protection, and these devices shall have no exposed live parts and for diagnostic work there shall be an additional switch in the said circuit, which shall be of one of the following types:-

(i) a switch with a spring or other mechanism that will open automatically except while held close by the operator, or

(ii) a time switch which will open automatically after a definite period of time for which it has been set.

(c) If more than one piece of apparatus be operated from the same medium or high voltage source each shall be provided with a medium or high voltage switch to give independent control.

(d) Low frequency current-carrying parts of a machine of the quenched-gap or open gap type shall be so insulated or guarded that they cannot be touched during operation, the high frequency circuit proper which delivers high-frequency current normally for the therapeutic purposes, being exempted.

(e) All X-ray generators having capacitors shall have suitable means for discharging the capacitors manually.

(f) Except in the case of self-contained units, all 200 peak KV or higher, X-ray generators shall have a sphere gap installed in the high-voltage system adjusted so that it will break down on over-voltage surges.

(3) (a) All non-current carrying metal parts of tube stands, fluroscopes and other apparatus shall be properly earthed and insulating floors, mats or platforms shall be provided for operator in proximity to medium or high voltage parts unless such parts have been rendered shock proof.

(b) Where short wave therapy machines are used, the treatment tables and examining chairs shall be wholly non-metallic.

(4) The owner of any X-ray installation or similar high frequency apparatus shall not bring the same into use without approval of the Licensee:

Provided that exceptions in the case of shock-proof portable X-ray and high-frequency equipment which have been inspected before the commencement of their use and periodically, thereafter.

Chapter 14
OVERHEAD LINES, UNDER GROUND CABLES AND GENERATING STATIONS

1. Material and strength

(1) All conductors of overhead lines, other than overhead telecommunication line erected on same supports carrying a power line, shall have a breaking strength of not less than 350 kg.

(2) Where the voltage is low and the span is of less than 15 meters and is on the consumer's premises, a conductor having an actual breaking strength of not less than 150 kg may be used.

2. Joints

Joints between conductors of overhead lines shall be mechanically and electrically secure under the conditions of operation. The ultimate strength of the joint shall not be less than 95 per cent of that of the conductor, and the electrical conductivity not less than that of the conductor:

Provided that no conductor of an overhead line shall have more than two joints in a span.

3. Maximum stresses: Factors of safety

(1) (a) The owner of every overhead line shall ensure that it has the following minimum factors of safety:-

(i)	for metal supports	- 2.0
(ii)	for mechanically processed concrete supports	- 2.0
(iii)	for hand-molded concrete supports	- 2.5
(iv)	for wood supports	- 3.0

The minimum factors of safety shall be based on such load as would cause failure of the support to perform its function (assuming that the foundation and other components of the structure are intact).

The aforesaid load shall be -

(i) equivalent to the yield point stress or the modulus of rupture, as the case may be, for supports subject to bending and vertical loads.

(ii) the crippling load for supports used struts.

The said owner shall also ensure that the strength of the supports in the direction of the line is not less than one-fourth of the strength required in the direction transverse to the line:

Provided that in the case of latticed steel or other compound structures, factors of safety shall not be less than 2.0 under such broken wire conditions as may be specified by the Commission in this behalf.

(b) The minimum factor of safety for stay-wires, guard-wires or bearer-wires shall be 2.5 based on the ultimate tensile strength of the wire.

(c) The minimum factor of safety for conductors shall be 2, based on their ultimate tensile strength. In addition, the conductor's tension at 32^{0} C, without external load, shall not exceed the following percentages of the ultimate tensile strength of the conductor:-

Initial unloaded tension …….. 35 per cent

Final unloaded tension …….. 25 per cent

Provided that in the case of conductors having a cross section of a generally triangular shape, such as conductors composed of 3-wires, the final unloaded tension at 32^{0} C shall not exceed 30 per cent of the ultimate tensile strength of such conductor.

(2) For the purpose of calculating the factors of safety prescribed in 3(1) above -

(a) the maximum wind pressure shall be such as the relevant authority may specify in each case;

(b) for cylindrical bodies the effective area shall be taken as two-thirds of the projected area exposed to wind pressure;

(c) for latticed steel or other compound structures the wind pressure on the lee side members shall be taken as one-half of the wind pressure on the windward side members and the factors of safety shall be calculated on the crippling load of struts and upon the elastic limit of tension members;

(d) the maximum and minimum temperatures shall be such as the relevant authority may specify in each case.

4. Clearance above ground of the lowest conductor

(1) No conductor of an overhead line, including service lines, erected across a street shall at any part thereof be at a height of less than-

(a) for low voltage lines : 5.8 meters

(b) for medium voltage lines : 6.1 meters

(2) No conductor of an overhead line, including service lines, erected along any street shall at any part thereof be at a height less than-

(a) for low voltage lines : 5.5 meters

(b) for medium voltage lines : 5.8 meters

(3) No conductor of an overhead line including service lines, erected elsewhere than along or across any street shall be at a height less than -

(a) for bare low and medium voltages lines upto and including 11 kV : 4.6 meters

(b) for insulated low and medium voltage lines upto and including 11 kV : 4.0 meters

(c) for high voltage lines above 11 kV : 5.2 meters

(4) For high voltage lines the clearance above ground shall not be less than 5.2 meters plus 0.3 meter for every 33,000 volts or part thereof by which the voltage of the line exceeds 33,000 volts;

Provided that the minimum clearance along or across any street shall not be less than 6.1 meters.

5. Clearance from buildings of low and medium voltage lines and service lines

(1) Where a low voltage, overhead line passes above or adjacent to or terminates on any building, the following minimum clearances from any accessible point, on the basis of maximum sag, shall be observed:-

(a) for any flat roof, open balcony, verandah roof and lean-to-roof-

(i) when the line passes above the building a vertical clearance of 2.5 meters from the highest point, and

(ii) when the line passes adjacent to the building a horizontal clearance of 1.2 meters from the nearest point, and

(b) for pitched roof-

(i) when the line passes above the building a vertical clearance of 2.5 meters immediately under the lines, and

(ii) When the line passes adjacent to the building a horizontal clearance of 1.2 meters.

(2) Any conductor so situated as to have a clearance less than that specified in 5(1) above shall be adequately insulated and shall be attached at suitable intervals to a bare earthed bearer wire having a breaking strength of not less than 350 kg.

(3) The horizontal clearance shall be measured when the line is at a maximum deflection from the vertical due to wind pressure.

For the purpose of this clause, expression “building” shall be deemed to include any structure, whether permanent or temporary.

6. Clearances from buildings of high voltage lines

(1) Where a high voltage overhead line passes above or adjacent to any building or part of a building it shall have on the basis of maximum sag a vertical clearance above the highest part of the building immediately under such line, of not less than-

(a) for high voltage lines upto and including 33,000 volts 3.7 meters

(b) for high voltage lines 3.7 meters plus 0.30 meter for every additional 33,000 volts or part thereof.

(2) The horizontal clearance between the nearest conductor and any part of such building shall, on the basis of maximum deflection due to wind pressure, be not less than-

(a) for medium voltage lines upto and including 11,000 volts 1.2 meters

(b) for high voltage lines above 11,000 volts and up to and including 33,000 volts 2.0 meters

(c) for extra-high voltage lines 2.0 meters plus 0.3 meter for every additional 33,000 volts for part thereof.

For the purpose of this clause express” building” shall be deemed to include any structure, whether permanent or temporary.

7. Conductors at different voltages on same supports

Where conductors forming parts of systems at different voltages are erected on the same supports, the Licensee shall make adequate provision to guard against danger to linesman and others from the lower voltage system being charged above its normal working voltage by leakage from or contact with the higher voltage system and the methods of construction shall be in acceptable practice and the clearances between the conductors of the two systems shall be in accordance with this Code.

8. Erection of or alteration to buildings, structures, flood banks and elevation of Roads

(1) If at any time subsequent to the erection of an overhead line (whether covered with insulating material or bare), any person proposes to erect a new building or structure or flood bank or to raise any road level or to carry out any other type of work whether permanent or temporary or to make in or upon any building, or structure or flood bank or road, any permanent or temporary addition or alteration, he and the contractor when he employs to carry out the erection, addition or alteration, shall if such work, building, structure, flood bank, road or additions and alterations, thereto, would, during or after the construction result in contravention of any of the provisions of this Chapter, give notice in writing of his intention to the Licensee and shall furnish therewith a scale drawing showing the proposed building, structure, flood bank, road, any addition or alteration and scaffolding required during the construction.

