

# **Bhutan Electricity Authority**



**Distribution Code 2020**

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## **Purpose, Scope and Commencement**

### **1. Introduction**

- i.) This regulation may be cited as the Bhutan Electricity Authority Distribution Code (Amendment) Regulation 2020.
- ii.) The purpose of this regulation is to enumerate the terms and conditions of supply of electrical energy to Customers served by Distribution Licensees and to provide broad guidelines to both Customers and Distribution Licensees in ensuring uniform practices of standard of supply and rules in extending and maintaining the electricity supply.

### **2. Commencement**

This regulation shall come into force from 18<sup>th</sup> May, 2020.

### **3. Objective**

The objective of the Distribution Code is to regulate the following activities so that these are undertaken in a safe, reliable and efficient manner:

- i.) The distribution of electricity by a Distribution Licensee for supply to its Customers;
- ii.) The connection of a Customer's electrical installation to the Distribution System of a Distribution Licensee;
- iii.) The connection of Embedded Generator to the Distribution System of a Distribution Licensee; and
- iv.) Transfer of electricity between Distribution Systems.

### **4. Scope**

- i.) The provisions of this Code shall be applicable to the Licensees and Users of the Licensee's Distribution System as detailed except where an exemption is granted by the Authority. Further any Licensee and Consumers connected or seeking connection with the Distribution System shall comply with the Distribution Code.
- ii.) This regulation shall extend to the whole of the Kingdom of Bhutan.

### **5. Dispensation**

Nothing contained in this Distribution Code shall have effect, in so far as it is inconsistent with the provisions of the Electricity Act of Bhutan, 2001 and Regulations framed under the law.

## 6. Unforeseen Circumstances

If circumstances not envisaged by the provisions of the Distribution Code arise, the Licensee shall, to the extent reasonably practicable, consult with all affected Users to reach an agreement for the further course of action. If agreement between the Licensee and affected Users is not reached in the time available, the Licensee shall follow a prudent course of action, keeping the nature of unforeseen circumstance and the technical parameters of the affected User's system in mind. Under such event, the affected Users shall comply with the instructions given by the Licensee. The Licensee shall inform the Authority about all such cases and request for incorporation during future revisions.

## 7. Non-Compliance

In case of persistent non-compliance of any of the stipulations of the Distribution Code by any Licensee and/or Users, the matter shall be referred to the Authority for redressal.

## 8. Management of Distribution Code

The Distribution Code and its amendments shall be made by the Authority. The request for amendments, modifications or clarifications in the Distribution Code shall be addressed to the Authority and the decision of the Authority shall be final.

## **Interpretation and Definitions**

### 9. Definitions

For the purpose of this regulation, any word or expression used to which a meaning has been assigned in the Electricity Act of Bhutan, 2001, shall have that meaning, unless explicitly indicated in this regulation. The following words and expressions shall have the meaning ascribed to them:

**“Act”** means the Electricity Act of Bhutan, 2001;

**“Apparatus”** means electrical equipment and includes all machines, fittings, accessories and appliances, which use electricity for functioning;

**“Area of Supply”** means the area within which a Distribution Licensee is authorised by the Licence to supply electricity;

**“Authority”** means the Bhutan Electricity Authority;

**“Average Power Factor”** means the Power Factor measured based on the average over a period and to be calculated as a ratio of kilowatt hour and kilovolt-ampere hour during the same period;

**“Bhutan Electricity Authority”** means the authority of that name established pursuant to Part 2 of the Act;

**“Circuit”** means an arrangement of conductor(s) for the purpose of carrying electrical energy and forming a system or branched system;

**“Connection Agreement”** means an agreement between a User and a Distribution Licensee for connection to the Distribution Licensee’s Distribution System;

**“Connection Point”** means a point at which a User’s electrical system is connected to the Licensee’s Distribution System;

**“Consumer or Customer”** means any person who is supplied with electricity for his own use by a Licensee or by any other person engaged in the business of supplying electricity to public under the Act or any other law for the time being in force and includes any person whose premises are for the time being connected for the purpose of receiving electricity with the works of a Licensee, or such other person, as case may be;