(2) (a) On receipt of the notice referred to in 8(1) above or otherwise, the Licensee shall examine whether the line under reference was lawfully laid and whether the person was liable to pay the cost of alteration and if so, send a notice without undue delay, to such person together with an estimate of the cost of the expenditure likely to be incurred to so alter the overhead line and require him to deposit, within 30 days of the receipt of the notice with the Licensee, the amount of the estimated cost.

(b) If the person referred to in 8(1) above disputes the Licensees estimated cost of alteration of the overhead line or even the responsibility to pay such cost the dispute may be referred to the Commission by either of the parties whereupon the same shall be decided by the Commission.

(3) No work upon such building, structure, flood bank, road and addition or alteration thereto shall be commenced or continued until the Licensee is satisfied that the provisions of this Chapter are not likely to be contravened either during or after the aforesaid construction:

Provided that the Licensee may, if satisfied that the overhead line has been so guarded as to secure the protection of persons or property from injury, or risk of injury, permit the work to be executed prior to the alteration of the overhead line or in the case of temporary addition or alteration, without alteration of the overhead line.

(4) On receipt of the deposit, the Licensee shall alter the overhead line within one month of the date of deposit.

(5) In the absence of an agreement to the contrary between the parties concerned, the cost of such alteration of the overhead line laid down shall be estimated on the following basis, namely:-

(a) the cost of additional material used on the alteration giving due credit for the depreciated cost of the material which would be available from the existing line;

(b) the wages of Labor employed in affecting the alteration;

(c) supervision charges to the extent of 15 per cent of the wages mentioned in (b); and

(d) any statutory charges incurred by the Licensee in respect of such alterations.

(6) Where the estimated cost of the alteration of the overhead line is not deposited the Licensee shall be considered as an aggrieved party for the purpose of this clause.

9. Transporting and Storing of material near overhead lines

(1) No rods, pipes or similar materials shall be taken below or in the vicinity of any bare overhead conductors or lines if they are likely to infringe the provisions for clearances stated in this Chapter, unless such materials are transported under the direct supervision of a competent person authorized in this behalf by the owner of such overhead conductors or lines.

(2) Under no circumstances rods, pipes or other similar materials shall be brought within the flash over distance of bare live conductors or lines; and

(3) No material or earth work or agricultural produce shall be dumped or stored or trees grown below or in the vicinity of bare overhead conductors/ lines so as to reduce the requisite safety clearances specified in this Chapter.

10. Clearances: General.

For the purpose of computing the vertical clearance of an overhead line, the maximum sag of any conductor shall be calculated on the basis of the maximum sag in still air and the maximum temperature declared by relevant authority or may be taken as 40^{0} C, whichever is greater. Similarly, for the purpose of computing any horizontal clearance of an overhead line the maximum deflection of any conductor shall be calculated on the basis of the wind pressure by the relevant authority.

11. Routes: Proximity to aerodromes

Overhead lines shall not be erected in the vicinity of aerodromes until the aerodrome authorities have approved in writing the route of the proposed lines.

12. Maximum interval between supports

All conductors shall be attached to supports at intervals not exceeding the safe limits based on the ultimate tensile strength of the conductor and the factor of safety prescribed above:

Provided that in the case of overhead lines carrying low voltage conductors, when erected in, over, along or across any street, the interval shall not exceed 70 meters.

13. Conditions to apply where telecommunication lines and power lines are carried on same supports

(1) Every overhead telecommunication line erected on supports carrying a power line shall consist of conductors each having a breaking strength of not less than 270 kg.

(2) Every telephone used on a telecommunication line erected on supports carrying a power line shall be suitably guarded against lightning and shall be protected by cut-outs.

(3) Where a telecommunication line is erected on supports carrying a high voltage power line, arrangement shall be made to safeguard any person using the telephone against injury resulting from contact, leakage or induction between such power and telecommunication lines.

14. Lines crossing or approaching each other

(1) Where an overhead line crosses or is in proximity to any telecommunication line, either the owner of the overhead line or the telecommunication line, whoever lays his line later, shall arrange to provide for protective devices or guarding arrangements, in a manner laid down in the Code of Practice or the guidelines in this respect, if any, and subject to the following provisions:-

(2) When it is intended to erect a telecommunication line or an overhead line which will cross or be in proximity to an overhead line or a telecommunication line, as the case may be, the person proposing to erect such line shall give one month's notice of his intention so to do along with the relevant details of protection and drawings to the owner of the existing line.

(3) Where an overhead line crosses or is in proximity to another over head line, guarding arrangements shall be provided so to guard against the possibility of their coming into contact with each other.

Where an overhead line crosses another overhead line, clearances shall be as under:-

Minimum clearances in meters between lines crossing each other,

Sl.	Circuit/ Line	Clearance in Meter				
	Lower ↓ Upper →	11 - 66 kV	132 kV	230 kV	400 kV	800 kV
1.	Low Tension	2.5	3.0	4.6	5.5	8.0
2.	11 - 66 kV	2.5	3.0	4.6	5.5	8.0
3.	132 kV	3.0	3.0	4.6	5.5	8.0
4.	230 kV	4.6	4.6	4.6	5.5	8.0
5.	400 kV	5.5	5.5	5.5	5.5	8.0
6.	800 kV	8.0	8.0	8.0	8.0	8.0

Provided that no guarding is required when an high voltage line crosses over another high voltage, medium or low voltage line or a road subject to the condition that adequate clearances are provided between the lowest conductor of the high voltage line and the top most conductor of the overhead line crossing underneath the high voltage line and the clearances as stipulated in this Chapter from the topmost surface of the road is maintained.

(4) A person erecting or proposing to erect a line which may cross or be in proximity with an existing line, may normally provide guarding arrangements on his own line or require the owner of the other overhead line to provide guarding arrangements as referred 14(3) above.

(5) In all cases referred to in the preceding clauses the expenses of providing the guarding arrangements or protective devices shall be borne by the person whose line was last erected.

(6) Where two lines cross, the crossing shall be made as nearly at right angles as the nature of the case admits and as near the support of the lines as practicable, and the support of the lower line shall not be erected below the upper line.

(7) The guarding arrangements shall ordinarily be carried out by the owner of the supports on which it is made and he shall be responsible for its efficient maintenance.

15. Guarding

(1) Where guarding is required under these clauses the provisions of 15(2) to (4) shall apply.

(2) Every guard-wire shall be connected with earth at each point at which its electrical continuity is broken.

(3) Every guard-wire shall have an actual breaking strength of not less than 635 kg and if made of iron or steel, shall be galvanized.

(4) Every guard-wire or cross-connected systems of guard-wires shall have sufficient current-carrying capacity to ensure the rendering dead, without risk of fusing of the guard-wire or wires till the contact of any live wire has been removed.

16. Service-lines from Overhead lines

No Service-line or tapping shall be taken off an overhead line except at a point of support:

Provided that the number of tapping per conductor shall not be more than four unless service bails are used in case of low voltage connections.

17. Earthing

(1) All metal supports and all reinforced and pre-stressed cement concrete supports of overhead lines and metallic fittings attached thereto, shall be permanently and efficiently earthed. For this purpose, a continuous earth wire shall be provided and securely fastened to each pole and connected with earth ordinarily at three points in

every km, the spacing between the points being as nearly equidistance as possible. Alternatively, each support and the metallic fitting attached thereto shall be efficiently earthed.

(2) Metallic bearer wire used for supporting insulated wire of low voltage overhead service lines shall be efficiently earthed or insulated.

(3 Each stay-wire shall be similarly earthed unless insulator has been placed in it at a height not less than 3.0 meters from the ground.

18. Safety and protective devices

(1) Every overhead line, (not being suspended from a dead bearer wire and not being covered with insulating material) erected over any part of street or other public place or in any factory or mine or on any consumer's premises shall be protected with a device for rendering the line electrically harmless in case it breaks.

(2) The owner of every high voltage overhead line shall make adequate arrangements to prevent unauthorized persons from ascending any of the supports of such overhead lines which can be easily climbed upon without the help of a ladder to special appliances, Rails, reinforced cement concrete poles and pre-stressed cement concrete poles without steps, tubular poles, wooden supports without steps, I-sections and channels shall be deemed as supports which cannot be easily climbed upon.

19. Protection against lightning

(1) The owner of every overhead line, substation or generating station which is so exposed as to be liable to injury from lightning shall adopted efficient means for diverting to earth any electrical surges due to lightning.

(2) The earthing lead for any lightning arrestor shall not pass through any iron or steel pipe, but shall be taken as directly as possible from the lightning-arrestor to a separate earth electrode and/or junction of the earth mat already provided for the high and extra high voltage substation subject to the avoidance of bends wherever practicable.

Note-A vertical ground electrode shall be connected to this junction of the earth mat.

20. Unused overhead lines

(1) Where an overhead line ceases to be used as an electric supply line, the owner shall maintain it in a safe mechanical condition or shall remove it.

(2) Where any overhead line ceases to be used as an electric supply line, for more than two years, the owner shall remove it.

Chapter 15
PRECAUTIONS TO BE ADOPTED IN MINES AND OIL-FIELDS

1. Application of Chapter

(1) The clauses in this Chapter shall apply only where energy is used in mines as defined in the Mines Act, 1923.

(2) In mines and oil fields, the clauses in this Chapter shall not apply to apparatus above the ground level except where such apparatus may directly affect the safety of the persons employed in underground, open-cast and oil fields.

2. Responsibility for observance

(1) It shall be the duty of the owner, agent, engineer or manager of a mine, or of the agent, engineer of any company operating in an oil field, or of the owner, engineer of one or more drilled wells situated in an oil field, to comply with and enforce the following clauses and it shall be duty of all persons employed to conduct their work in accordance with such provisions.

(2) Adequate number of authorized supervisors and electricians shall be on duty in every mine or oil-field while energy is being used therein.

3. Notices

(1) On or before the first day of February in every year, in respect of every mine or oil-field, returns giving the size and type of apparatus, together with such particulars in regard to circumstances of its use which may be required by the Licensee.

(2) The persons specified in aforesaid clause 2(1) shall also give to the Licensee not less than seven days' notice in writing of the intention to bring into use any new installation in a mine or oil-field giving details of apparatus installed and its location:

Provided that in case of any additions or alterations to an existing low voltage installation, immediate notice in writing shall be sent to the Licensee before such additions or alterations are brought into use.

(3) This provisions shall not apply to telecommunication or signaling apparatus.

4. Plans

(1) A correct plan, on the same scale as the plan kept at the mine in fulfillment of the requirements of the Mines Act, 1923, shall be available in the office at the mine showing the position of all fixed apparatus and conductors therein, other than lights, telecommunication or signaling apparatus, or cables for the same.

(2) A similar plan on the scale not less than 25 cm. to a km. (1:4000) shall be kept by the manager or owner of one or more wells in any oil-field.

(3) A similar plan on such scale as the Commission/ Government may direct, showing the position of all electric supply lines, shall be kept in the office of any Licensee or other person transmitting or distributing energy in a mine or oil-field.

(4) The plans specified under this clause shall be examined and corrected as often as necessary to keep them reasonably up-to-date. The dates of such examinations shall be entered thereon by the manager or owner of the mine or wells and such plans shall be available to the Licensee at any time.

5.Lighting, communications and fire precautions

(1) In a mine illuminated by electricity, one or more flame safety lamps, or other lights shall be maintained in a state of continuous illumination in all places where, failure of the electric light at any time would be prejudicial to safety.

(2) Efficient means of communication shall be provided in every mine between the point where the switchgear provided under clause 12 and 13 of this Chapter is erected and the shaft bottom or other distributing centers in the mines.

(3) Fire extinguishing appliances of adequate capacity and of an approved type shall be installed and properly maintained in every place in a mine containing apparatus, other than cables, telecommunications and signaling apparatus.

6.Isolation and fixing of transformer, switchgear, etc.

(1) Where necessary to prevent danger of mechanical damage, transformers and switchgear shall be placed in a separate room, compartment or box.

(2) Unless, the apparatus, is so constructed, protected and worked as to obviate the risk of fire, no inflammable material shall be used in the construction of any room, compartment or box containing apparatus, or in the construction of any of the fittings therein. Each such room, compartment or box shall be substantially constructed and shall be kept dry and illuminated and efficient ventilation shall be provided for all apparatus installed therein.

(3) Adequate working space and means of access, clear of obstruction and free from danger, shall, so far as circumstances permit, be provided for all apparatus that has to be worked or attended to and all handles intended to be operated shall be conveniently placed for that purpose.

7.Method of earthing

Where earthing is necessary in a mine it shall be carried out by connection to an earthing system at the surface of the mine, in a manner approved by the Licensee.

8. Protective equipment

(1) In the interest of safety, appropriate equipment shall be suitably placed in the mines for automatically disconnecting supply to any part of the system, where a fault, including an earth fault occurs. Fault current shall not be more than 750 milli-amps in 550/1100 volt systems for underground oil fields and 50 amps in 3.3 kV/6.6 kV systems in open cast mines. The magnitude of the earth fault current shall be limited

to these specified values by employing suitably designed, restricted neutral system of power supply.

(2) The operation of the switchgear and the relays shall be recorded daily at the generating station, substation or switch station in register kept for the purpose.

(3) The effectiveness of the switchgear and the protective system shall always be kept and maintained in working order, shall be checked once every three months and the result thereof shall be recorded in a separate register kept for the purpose.

9. Earthing metal, etc.

(1) All metallic sheaths, coverings, handles, joint boxes, switchgear frames, instrument covers, switch and fuse covers of boxes, all lamp-holders (unless efficiently protected by an insulated covering made of fire resisting material) and the frames and bedplates of generators, transformers and motors (including portable motors), shall be earthed by connection to an earthing system in the manner prescribed in Clause 7 above.

(2) Where cables are provided with a metallic covering constructed and installed in accordance with clause 14(d), such metallic covering may be used as a means of connection to the earthing system.

(3) All conductors of an earthing system shall have conductivity, at all parts and all joints, at least equal to 50 per cent of that of the largest conductor used solely to supply the apparatus, a part of which it is desired to earth:

Provided that no conductor of an earthing system shall have a cross-sectional area less than 0.15 sq. cm. except in the case of the earth conductor of a flexible cable used with portable apparatus where the voltage does not exceed 125 volts, and the cross-sectional area and conductance of the earth-core is not less than that of the largest of the live conductors in the cable.

(4) All joints in earth conductors and all joints in the metallic covering of cables shall be properly soldered or otherwise efficiently made.

(5) No switch, fuse or circuit-breaker shall be inserted in any earth conductor.

(6) This provision shall not apply (except in the case of portable apparatus) to any system in a mine in which the voltage does not exceed 30 volts.

10. Voltage limits

Energy shall not be transmitted into a mine at a voltage exceeding 11,000 volts and shall not be used therein at a voltage exceeding 6,600 volts:

Provided that:

(a) Where hand-held portable apparatus is used, the voltage shall not exceed 125 volts;

(b) Where electric lighting is used:-

(i) in underground mines, the lighting system shall have a mid or neutral point connected with earth and the voltage shall not exceed 125 volts between phases;

(ii) on the surface of a mine or in an open cast mine, the voltage may be raised to 250 volts, if the neutral or the mid point of the system is connected with earth and the voltage between the phases does not exceed 250 volts;

(c) Where portable hand-lamps are used in underground working of mine, the voltage shall not exceed 30 volts;

(d) Where any circuit is used for the remote control or electric inter-locking of apparatus, the circuit voltage shall not exceed 30 volts: Provided that in fixed plants, the said voltage may be permitted upto 650 volts, if the bolted type plug is used.

11. Transformers

Where energy is transformed, suitable provision shall be made to guard against danger by reason of the lower voltage apparatus becoming accidentally charged above its normal voltage by leakage from or contact with the higher voltage apparatus.