**“Customer Average Interruption Duration Index”** or **“CAIDI”** means the average interruption duration of sustained interruptions determined in accordance with Section 55 (i.) for those consumers who experienced interruptions during the reporting period, determined by dividing the sum of all sustained consumer interruption durations, in minutes, by the total number of interrupted consumers for the reporting period, or by using the following equation:

$$\text{CAIDI} = \text{SAIDI} / \text{SAIFI}$$

**“Day”** means a working day, other than a Saturday or Sunday, or a Public Holiday;

**“Distribute”** means to distribute electricity to Customers’ points of supply using a Distribution System;

**“Distribution Licensee”** means a person who has obtained a license to distribute electricity in pursuant to Section 22 of the Act;

**“Distribution System”** means any system consisting mainly of cable, service lines and overhead lines, electrical plant and meters having design voltage of 33 kV and below owned or operated by a Licensee for distribution or for retail supply and used for the transportation of electricity from a transmission system or generating sets or other points to the point of delivery to Consumers, and includes any electrical plant and meters owned or operated by the Licensee in connection with the distribution of electricity. The Distribution System shall not include any part of a transmission system, except where used for the supply of electricity to a single Consumer or group of Consumers;

**“Distribution Zone”** means an area within the Area of Supply that is normally served by one connection to the Transmission System, or in the case of a ring network, a small number of connections to the Transmission System;

**“Earthing”** means connection of the electrical appliances with the general mass of earth as to ensure at all times an immediate discharge of energy without danger;

**“Embedded Generator”** means a generator which is connected to a Distribution System;

**“Emergency”** means an Emergency due to the actual or imminent occurrence of an event /incident which endangers or threatens to endanger the safety or health of any person or which destroys or damages, or threatens to destroy or damage, any property;

**“Generation Licensee”** means a person who has obtained a License for generation of electricity pursuant to Part-3 (Section 22) of the Act;

**“Grid Code”** means a document describing the approach and the responsibilities for planning and operation of power system issued by the Authority in pursuant to Part 10 (Section 89) of the Act;

**“High Voltage”** means voltage of 66 kV and above;

**“Large Consumer”** means any Consumer who is directly connected to the Transmission System or whose notified maximum demand exceeds a level of five (5) MW, or such level as the Authority may determine from time to time;

**“Licence”** means a license issued under the provisions of Part 3 of the Act;

**“Licensee”** means any person issued with a Licence;

**“Load Shedding”** means deliberate switching off of electrical loads at distribution level based on system requirement;

**“Low Voltage”** means voltage not exceeding 400 volts between phase to phase for three phase supply or 230 volts between phase to neutral in case of single-phase supply;

**“Medium Voltage”** means voltages of 6.6 kV or 11 kV or 33 kV;

**“Meter”** means equipment used for measuring electrical quantity;

**“Momentary Average Interruption Frequency Index”** or **“MAIFI”** means the average frequency of momentary interruptions (outage duration less than 5 minutes), determined by dividing the sum of all number of consumers momentary interruption by the total number of consumers using the following equation:

$$MAIFI = \frac{\sum_i M_i \times N_i}{NT}$$

Where:

“Mi” is the number of momentary interruption events “i”

“Ni” is the number of consumers who experienced a momentary interruption in an interruption event “i” during the reporting period; and

“NT” is the total number of consumers of the Distribution license

**“Power Factor”** means the ratio of Active Power (kW) to Apparent Power (kVA);

**“Planned or Schedule Outages”** means annual outage plan taken for operational and maintenance work that require the electrical system to be interrupted;

**“Rural Area”** means any area that is not an Urban Area;

**“System Average Interruption Duration Index”** or **“SAIDI”** means the average duration of sustained consumer interruptions (determined in accordance with Section 55 (i.) per consumer occurring during the reporting period, determined by dividing the sum of all sustained consumer interruption durations, in minutes, by the total number of consumers using the following equation:

$$SAIDI = \frac{\sum(R_i * N_i)}{NT}$$

where:

“ $R_i$ ” is the restoration time for interruption event “ $i$ ”;

“ $N_i$ ” is the number of consumers who experienced a sustained interruption in interruption event “ $i$ ” during the reporting period; and

“ $NT$ ” is the total number of consumers of the Distribution Licensee;

**“System Average Interruption Frequency Index”** or “SAIFI” means the average frequency of sustained interruptions determined in accordance with Section 55(i.) per consumer occurring during the reporting period, determined by dividing the total number of all sustained consumer interrupted by the total number of consumers using the following equation:

$$SAIFI = Ni/NT$$

where:

“ $N_i$ ” is the number of consumers who experienced a sustained interruption in interruption event “ $i$ ” during the reporting period; and

“ $NT$ ” is the total number of consumers of the Distribution Licensee;

**“System Operator”** means the authorised person/s whose function is defined under Section 39 of the Act;

**“Transmission Licensee”** means a person who has obtained a Licence for transmission of electricity pursuant to Section 22 of the Act;

**“Transmission System”** means an electricity network operating at a nominal voltage of 66 kV and above or as deemed by the Authority to be a part of the transmission network;

**“Unplanned Interruptions”** means the loss of electrical power to one or more customer that does not result from planned outage;

**“Urban Area”** means any area within a proclaimed municipality;

**“User”** means any person having an electrical connection to the Distribution System.

## 10. Abbreviations

The following abbreviations shall have the meaning ascribed to them:

“**AC**” means Alternating Current;

“**BEA**” means Bhutan Electricity Authority;

“**CAIDI**” means Customer Average Interruption Duration Index;

“**CT**” means Current transformer;

“**DPR**” means Distribution Performance Report;

“**HP**” means Horse Power;

“**HV**” means High Voltage;

“**kW**” means kilowatt;

“**kWh**” means kilowatt hour;

“**kVAR**” means kilovolt ampere reactive;

“**kVARh**” means kilovolt ampere reactive hour;

“**kV**” means kilovolt;

“**kVA**” means kilovolt ampere;

“**LV**” means Low Voltage;

“**MAIFI**” means Momentary Average Interruption Frequency Index;

“**MV**” means Medium Voltage;

“**PT**” means Potential Transformer;

“**SAIDI**” means System Average Interruption Duration Index;

“**SAIFI**” means System Average Interruption Frequency Index.

## Conditions of supply

### 11. Objective

The objectives of this Section are to:

- i.) To ensure that the technical, design 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 the Distribution System;
- ii.) To establish the general requirements for all Users seeking to connect to the Distribution System, or seeking to modify an existing connection;
- iii.) 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;
- iv.) To ensure that a new connection to the Distribution System neither exert any adverse effect on the existing Users nor shall a new connection suffer adversely due to existing Users;
- v.) To specify the requirements that are applicable to all existing or prospective Embedded Generators, and
- vi.) To facilitate data exchange between the Users, who are connected to the Distribution System.

### 12. Scope

The conditions of supply as enumerated in this code shall apply to all Users using or intending to use the Distribution System including:

- i.) Distribution Licensees;
- ii.) Consumers connected to the Distribution System; and
- iii.) Embedded Generators.

### 13. Connection Application Procedure

- i.) Application for Connection
  - a) An entity seeking connection to Distribution System or an existing User seeking modification to an existing connection shall submit an application for connection to the Distribution Licensee as per the procedures and formats prescribed by the Licensee.
  - b) The applicant seeking a new connection or requesting modification for a connection shall enter into an agreement with the Distribution Licensee. The

applicant seeking connection to Distribution System shall also observe the approved procedure as laid down in the terms and conditions of electricity supply by the Distribution Licensee.

ii.) Data Requirement

- a) Any entity seeking connection to a Distribution Licensee's system or an existing User seeking modification in an existing connection shall furnish data (in prescribed format) to the Distribution Licensee. Incomplete and insufficient data by the applicant, unless corrected, shall entitle the Distribution Licensee to refuse connection.
- b) An Embedded Generator shall provide to the Distribution Licensee information on the Generating Plant and the proposed interface arrangements between the Generating Plant and the Distribution System. The Embedded Generator shall furnish the information for each generating unit (in the format specified by the Licensee) along with their application for connection with Distribution System.
- c) The Distribution Licensee, when necessary, shall ask for any additional information as may be necessary to permit a full assessment of the effect of the applicant's load on the Distribution System. The applicant shall submit such additional data to Distribution Licensee within the prescribed time.