12. Switchgear and terminals

Switchgear and all terminals, cable-ends, cable joints and connections to apparatus shall be totally enclosed and shall be constructed, installed and maintained as to comply with the following requirements:-

(a) all parts shall be of mechanical strength sufficient to resist rough usage;

(b) all conductors and contact areas shall be of adequate current-carrying capacity and all joints in conductors shall be properly soldered or otherwise efficiently made;

(c) the lodgment of any matter likely to diminish the insulation or affect the working of any switchgear shall be prevented;

(d) all live parts shall be so protected or enclosed as to prevent persons accidentally coming into contact with them and to prevent danger from arcs, short-circuits, fire, water, gas or oil;

(e) where there may be risk of igniting gas, coal-dust, oil or other inflammable material, all parts shall be so protected as to prevent open sparking; and

(f) every switch or circuit-breaker shall be so constructed as to be capable of opening the circuit, if controls and dealing with any short-circuit without danger.

13. Disconnection of supply

(1) Properly constructed switchgear for disconnecting the supply of energy to a mine or oil-field shall be provided at a point approved by the Licensee. During the time any cable supplying energy to the mine from the aforesaid switchgear is live, a person authorized to operate the said switchgears shall be available within easy reach thereof:

Provided that in the case of gassy coal seam, the main mechanical ventilator operated by electricity shall be interlocked with the switchgear so as to automatically disconnect the power supply in the event of stoppage of main mechanical ventilator.

(2) When necessary in the interest of safety, appropriate apparatus suitably placed, shall be provided for disconnecting the supply from every part of a system.

(3) Where considered necessary by the Licensee in the interest of safety, the apparatus specified in 13(2) above shall be so arranged as to disconnect automatically from the supply any section of the system subjected to a fault.

(4) Every motor shall be controlled by switchgear which shall be so arranged as to disconnect the supply from the motor and from all apparatus connected thereto. Such switchgear shall be so placed as to be easily operated by the person authorized to operate the motor.

(5) Whenever required by the Licensee the motor shall be controlled by a switchgear to disconnect automatically the supply in the event of conditions of over-current, over-voltage and single phasing

14. Cables

All cables, other than flexible cables for portable or transportable apparatus, shall comply with the following requirements:-

(a) All such cables (other than the outer conductor of a concentric cable) shall be covered with insulating material and shall be efficiently protected from mechanical damage and supported at sufficiently frequent intervals and in such a manner as to prevent damage to such cables;

(b) (i) except as provided in clause 14(c), no cables other than concentric cables or two core or multi-core cables protected by a metallic covering or single core cables protected by a metallic covering and which contain all the conductors of a circuit shall be used-

(i.1) where the voltage exceeds 125 volts, or

(i.2) when the Licensee considers that there is risk of igniting gas or coal-dust or other inflammable material, and so directs;

(ii) the sheath of metal-sheathed cables and the metallic armoring of armored cables shall be of a thickness not less than that recommended from time to time in the IEC 60502 or any other appropriate Standard;

(c) Where a medium voltage direct current system is used, two single core cables may be used for any circuit provided that their metallic coverings are bounded together by earth conductors so placed that the distance between any two consecutive bonds is not greater than 30 meters measured along either cable;

(d) The metallic covering of every cable shall be-

(i) electrically and mechanically continuous throughout;

(ii) earthed, if it is required by clause 9(1) to be earthed by a connection to the earthing system of conductivity not less than of the same length of the said metallic covering;

(iii) efficiently protected against corrosion where necessary;

(iv) of a conductivity at all parts and at all joints at least equal to 50 per cent of the conductivity of the largest conductor enclosed by the said metallic covering; and

(v) where there may be risk of igniting gas, coal-dust, or other inflammable material, so constructed as to prevent, as far as practicable, the occurrence of open sparking so as the result of any fault or leakage from live conductors;

(e) Cables and conductors where connected to motors, transformers, switchgear and other apparatus, shall be installed so that :-

(i) they are mechanically protected by securely attaching the metallic covering to the apparatus; and

(ii) the insulating material at each cable end is efficiently sealed so as to prevent the diminution of its insulating properties;

(f) Where necessary to prevent abrasion or to secure gas-tightness, properly constructed glands or bushes shall be provided;

(g) Unarmored cables or conductors shall be conveyed either in metallic pipes or metal casings or suspended from efficient insulators by means of non-conducting materials which will not cut the covering and which will prevent contact with any timbering or metal work. If separate insulated conductors are used, they shall be installed at least 3.75 cm. apart and shall not be brought together except at lamps, switches and fittings.

15. Flexible cables

(1) Flexible cables for portable or transportable apparatus shall be two-core or multi-core (unless required for electric welding), and shall be covered with insulating material which shall be efficiently protected from mechanical injury. If flexible metallic covering is used either as the outer conductor of a concentric cable or as a means of protection from mechanical injury, it shall not be used by itself to form an earth conductor for such apparatus, but it may be used for that purpose in conjunction with an earthing core.

(2) Every flexible cable intended for use with portable or transportable apparatus shall be connected to the system and to such apparatus by properly constructed connectors:

Provided that for high voltage machines a bolted type connector shall be used and the trailing cable shall be suitably anchored at the machine end.

(3) At every point where flexible cables are joined to main cables, a circuit breaker shall be provided which is capable of automatically disconnecting the supply from such flexible cables.

(4) Every flexible cable attached to a portable or transportable machine shall be examined periodically by the person authorized to operate the machine, and if such cable is used underground, it shall be examined at least once in each shift by such person. If such cable is found to be damaged or defective, it shall forthwith be replaced by a cable in good condition.

(5) If the voltage of the circuit exceeds low voltage, all flexible cable attached to any transportable apparatus shall be provided with flexible metallic screening or pliable armoring.

Provided that this provision shall not apply to flexible cables attached to any transportable apparatus used in open cast mines where reeling and unreeling of such cables is necessary as per design features of the equipment.

(6) All flexible metallic screening or armoring specified in 15(5) above shall comply with the provisions of 14(d):

Provided that in the case of separately screened flexible cables the conductance of each such screen shall not be less than 25 per cent of that the power conductor and the combined conductance of all such screens shall in no case be less than that of 0.15 sq. Cm. Copper conductor.

(7) Flexible cable exceeding 90 meters in length shall not be used with any portable or transportable apparatus:

Provided that such flexible cable when used with coal-cutting machines for long wall operation shall not exceed 180 meters in length:

Provided further that the aforesaid cable in case of an open cast mine, when used with electrically operated heavy earth moving machinery shall not exceed 300 meters in length.

(8) Flexible cable, when installed in a mine, shall be efficiently supported and protected from mechanical injury.

(9) Flexible cables shall not be used with apparatus other than portable or transportable apparatus.

(10) Where flexible cables are used they shall detached or otherwise isolated from the source of supply when not in use, and arrangements shall be made to prevent the energizing of such cables by unauthorized persons.

16. Portable and transportable machines

The person authorized to operate an electrically driven coal-cutter, or other portable or transportable machine, shall not leave the machine while it is in operation and shall, before leaving the area in which such machine is operating, ensure that the supply is disconnected from the flexible cable which supplies the machine. When any such machine is in operation, steps shall be taken to ensure that the flexible cable is not dragged along by the machine:

Provided that all portable and transportable machines used in underground mines shall operate on remote control from the concerned switchgear with Pilot Core Protection.

17. Sundry precautions

(1) All apparatus shall be maintained reasonably free from dust, dirt and moisture, and shall be kept clear of obstruction.

(2) All apparatus other than portable and transportable apparatus shall be housed in a room, compartment or box so constructed as to protect the contents from damage occasioned by falling material or passing traffic.

(3) Inflammable or explosive material shall not be stored in any room, compartment or box containing apparatus, or in the vicinity of any apparatus.

(4) Should there be a fault in any circuit, the part affected shall be made dead without delay and shall remain so until the fault has been remedied.

(5) While lamps are being changed the supply shall be disconnected.

(6) No lamp holder shall be in metallic connection with the guard or other metal work of a portable hand lamp.

(7) The following notices in Bengali and English, so designed and protected as to be easily legible at all times, shall be exhibited:-

(a) at all places where electrical apparatus is in use, a notice forbidding unauthorized person to operate or otherwise interfere with such apparatus;

(b) at those places in the interior or at the surface of the mine where a telephone or other means of communication is provided, a notice giving full instructions to persons authorized to effect the disconnection, at the surface of the mine, of the supply of energy to the mine.

(8) All apparatus, including portable and transportable apparatus, shall be operated only by those persons who are authorized for the purpose.

(9) Where a plug-and-socket-coupling other than of bolted type is used with flexible cables, an electrical inter-lock or other approved device shall be provided to prevent the opening of the coupling while the conductors are live.

18. Precautions where gas exists

(1) In any part of a coal-seam of any degree gassiness –

(a) all cables shall be constructed, installed, protected, operated and maintained in such a manner as to prevent risk of open sparking;

(b) at any place which lies in-bye of the last ventilation connection, all signaling, telecommunication and remote control circuits shall be so constructed, installed, protected, operated and maintained as to be intrinsically safe;

(c) all apparatus including portable and transportable apparatus including lighting fittings used at any place which lies in bye of the last ventilation connection shall be flame-proof.

(d) all electric lamps shall be enclosed in flame-proof enclosures.

(2) In any oil mine or oil-field, at any place within the Danger Areas, -

(a) all signaling, telecommunication and remote control circuits shall be so constructed, installed, operated, protected and maintained as to be intrinsically safe;

(b) all cables shall be so constructed, installed, operated and maintained as to prevent risk of open sparking;

(c) all apparatus including portable and transportable apparatus shall be flame-proof;

(d) all electric lamps shall be enclosed in flame-proof enclosures.

(3) In any coal-seam of any degree gassiness or the danger zone of oil-mine the supply shall be discontinued, -

(a) immediately, if open sparking occurs;

(b) during the period required for examination or adjustment of the apparatus, which would necessitate the exposing of any part liable to open sparking;

(c) the supply shall not be reconnected until the apparatus has been examined by the electrical supervisor or one of his duly appointed assistants until the defect, if any, has been remedied or the necessary adjustment made;

(d) a flame safety lamp shall be provided and maintained in a state of continuous illumination near an apparatus (including portable or transportable apparatus) which remains energized and where the appearance of the flame of such safety lamps indicates the presence of inflammable gas, the supply to all apparatus in the vicinity shall be immediately disconnected and the incident reported forthwith to an official of the mine; and such apparatus shall be interlocked with the controlling switch in such a manner as to disconnect power supply automatically in the event of percentage of inflammable gas exceeding one and one quarter in that particular district:

Provided that where apparatus for automatic detection of the percentage of inflammable gas or vapor are employed in addition to the flame safety lamps, such apparatus shall be maintained in perfect order.

(4) (i) In any part of a coal-seam of any degree of gassiness or in any hazardous area of an oil-mine, if the presence of inflammable gas in the general body of air is found any time to exceed one and one quarter 3[per cent], the supply of energy shall be immediately disconnected from all cables and apparatus in the area and the supply shall not be reconnected so long as the percentage of inflammable gas remains in excess of one and one quarter per cent.

In an oil mine where concentration of inflammable gas exceed 20% of its lowest explosive limit, the supply of electric energy shall be cut-off immediately from all cables and apparatus lying within 30 meters of the installation and all sources of ignition shall also be removed from the said area and normal work shall not be resumed unless the area is made gas-free:

Provided that such disconnection shall not apply to intrinsically safe environmental monitoring scientific instruments.

(ii) Any such disconnection or reconnection of the supply shall be noted in the Log sheet which shall be maintained and shall be reported to the Licensee on demand.

19. Shot-firing

(1) When shot-firing is in progress adequate precautions shall be taken to protect apparatus and conductors other than those used for shot-firing from injury.

(2) Current from lighting or power circuits shall not be used for firing shots.

(3) The provisions of clause 15 of this Chapter shall apply in regard to the covering and protection of shot-firing cables, and adequate precautions shall be taken to prevent such cable touching other cables and apparatus.

20. Signaling

Where electrical signaling is used –

(a) adequate precautions shall be taken to prevent signal and telephone wires coming into contact with other cables and apparatus;

(b) the voltage used in any one circuit shall not exceed 30 volts; and

(c) contact-makers shall be so constructed as to prevent the accidental closing of the circuit.

(d) bare conductors, where used shall be installed in suitable insulators.

21. Haulage

Haulage by electric locomotives on the overhead trolley-wire system, at medium or low voltage, and haulage by storage battery locomotives may be used with the prior consent in writing of the Licensee, and subject to such conditions as he may impose in the interests of safety.

22. Earthing of neutral points

Where the voltage of an alternating current system exceeds 30 volts, the neutral or mid-point shall be earthed by connection to an earthing system in the manner prescribed in Clause 7 above.

Provided that when the system concerned is required for blasting and signaling purposes, the provisions of this clause shall not apply:

Provided further that in case of unearthed neutral system adequate protection shall be provided with the approval of the Licensee.

23. Supervision

(1) Every person appointed to operate, supervise, examine or adjust any apparatus shall be competent to undertake the work which he is required to carry-out as directed by the engineer.

(2) The electrical supervisor shall be responsible for the proper performance of the following duties, by himself or by electrician appointed:-

(a) through examination of all apparatus (including the testing of earth conductors and metallic coverings for continuity) as often as may be necessary to prevent danger;

(b) examination and testing of all new apparatus, and of all apparatus, re-erected in the mine before it is put into service in a new position.

(3) In the absence of any electrical supervisor for more than three days, the owner, agent or manager of the mine or the agent or owner of one or more oil-wells in an oil-field, shall appoint in writing a substitute electrical supervisor.

(4) The electrical supervisor or the substitute electrical supervisor appointed under 23(3) to replace him shall be personally responsible for the maintenance at the mine or oil-field, of a log-book made up of the daily log sheets.

24. Exemptions

The provisions of this Chapter shall not apply in any case, where, on grounds of emergency or special circumstances, exemption is obtained from the Commission. In granting any such exemption the Commission may prescribe such conditions as it thinks fit.

Chapter 16
CONSUMER PROTECTION

10.1 Consumer's Representation

A consumer aggrieved by any action or lack of action by the *Authorized Officer* under this Code may file a representation within one year of such action or lack of action to the designated authority of the Licensee, above the rank of *Authorized Officer* who shall pass final orders on such a representation within *15(fifteen)* days of receipt of the representation.

A consumer aggrieved by the decision or lack of decision of the designated authority of the Licensee may file a representation within 45(forty five) days to the chief executive officer of the Licensee who shall pass final orders on such a representation within *15(fifteen)* days of receipt of the representation.

In respect of orders or lack of orders of the chief executive officer of the Licensee on matters provided under the Act, the consumer may make a reference to the Commission under the Act.

10.2 Citizen Charter

The Licensee shall be responsible for fulfilling the Distribution Performance Monitoring Standards, which includes the provision of Customer Complaint Handling Procedures and also the Citizen Charter that shall be available and displayed, in Bengali and English, at each *Electric Supply Division/ Unit office and* Bill Collection *centre*.

10.3 Professional Negligence, Misconduct, Offence, etc.

If the authorized employee of the Licensee is found guilty of misconduct, negligence or offence; departmental proceedings will be conducted in accordance with the Service Rules under which his service is governed.

Failing to maintain the stipulated time set under different clauses of this Code without assigning reasons and intimating the same to the consumer/ applicant, will be considered as negligence on the part of the Authorized employee.

If any of such charge/ guilt is established, the person concern shall be declared unfit for customer service activities.

Chapter 17
FINANCIAL STANDARDS FOR DISTRIBUTION

11.1 Introduction

This Chapter applies to all Distribution Licensee and Users including Distribution System Owner, Open Access Customer/ Consumers and Generators connected to Distribution System.

11.2 Objective:

(a) To specify the financial capability standards for the Licensee;

(b) To safeguard against the risk of financial non-performance;

(c) To ensure the affordability of electric power supply while maintaining the required quality and reliability; and

(d) To protect the public interest.