14. Connection Agreement

- i.) Distribution Licensee and the User shall be responsible for safety as indicated in the Connection Agreement.
- ii.) The Connection Agreement shall 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 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 Responsibility Schedule; and
  - e) Minimum requirement on protection.

### iii.) 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 by the Licensee:

- 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; and
- f) The responsibility for all matters relating to safety of persons at site.

### 15. Connection Points and Boundaries

- i.) Connection to Transmission System: The Distribution Licensee shall comply with connection condition stipulated in the GRID CODE for connection to the transmission system.
- ii.) Connection of Generators with Distribution Systems: Voltage for inter-connection of generators with Distribution System shall be 33/11/6.6 kV or as agreed to with Distribution Licensee. The Connection Point shall be mutually agreed between the generating station and the Distribution Licensee. Generating Company/Generator shall maintain all the terminals, communication and protection equipment provided in the switchyard of generating station.
- iii.) The provision, ownership, operation & maintenance of the metering system between Generation Licensee and Distribution Licensee at inter-Connection Point shall be as per Section 37. The Distribution Licensee shall maintain all electrical equipment and other assets from the gantry onwards.
- iv.) HV Consumers: The voltage may be three phase 66 kV and above with +/- 10% variation as provided in the terms and conditions of Electricity Supply by the Distribution Licensee. The provision, ownership, operation & maintenance of the

metering system between Consumer and Distribution Licensee at Connection Point shall be indicated in the connection agreement mutually agreed.

- v.) MV Consumers: The Voltage may be 6.6 kV or 11KV or 33kV with +/- 10% variation as provided in the terms and conditions of Electricity Supply by the Distribution Licensee. The provision, ownership, operation & maintenance of the metering system between Consumer and Distribution Licensee at Connection Point shall be indicated in the connection agreement mutually agreed.
- vi.) LV Consumers: The voltage may be single phase 230 Volt between phase and neutral or three phase 400 Volts between phases.
- vii.) The point of commencement of supply of energy to a Consumer shall be at the incoming terminal of the cut-out /other isolating device installed by the Consumer as per the terms and conditions of the electricity supply.
- viii.) The Distribution Metering Code shall govern the metering at the Consumer's premises. The provision of sealing of meters and cut-out/isolating devices shall be as per Section 37.

#### 16. Technical requirements of Connected Equipment

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

- i.) All equipment connected to the Distribution System shall be of such design and construction as to satisfy the requirements of the Codes and Standards approved by the Authority;
- ii.) Installation and commissioning of all electrical equipment/works shall comply as per standard rules and practices;
- iii.) For each new connection, the Distribution Licensee shall specify the Connection Point and the voltage of supply, along with the metering and protection requirements;

- iv.) Insulation levels of the Users' equipment shall conform to applicable Standard or Code;
- v.) Protection and metering of the connected equipment shall be in accordance with Sections 37 and 38;
- vi.) All equipment conductor cable at the premises of LV & MV Consumers shall also comply with relevant international or other equivalent standards.

## 17. Non-compliance

### Notification to Customers

- i.) If a Distribution licensee becomes aware of its failure to comply with any obligation under the Code, which can reasonably be expected to have a material or adverse impact, it shall:
  - a) inform the customer likely to be adversely affected by the non-compliance at the earliest but not later than five (5) days;
  - b) undertake an investigation of the non-compliance as soon as practicable but in any event within twenty (20) days; and
  - c) advise the customer of the steps it is taking to comply.
- ii.) If a Distribution licensee becomes aware of a breach of this Code by a Customer, which is not of a trivial nature, the Distribution licensee shall notify the Customer, in writing, of:
  - a) details of the non-compliance and its implications, including any impact on the Distribution Licensee and other Customers;
  - b) actions that the customer could take to remedy the non-compliance;
  - c) a reasonable time period in which compliance must be demonstrated; and
  - d) any consequences of non-compliance.

## 18. Disconnection of Supply

A Distribution licensee may disconnect supply to a Customer's premises if:

- a) the Customer has not fulfilled an obligation to comply with this Code as notified under Section 17 (ii.) within the reasonable notice period thereof; and
- b) the Customer fails to comply with the notice or enters into an arrangement to comply but fails to comply with that arrangement.

### i.) Health, safety or emergency

A Distribution licensee may disconnect supply to a Customer's premises if supply otherwise would potentially endanger or threaten to endanger the health or safety of any person or the environment or an element of the environment or if there is otherwise an emergency. Except in the case of an emergency, or where there is a need to reduce the risk of fire or where relevant regulations require otherwise, a Distribution licensee must not disconnect a Customer's supply address unless the Distribution licensee has:

- a) given the Customer written notice of the reason;
- b) allowed the Customer 5 days from the date of receipt of the notice or ten (10) days from the issue of notice to eliminate the cause of the potential danger; and
- c) at the expiration of Section 18.i(b) another five (5) days notice of its intention to disconnect the Customer (the five (5) days is to be reckoned from the date of receipt of the notice or ten (10) days from issue of the notice whichever is earlier).

### ii.) Customer's request

A Distribution Licensee shall disconnect supply to a customer's premises if the customer has requested disconnection, a customer shall notify the Distribution Licensee 5 days in advance. The Distribution licensee shall disconnect the supply as indicated in its Terms and Condition of Supply of Electricity.

### iii.) Illegal supply

A Distribution Licensee may disconnect supply to a Customer's premises immediately after serving the disconnection notices if:

- a) the supply of electricity to a customer's electrical installation is used other than that specified in the connection agreement;
- b) customer takes at the customer's premises electricity supplied to another supply address;
- c) a customer tampers with, or permits tampering with, the meter or associated equipment; or
- d) any unauthorized tapping of electricity is noticed.

### iv.) Non- payment of bills

The Distribution Licensee may disconnect supply to the customer's address for non-payment of bills after serving disconnection notice.

### v.) No disconnection

A Distribution Licensee must not disconnect supply to a customer's supply address except in the case of an emergency or under Section 18.

## 19. Connected Plant Restrictions

### i.) Safety

- a) All equipment of the Users including cables, wiring and overhead lines shall be compatible with safety standards in respect of quality of manufacture; erection and location of installation; and earthing of the installation.
- b) The Consumers, as per Part 3, Section 43 of the Act, shall comply with Safety Regulations made by the Authority.

### ii.) Insulation

The Users' systems must be designed with proper basic insulation level. Insulation of all components in service must have adequate insulation strength for the system operating voltages at all times.

### iii.) 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 the Safety Code and Regulations of Authority.

### iv.) Earthing

All components of Users' systems must be properly earthed as per applicable Rules/Standards. 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 of underground cables shall also be earthed appropriately. Good industry practice shall be adopted for earthing of Distribution System.

### v.) 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.

### vi.) 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 access to the authorized personnel of the Licensees 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 authorised to take away and cut off such supply, any electric supply-lines, meters, fittings, works or apparatus belonging to the Licensee; or
- d) as necessitated by the Licensee for the performance of his duty.

### vii.) Unintended and Unscheduled Back-Energisation.

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-energisation.

viii.) Harmonic Current

Distribution Licensee shall incorporate suitable clause in the Connection Agreement for restricting the harmonic injection by the Consumer into Distribution System.

ix.) Voltage Flicker generated by Consumers

Distribution Licensee shall incorporate suitable clause in the Connection Agreement to restrict the current fluctuations and thereby voltage flicker.

x.) Power Factor

Low Power Factor results in underutilization of capacities of equipment, machines, overhead lines and cables of the Licensees and generators. 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 0.85.

20. Interface with Embedded Generators

If the Distribution Licensee has an interface with any generator, the Distribution Licensee and the concerned owner of the generating unit shall also abide by the following provisions:

i.) Generating Units up to five (5) MW

The owner shall provide suitable protection at the interface to protect his system from any damage due to normal and abnormal conditions in the Distribution System. The owner shall install appropriate metering arrangement for the reactive energy exchanged, in addition to operational metering. The frequency variations shall be conforming to the provisions of the Grid Code in case the Generating units are kept synchronized with the Transmission System.

ii.) Generating units of above five (5) MW

The owner shall provide suitable capacitors to compensate the reactive power drawl. The owner of generating unit shall enter into a Connection Agreement with the Distribution Licensee and if required with Transmission Licensee in the country.