11.3 Financial Standards for Distribution Licensee

1. Financial Ratios

The following Financial Ratios shall be used to evaluate the Financial Capability of the Licensee:

(a) Leverage Ratios;
(b) Liquidity Ratios;
(c) Financial Efficiency Ratios; and
(d) Profitability Ratios.

2. Leverage Ratios

Leverage Ratios shall include the following:

(a) Debt Ratio;
(b) Debt-Equity Ratio; and
(c) Interest Cover.

The Debt Ratio shall measure the degree of indebtedness of the Licensee. The Debt Ratio shall be calculated as the ratio of total liabilities to total assets.

The Debt Ratio shall be used to measure the proportion of assets financed by creditors. The risk addressed by the Debt Ratio is the possibility that the Licensee cannot pay off interest and principal.

The Debt Ratio can also be calculated as the ratio of Long-Term Debt plus Value of Leases to Long-Term Debt plus Value of Leases plus Equity. Equity is the sum of Outstanding Capital Stock, Retained Earnings, and Revaluation Increment.

The Debt-Equity Ratio shall indicate the relationship between long-term funds provided by creditors and those provided by the Licensees. The Debt-Equity Ratio

shall be calculated as the ratio of the sum of Long-Term Debt plus Value of Leases to Equity. Equity shall be the sum of Outstanding Capital Stock, Retained Earnings, and Revaluation Increment.

The Debt-Equity Ratio shall be used to compare the financial commitments of creditors relative to those of the Licensees.

The Debt-Equity Ratio shall be used as a measure of the degree of financial leverage of the Licensee.

The Interest Cover shall measure the ability to service its debts. The Interest Cover shall be computed as the ratio of Earnings Before Interest and Taxes (EBIT) plus Depreciation to Interest plus Principal Payments.

The Interest Cover shall also be used as a measure of financial leverage for the Generator that focuses on the extent to which contractual interest and principal payments are covered by earnings before interest and taxes plus depreciation. The Interest Cover is identical to Debt Service Coverage Ratio because principal payments due during the year are included in the denominator of the ratio.

3. Liquidity Ratios

Liquidity Ratios shall include the following:

(a) Current Ratio; and

(b) Quick Ratio.

The Current Ratio shall measure the ability of the Licensee to meet short-term obligations. The Financial Current Ratio shall be calculated as the ratio of Current Assets including inventories to Current Liabilities. Current Assets shall consist of cash and assets that can readily be turned into cash by the Licensee. Current Liabilities shall consist of payments that the Licensee is expected to make in the near future.

The Current Ratio shall be used as a measure of the margin of liquidity of the Licensee.

The Quick Ratio shall measure the ability of the Licensee to satisfy its short-term obligations as they become due. The Quick Ratio shall be calculated as the ratio of the sum of Cash, Marketable Securities, and Receivables to the Current Liabilities.

The Quick Ratio shall be used to measure the safety margin for the payment of current debt of the Licensee if there is shrinkage in the value of cash and receivables.

4. Financial Efficiency Ratios

Financial Efficiency Ratios shall include the following:

(a) Sales-to-Assets Ratio; and

(b) Average Collection Period.

The Sales-to-Assets Ratio shall measure the efficiency with which the Licensee uses all its assets to generate sales. The Sales-to-Assets Ratio shall be calculated as the ratio of Sales to Average Total Assets. The Average Total Assets shall be

determined using the average of the assets at the beginning and end of the year. The higher the Sales-to-Assets Ratio, the more efficiently the Licensee's assets have been used.

The Average Collection Period (ACP) shall measure how quickly other entities pay their bills to the Licensee. The Average Collection Period shall be calculated as the ratio of Average Receivables to Daily Sales. The Average Receivables shall be determined using the average of the receivables at the beginning and end of the year. Daily Sales shall be computed by dividing Annual Sales by 365 days.

The Average Collection Period shall be used to evaluate the credit and collection policies of the Licensee.

Two computations of the Average Collection Period shall be made:

(a) ACP with government accounts and accounts under litigation; and
(b) ACP without government accounts and accounts under litigation.

5. Profitability Ratios

Profitability Ratios shall include the following: (a) Net Profit Margin; and (b) Return on Assets.

The Net Profit Margin shall measure the productivity of sales effort. The Net Profit Margin shall be calculated as the ratio of Net Profits After Taxes to Sales. The Net Profits After Taxes shall be computed as Earnings Before Interest and Taxes minus Tax (EBIT – Tax).

The Net Profit Margin shall be used to measure the percentage of Licensee's sales that remain after all costs and expenses have been deducted.

The Return on Assets shall measure the overall effectiveness of the Licensee in generating profits from its available assets. The Return on Assets shall be calculated as the ratio of Earnings Before Interest and Taxes minus Tax to the Average Total Assets. The Average Total Assets shall be computed as the average of the assets at the beginning and end of the year.

6. Submission and Evaluation

Licensee shall submit to the Commission true copies of audited balance sheet and financial statement for the preceding financial year on or before December 31 of the current year.

Licensee shall submit to the Commission the average power consumption for each class of customers for the preceding financial year. This requirement is due on or before December 31 of the current year.

Failure to submit to the Commission the requirements shall serve as grounds for the imposition of appropriate sanctions, fines, penalties, or adverse evaluation.

All submissions are to be certified by a duly authorized officer.

11.4 Uniform System of Accounts (USoAC)

The Licensee shall follow the accounting procedures of the Commission namely the Uniform System of Accounts (USoAC) in fulfilling the requirements of Financial Standard of Transmission stated in this Distribution Code.

Anything of the Financial Standard of Distribution contradictory to the provisions/ procedures of the USoAC then the provisions/ system of the later shall prevail.

Chapter 18

MISCELLANEOUS

Power to Remove Difficulties

If any difficulty arises in giving effect to any of the provisions of these Regulations, the matter may be referred to the Commission who after consulting the parties affected may pass any general or special order, not inconsistent with the provisions of the Act, which appears to it to be necessary or expedient, for the purpose of removing the difficulty.

Saving of the Power of the Licensee Relating to its Business of Supplying Electricity

It is open to any Licensee to frame and adopt such provisions, consistent with the provisions of the Act and other enactments for the time being in force, and the terms and conditions of the license relating to supply of electricity, at variance with the provisions of this Code with the aim of providing a more consumer-friendly service:

Provided that the provisions so framed and adopted shall have effect subject to prior approval of the Commission in writing.

Overriding Effect

Nothing contained in this Code shall have effect in so far as it is inconsistent with the provisions of the Electricity Act, 1910 and Rules framed thereunder as amended by the Act.

Chapter 19

JURISDICTION OF COURT AND SERVICE OF NOTICE

All proceedings arising out of this Code and the agreement made thereunder shall be filed only in such Court under whose jurisdiction the agreement was executed subject to the overall jurisdiction of the High Court.

13.1 Service of Notice

Wherever a provision has been made under this Code for service of notice on the consumer, such service may be effected either by despatching to him the notice by registered post or by personal delivery. In case of individual consumers service on the consumers spouse or his representative and in case of a firm, company or corporation service on the Managing Director, Director or Principal Officer or an authorized person of such concern shall be sufficient.

Where a consumer refuses or avoids receiving notice, the notice may be affixed at a conspicuous place of the premises of the consumer in the presence of two witnesses and an identifier and in such case; an endorsement shall be made to that effect on the copy of the notice. Such service by affixture shall be deemed to be sufficient service.