#### 21. Operational Labelling

The Distribution Licensee and each User shall be responsible for providing and maintenance of clear, unambiguous signs and labels indicating the numbering and names of equipment/apparatus and Circuits at the substations and connection sites. Each piece of equipment such as a transformer, circuit breaker or an isolator shall be labelled by a unique number.

#### 22. Temporary Service Line

Service lines for temporary requirement shall be laid by the Distribution Licensee wherever possible and the cost incurred in providing, laying, maintaining and removing such service lines shall be paid by the User. The Distribution Licensee, however, at its sole discretion, may allow the User to lay, maintain and remove such service line, using the User's own material. The User will be required to pay energy charges and all other charges at the norms fixed by the Distribution Licensee for such temporary service under its Schedule of Rates. Unless otherwise approved by the Licensee in writing, the temporary service shall be defined as installations intended for removal within a period not exceeding s two (2) years.

### **Asset Management**

#### 23. Objective

The objective of this Section is to ensure a good asset management practice by the Distribution Licensee to encourage improvement and innovation in distribution services.

#### 24. Good Asset Management Practice

A Distribution Licensee shall endeavour to:

- i.) Assess and record the nature, location, condition and performance of its Distribution System assets;

- ii.) Develop and implement plans for the acquisition, creation, maintenance, operation, refurbishment, repair and disposal of its Distribution System assets and plans for establishment and augmentation of transmission connections:
  - a) to comply with the laws and other performance obligations which apply to the provision of distribution services including those contained in this Distribution Code;
  - b) to minimise the risks associated with the failure or reduced performance of assets; and
  - c) to minimise costs to Consumers taking into account distribution losses.
  
- iii.) Develop, test, simulate and implement contingency plans to deal with events which have a low probability of occurring, but are realistic and have a substantial impact on Consumers.

## 25. Consumers' electrical installation and equipment

A Consumer shall endeavour to:

- i.) Ensure that the electrical installation and any equipment within its premises:
  - a) complies with the Distribution Code;
  - b) complies with Internal House Wiring Regulation; and
  - c) is maintained in a safe condition.
- ii.) Ensure that protection equipment are effectively coordinated with the Distribution System.
- iii.) Ensure that the Distribution System and the reliability and quality of supply to other Users are not adversely affected by its actions or equipment.
- iv.) Not allow a supply of electricity to its electrical installation to be used by any other person except in accordance with the Act.
- v.) Not bypass/tamper the meter.
- vi.) Not allow electricity supplied under a domestic tariff to be used for non-domestic purposes.

## 26. Distribution Licensee's equipment on Consumer's Premises

- i.) A Consumer must:
  - a) Not interfere with the Distribution Licensee's system including any of the Distribution Licensee's equipment installed in or on the Consumer's premises;

- b) Provide and maintain in its premises the agreed facility required by the Distribution Licensee to protect any equipment of the Distribution Licensee;
- ii.) A Consumer must provide to the Distribution Licensee's representatives convenient and unhindered access:
  - a) To the Distribution Licensee's equipment for any purposes associated with the supply, metering or billing of electricity; and
  - b) To the Consumer's electrical installation for the purposes of inspection or testing for assessing whether the Consumer is complying with the Distribution Code; and connecting, disconnecting or reconnecting supply.
- iii.) In cases other than emergencies, a Distribution Licensee shall endeavour to access a Consumer's premises at a time which is reasonably convenient to both the Consumer and the Distribution Licensee.

## 27. Distribution Performance Report

- i.) Distribution Licensees shall submit to the Authority on an annual basis a Distribution Performance Report (DPR), about the plan to meet predicted demand over the following five years.
- ii.) The DPR must include the following historical information for each Distribution Zone for the preceding year:
  - a) the supply capacity;
  - b) the historical demand pattern and maximum demand;
  - c) the volumes of energy supplied;
  - d) the loss of load as measured by the CAIDI, SAIDI, SAIFI and MAIFI; and
  - e) energy exchange with other Distribution Licensees.
- iii.) The DPR must include the following planning information for each Distribution Zone for the forthcoming five (5) year period:
  - a) The forecast number and type of new connections by customer category, including customers from rural electrification projects, and new Large Consumers, who will be supplied in each Distribution Zone;
  - b) the forecast demand growth in terms of both energy and peak demand; and
  - c) a plan for meeting forecast demand including opportunities for Embedded Generators and demand management.