List of Annexure

Sl.No	Title of Annexure	Annexure No.
1.	Load Data for demands of 5 MW and above to be furnished by the User/Consumer	Annexure-1
2.	System Data to be provided to the intending User/Consumer with contract demand of 5MW or more	Annexure-2
3.	System Data Of Whole Licensee System	Annexure-3
4.	Embedded Generator Unit-Wise Data	Annexure-4
5.	Site Responsibility Schedule	Annexure-5
6.	Essential Loads And Priority of Restoration	Annexure-6
7.	Operational Event Reporting	Annexure-7
9.	Form for Reporting Electrical Accidents	Annexure-8

Annexure-1

Load Data for demands of 5 MW and above to be furnished by the User/Consumer (clause 4.7 sub-clause 5)

Name & Address of User/Consumer:

S.No	Description	Details
1.	Type of Load	(State whether: - steel melting furnace loads, Rolling mills, traction loads, other industrial loads, pumping loads, etc.)
2.	Maximum Demand (kVA) and Annual Energy Requirement in kWh	
3.	Year/Years by which full/part Supply is required	
4.	Location of Load	(Furnish location map to scale, indicate details of Consumer category/ capacity, nearest Railway Station, and nearest EHV substation)
5.	Rated Voltage at which supply is required. Whether Single phase or Three-phase supply required	
6.	Type of supply	Normal/ Alternate/ Dedicated (specify details)
7.	Description of Equipment	
A.	Motors: State purpose and number of installations, voltage and kW rating, starting current, type of motors, types of drives and control arrangements.	
B.	Heating : Type and kW Rating	
C.	Furnace : Type, Furnace Transformer Capacity and Voltage Ratio	
D.	Electrolysis : Purpose, kVA capacity	
E.	Lighting : kW Demand	
8.	Sensitivity of demand to fluctuations in voltage and frequency of supply at the time of Peak Demand (Give details)	

9.	Voltage sensitivity	MW/kV MVAr/kV
10.	Frequency sensitivity	MW/Hz MVAr/Hz
11.	Phase unbalance imposed on system: Maximum (%) Average (%)	
12.	Maximum harmonic content imposed (Furnish details of devices included with the system for the suppression of harmonics, also furnish the harmonic currents of different orders drawn by each device without filters)	
13.	Details of any loads, which may cause Demand fluctuations of greater than 10 MW at the point of connection, including Voltage Dips (percentage) lasting for 5 seconds and more. (Give details)	

Annexure-2

System Data to be provided to the intending User/ Consumer with contract demand of 5MW or more (Clause 4.7 sub-clause 5):

1) 33 kV and above distribution line data relevant to the location where connection has been applied/ feasible to provide.
2) Details of metering system and protection system proposed.
3) Fault levels at which the consumer should design his equipment.
4) Fault clearance time for consumer's switch gear and
5) Substation fault level.

Annexure 3

System Data of Whole Licensee System
(Clause 4.7 -5)

1. Topological map of Bangladesh marking boundaries of Area of supply of the licensee.
2. Distribution map of the licensee drawn to scale of not less than 1 Cm to 2.5 Km showing the existing 11 kV and 33 kV lines and substations within the area of supply. Lines and substations under construction or planned for the next five years shall be shown in dotted lines.
3. Single line diagram of the distribution system showing line length, conductor sizes, substation capacity, capacitor sizes with locations of auto-recloser/ Kiosks/ Breakers etc.
4. Details of Metering and relaying at 33/11 kV substations.
5. Details of Grid substations at the point of interconnections as follows:
    a) MVA Capacity and voltage.
    b) Number of transformers, capacity of each transformer, voltage ranges of taps.
    c) Fault level at substation busbars,
    d) Bus impendence
    e) Substation layout diagram.

Draw at interconnection points: Maximum and Minimum MW drawn during last six months from each interconnection with the transmission system or with other distribution licensees.

Annexure 4

EMBEDDED GENERATOR UNIT-WISE DATA

(Clause 4.6 –2)

Name & Address of Generating Company:	
Location of Generating Plants (s):	
Terminal Volts (kV);	
Rated kVA;	
Maximum and minimum Active Power sent out (kWso) Reactive Power requirements (kVAr), if any;	
Type of Generating Plant—synchronous, asynchronous, etc.;	
Fault Level contribution	
Method of voltage control;	
Generator transformer details, if applicable;	
Requirements for Top-up supplies and/or standby supplies;	
Generator kW/ kVAr capability chart (at lower voltage terminals);	
Type of excitation system;	
Inertia constant kW secs/kVA;	
Stator Resistance;	
Direct-Axis Reactance (Sub-transient, Transient & Synchronous);	
Quadrature-Axis Reactance (Sub-transient & Synchronous);	
Zero Sequence (Resistance & Reactance);	
Negative Sequence (Resistance & Reactance);	
Generator Transformer (Resistance, Reactance, kVA Rating, Tap Arrangement, Vector Group, Grounding, Connection & % Impedance);	
Automatic Voltage Regulator block diagram, including the data on the gains (forward and feedback), time constants, and voltage control limits;	
Speed Governor block diagram detailing the governor fly-ball, if applicable, and control system and Prime Mover time constants, together with the turbine rating and maximum power;	
Standby Requirements:	

Rated Capacity and Minimum Generation of each Generating Unit and Power Station in kW for standby capacity requirements.	
Generating Unit and Power Station auxiliary Demand (Active Power and Reactive Power) in kW and kVAr, at rated capacity conditions. For Customers Self-Generating Plant, this shall include Top-up requirements.	
Interface Arrangements- the means of synchronization between the Distributors and User;	
Details of arrangements for connecting to ground that part of the Generator's System directly connected to the Distribution System;	
The means of connection and Disconnection which are to be employed	
Precautions to be taken to ensure the continuance of safe conditions should any grounded neutral point of the Generator's System become disconnected from ground.	

Annexure 5

CONNECTION AGREEMENT
SITE RESPONSIBILITY SCHEDULE
(Clause 5.5- 1)

Name of Substation/Location :

Site Owner :

Name of co-ordination officer of site :

Telephone No. :

Fax No. :

Item of Plant / Apparatus	Plant Owner	Safety Responsibility	Control Responsibility	Operation Responsibility	Maintenance Responsibility	Remarks
…kV Switchyard						
All equipment including bus-bars						
Feeders						
Generating Units						
Other (to be specified)						

Signatures:

_____
Plant Owner

_____ _____
Safety Responsibility Officer Control Responsibility Officer

_____ _____
Operation Responsibility Officer Maintenance Responsibility Officer

Annexure 6

ESSENTIAL LOADS AND PRIORITY OF RESTORATION

(Clause 6.6-1)

Priority	Type of Load	Name of the Substation feeding such loads
1.	Hospitals, Water Works	
2.	Defense Establishments	
3.	Radio, Television Stations and Telecommunication Exchanges/ Stations	
4.	Air Port	
5.	Important Towns	
6.	Police Stations	
7.	Fire Stations	
8.	Process Industries and Mining	

Annexure 7

OPERATIONAL EVENT REPORTING
(Clause No. 6.6-1)

Name of the reporting Organization:

Date and Time of reporting the /event incident

1. Date and time of incident
2. Location of incident (Name of Substation/ Line etc.)
3. Description of incident
4. System parameters before the incident
   (Voltage, Frequency, Flows, Generation, etc.)
5. Failure of protection at EHV GSS if any and relay indications.
6. Damage to equipment
7. Supplies interrupted and duration, if applicable
8. Amount of Generation lost, if applicable
9. Possibility of alternate supply arrangement
10. Estimate of time to return service
11. Cause of incident
12. Any other relevant information and remedial action taken
13. Recommendations for future improvement/ repeat incident

Annexure 8

FORM FOR REPORTING ELECTRICAL ACCIDENTS

See Section 33(1) of Electricity Act 1910

(To be furnished by Shift-in-Charge of the concerned Utility where accident occurred)

1. Date and Time of accident
2. Place of accident

   (Village/ Locality/Area, Thana and District)
3. System and voltage of supply

   (Whether EHV/ HV/ MV/ LV line, substation/ generating station/ consumer's installations/ service lines/ other installations)
4. Designation of the Officer-in-charge (in whose jurisdiction the accident occurred)
5. Name of owner/user of energy in whose premises the accident occurred.
6. Details of victim(s)

   (a) Human

Sl. No.	Name	Father's Name	Sex of victim	Full Postal Address	Approx. Age	Fatal/ Non-Fatal

   (b) Animal

Sl. No.	Description of Animals	Number(s)	Name of Owner(s)	Address of Owner(s)	Fatal/ Non-Fatal	Remarks

7. In case the victim(s) is/are employee(s):
   (a) designation of such person(s)
   (b) brief description of the job undertaken, if any.
   (c) Whether such person/ persons was/ were allowed to work on the job.