- iv.) The DPR shall also contain the following investment information for each Distribution Zone for the forthcoming five (5) year period:
  - a) Planned investment, including rural electrification investment; and
  - b) Investment measures to improve reliability to Consumers.
  
- v.) Each Distribution Licensee must publish the DPR on its website and, on request by a Consumer, provide the Consumer with a copy.

## **Distribution Operating Code**

### 28. Introduction

- i.) This section contains the rules, procedures and practices to be followed for safe and efficient operation of the Distribution System by the Distribution Licensee, and Users of the Distribution System. This shall also apply to any electrical interface between two Distribution Licensees. Operational matters pertaining to interfaces between distribution and transmission systems shall conform with the Grid Code.
  
- ii.) The following aspects of Distribution System Operation are covered in this section:
  - a) System of supply;
  - b) Quality of supply-Monitoring and control of frequency, voltage, and Power Factor;
  - c) Demand estimation;
  - d) Outage Planning;
  - e) Contingency Planning;
  - f) Demand Management and Load Shedding;
  - g) Metering and protection;
  - h) Safety Co-ordination;
  - i) Maintenance of substations and Distribution Lines. s

### 29. Objectives

The objective of Distribution Operation Code is to achieve the following:

- i.) To establish rules, procedures and arrangements for safe and efficient operation of the Distribution System;

- ii.) To enable the Distribution Licensee to coordinate and integrate the operation and maintenance with other Users, Embedded Generators, and Large Consumers connected to Distribution System;
- iii.) To ensure safety of persons and properties while work is being done on the Distribution System; and
- iv.) To provide for the exchange of information.

### 30. Distribution Operating Procedure

- i.) To ensure compliance with the provisions of this Code, Distribution Licensees shall develop and maintain Distribution Operating Procedures.
- ii.) Distribution Licensees shall furnish the copies of the Distribution Operating Procedures to the Authority.

### 31. System of Supply

- i.) The declared frequency of AC supply is 50 Hz.
- ii.) The declared voltage of AC Supply is as follows:

System of Supply	Voltage Level	Limits of Variation
LV	Single phase, 230 V between phases and neutral, Three phase 400V between phases	±6%
MV	6.6kV, 11kV, 33kV	±10%
HV	Three phase at 66kV and above	±10%

iii.) The system of supply shall be determined by the Distribution Licensee depending on the contract demand of the Consumer. The system of supply for the contract demands shall normally be as follows:

Contract Demand*	Supply system
≤ 10kW	Single phase, 230V
>10kW & ≤30kW	3 phase, 400V through direct connected meter
>30kW & ≤100kW	3 phase, 400V through direct connected or CT connected meter
>100kW & ≤300kW	3 phase, 400V through CT connected meter
>300kW & ≤3MW	6.6kV, 11kV or above through CT/PT connected meter
>3MW & ≤15MW	33kV or above through CT/PT connected meter

\*The Contract Demand in case of LV Consumer is the estimated demand based on the information on the appliances, number of power points, furnished by the Consumer duly verified by the Distribution Licensee (at the time of application for new connection or for increase / decrease in demand, unless such demand is warranted to be furnished by the Consumer for appropriate customer categorization, based on the tariff schedules, revised from time to time by the Distribution Licensee).

iv.) The Distribution Licensee may, however, at its discretion, also supply at any other voltage depending on system availability or condition.

### 32. Quality of Supply

#### i.) Supply Frequency

- a) The System Operator shall co-ordinate for maintaining the system frequency between 49.5-50.5Hz.
- b) The Distribution Licensee shall comply with the directions of System Operator in its endeavour to maintain the system frequency.

#### ii.) Supply Voltage

- a) Distribution Licensee must maintain a nominal voltage level at the point of supply to the Consumer's electrical installation, subject to Section 31(ii.).