8. In case the victim(s) is/are employee(s) of a licensed contractor
   (a) Did the victim(s) possess any electric workman's permits(s), supervisor's certificate of competency issued under Electricity Rule? If yes give number and date of issue and the name of issuing authority.
   (b) Name and designation of the person who assigned the duties of the victim(s)

9. In case of accident in the Distribution Licensee system, was the Permit To Work (PTW) taken?

10 Describe fully the nature and extent of injuries, e.g. fatal/ disablement (permanent or temporary) of any portion of the body or burns or other injuries.
In case of fatal accident, was the post mortem performed?

11 Detailed causes leading to the accident
(To be given in a separate sheet annexed to this form)

12 Action taken regarding first-aid, medical attendance etc. immediately after the occurrence of the accident (give details)

13 Whether the District Magistrate and Police Station concerned have been notified of the accident (if so, give details)

14 Steps taken to preserve the evidence in connection with accident to the extent possible.

15 Names and designation(s) of the person(s) assisting, supervising the person(s) killed or injured.

16 What safety equipments were given to and used by the person(s) who met with this accident (e.g. rubber gloves, rubber mats, safety belts and ladders etc.)?

17 Whether isolating switches and other sectionalizing devices were employed to deaden the section for working on the same? Whether working section was earthed at the site of work?

18 Whether the work on live lines was undertaken by authorized person(s)?

If so, the name and the designation of such

person(s) may be given.

19 Whether the artificial resuscitation treatment work on live lines was undertaken by authorized person(s)?
If yes, how long was it continued before its abandonment?

20 Names and designations of persons present at and witnessed the accident.

21 Any other information remarks.

Place : _____
Time : _____
Date : _____
Signature

Signature : _____
Name : _____
Designation : _____
Address : _____

Annexure 9

Form-1
Agreement

Name of Electric Utility
Electric Supply Division/ Unit
Address:……Tel:……Fax /Email:……

Electricity Supply Agreement

This agreement is executed on …… day…..… month …… year between *Name of the Electric Distribution Licensee* , hereinafter termed as Licensee,

And

Mr. / Mrs. / Messer's : ……
Father / Husband's Name : ……
Address : ……

hereinafter termed as the Consumer.

The Licensee shall supply and sale maximum …… KW of electric energy for Consumer's use under ..... category in the premises mentioned in annexure-A attached with this agreement. The Consumer shall abide by the following terms and conditions for purchase and use electricity from the Licensee.

1. Type of Service

a) The supply shall be Alternating current (A.C), ……Volts, …… Phase, … Wires and 50 Hertz.

b) The Consumer shall not use electricity supplied under this agreement for any other purpose except as mentioned herein and shall not sale the electricity to other consumers.

c) The Customer shall arrange full security to protect installed energy meters and its seal.

2. Electric Bill Payment:

a) The Consumer shall be bound to comply with the Licensee's Conditions of Supply and pay regularly the bill for used electricity at the Tariff in force from time to time.

b) The Consumer shall pay bills regularly to the banks (as indicated in the bills) within the stipulated time otherwise late payment surcharge/ fee shall be imposed at the prevailing rates.

c) If the Consumer fails to pay electricity bill for 2(two) months, the service connection shall be liable to disconnection. Arrear bills plus reconnection and disconnection fees shall be charged for reconnection.

3. Accessibility to Premises:

The Consumer shall allow the Licensee's Inspector free access to his/her premises to conduct meter check, serve electricity bills, survey, estimate, inspection and test, restore or disconnect supply.

4. Consistency of Electricity Supply:

The Licensee shall give utmost effort to supply continuous and reliable electricity to the Consumer but supply disrupted due to natural calamity, government's instruction, load shedding, employee's strike, accident, right of way and maintenance of network system and if the Consumer incurs any loss the Licensee shall not be liable and the Consumer shall not even claim.

5. Peak-Load hours:

The customer shall comply with the restrictions of using electricity during peak load hours imposed by the Licensee. Period during 17:00 hrs to 23:00 hrs in the evening will be considered as peak load hours. During this period the Consumer shall comply with the lawful instructions of the Licensee in using of electricity in mill/ factory/ workshop/ pumps/ welding machine otherwise the Licensee will take appropriate measures as authorized in the License.

6. Power Factor:

The Consumer shall maintain Power factor (P.F) near to unity (1.0). If the average Power factor in any billing period applicable category of consumers falls below the limit set by BERC, penalty shall be imposed as per approved rates and methods. The customer shall continue to the pay the penalty until improvement of Power factor has been achieved to the value as mentioned above.

7. Security Deposit:

Service connection facilities will be installed only when a sum of Tk. …… (*in word*) is deposited as security (non refundable)

8. Successor & Liability:

This agreement shall be equally applicable for both party's successor and legal representative and shall enjoy the benefits as well as bear the liabilities.

9. Term of Agreement:

This agreement shall be come into force from the date of signing and both party shall equally honor and comply all the terms and conditions of the agreement. The Consumer may terminate this agreement by serving 3 (Three) months written notice. Similarly, the Licensee may terminate this agreement on violation of terms of this agreement by the Consumer.

Upon agreed all the terms and conditions as stated above both parties have signed and executed this agreement from the date as mentioned above.

Signature: ……
(For Licensee)
Designation:…….

(office Seal)

Witness:

Signature:……..
(For Customer)
Address:…….
……..
……..
.……

Witness:

Form – 2 *Annexure 10*

Requisition for 230/400 V Connection

Name of Electric Utility
Commercial Division Office

Address:……Tel:……Fax/Email:……

Requisition No.:…… **Date:** ……..

Name of Applicant		**Contact Tele**	
Father / Husband's Name			

Type of Premise & Address where supply is required

(Please Put tick mark in the item applicable box)

	Residential		Theatre	**Address where supply is required**
	Office		Educational	
	Factory/Ind		Club/ Charitable	
	Shop		Agri Pumps	
	Hospital		Others	Pole No: Transformer No:

Date by which supply is required		**Electricity Bill No.**	
Meter No. on Service		**Installation No.**	

(Please Produce one recent bill for Inspection)

Landlord/Landlady's Name	
Address	

This Requisition is for (Please put tick mark against the item applicable box)

a)		New Connection (No Cable)	b)		Reconnection (Cable Existing)
c)		More Load (Extension)	d)		Separate Connection for Sub-division
e)		Temporary Supply, from ……..to ……..			
f)		Shifting of Service Cable	g)		Shifting of Meters
h)		Particulars of Shifting:			

(For New Service, submit ground floor and site plans)

Space For Official Use	
Registration Fee Receipt No. ……	
Tasks	**Initials & Date**
Site Visit	
Tech Study	
Estimate	
Executive Order	
Installed Meter No. & Prsnt Reading	…… ……
Other Comments	
Send to : Billing Section For Database Entry	

Wiring Work is Entrusted to the following Licensed Electrical Contractor:

Name:				**Address:**				**Tele:**		
Load Particulars	**Sl**	**Des of Load**	**KW**	**Sl**	**Des of Load**	**KW**	**Sl**	**Des of Load**	**KW**	**Total sum KW**
	a)	Lamps + Fan		c)	TV / Computer		e)	Pump/Motor		
	b)	Fridge		d)	A.C + Iron		f)	Others		

Declaration: I hereby require you to supply Electricity to the Premises mentioned above occupied by me and situated within your licensed Area of Supply within such period as the Regulator may allow.

I further require you to supply me with necessary meters on hire. If called upon to do so, I agree to give you security for the price of the meters.

I also agree to abide by your **Conditions of Supply** and pay for the Electricity at the Tariffs in force from time to time.

I agree to use the energy for the purpose mentioned herein above. If at any time energy supplied to me wholly or any part thereof is used by me for any other purpose for which higher method of charging is in force. I shall be liable to be charged for the whole of the energy registered as consumed at the higher rate.

Place…… Date…… Signature of Applicant: ……

Note: Incorrect or incomplete information on this form may lead to delay or even cancellation of this requisition. In case of difficulty in filling this form Contact Consumers Services Division.

Location of Meter : Should be Easy Accessible

(By Order of the Commission)
Sd/- ILLEGIBLE
Secretary,
Bangladesh Energy Regulatory Commission