- b) The Distribution Licensee shall endeavour to control voltage within the allowable tolerance of its variations unless such variations are beyond the control of the Distribution licensee.
- c) The Distribution Licensee must monitor and record steady state voltages and voltage variations at each zone substation in its Distribution System which are outside the limitations.

iii.) Power factor

- a) The Consumers shall maintain an average Power Factor of not less than 0.85.
- b) The Distribution Licensee reserves the right to refuse to supply an apparatus, motor or installation in a Consumer's premises where in its opinion the average Power Factor of the installation is less than 0.85.
- c) When required by the Distribution Licensee, the Consumer shall take reasonable time, not exceeding three months, to take such effective steps as to raise the average Power Factor of installation to a value not less than 0.85. Notwithstanding this provision, the Distribution Licensee in the interest of system regulation, may at its discretion, disconnect the supply till such remedial measures are taken by the User without giving notice.
- d) In the event of such steps not being taken by the Consumer, the Distribution Licensee reserves the right to disconnect at its discretion the supply without prejudice to the right of recovery of penal charges as stipulated in the tariff rates.

iv.) Load balancing

- a) The Consumer taking three phase supply shall balance the connected load in such a way that the difference in the loading of each phase does not exceed five per cent (5%). In other words, the maximum permissible difference between phases shall be five per cent (5%).
- b) In case of continued unbalance in the operating loads for three-phase Consumers, the Distribution Licensee, may at its discretion, notify the Consumer to ensure proper balancing of the operating loads.

### 33. Demand Estimation

- i.) A Distribution Licensee shall prepare a five-year demand forecast on an annual basis and submit this to the Authority.
- ii.) A Distribution Licensee shall provide such demand forecasts as may be required under the Grid Code.
- iii.) The basis of demand estimation shall be on following inputs:
  - a) Historical information;
  - b) Typical requirement of HV, MV and estimated demand of LV Consumers on the basis of relevant load data and/or hourly load curves subject to modifications depending upon the communications received from such Users or caused by any contingency. Distribution Licensee may also identify such major Consumers who only shall be required to furnish data pertaining to their installations to the Licensee on demand for the purpose of demand estimation;
  - c) Availability of Embedded Generators; and
  - d) Estimation of system losses.
- iv.) The Distribution Licensee shall consolidate the requirement for the entire Distribution System and shall furnish the same to the System Operator.
- v.) The Licensee shall prepare and maintain adequate historical data and shall use scientific techniques and methods for demand estimation.
- vi.) In the event of any unforeseen event causing change in the demand in the entire Distribution System or at a particular interconnection shall necessitate revision of demand forecast. The revised values of estimated demand shall be promptly intimated:
  - a) by Users to the Licensee; and
  - b) by the Licensee to System Operator.

### 34. Outage Planning

- i.) The Distribution Licensee, as far as possible, shall coordinate and match its planned outage program with the Transmission Licensee to minimize outage impact to the Consumers.

- ii.) The outage programme shall contain identification of lines and equipment of Distribution System (not below 11 kV system) proposed to be taken out of service, date of start of outage, duration of outage and estimated quantum of load curtailment during outage.
- iii.) Before any line or equipment of 11 kV and above are taken out of service, the Distribution Licensee shall inform the Transmission Licensee even though the same is already included in the approved plan.
- iv.) The above procedure shall not apply under the following circumstances:
  - a) In cases where the estimated drawal at Connection 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's or Consumer's installation due to violation of agreement.
- v.) In such cases the System Operator shall be informed wherever the load to the extent of two (2) MW or more is affected.

vi.) Outage of Users' Plant

All Users shall submit their tentative outage plans to its Distribution Licensee. The HV and MV Consumers, Embedded Generators shall each indicate three preferred options of the date of commencement of outage. The Distribution Licensee shall endeavour to harmonize the outage plan of its Distribution System elements and the Users outages and the comprehensive outage plan shall be communicated to the Users. The Distribution Licensee shall endeavour to accommodate the first preference dates of outage commencement of the Users. The Licensee may convene coordination meetings with the Users before finalizing the outage plan.

### 35. Contingency Planning

- i.) A contingency situation may arise in the event of a total or partial blackout in the Transmission System. A contingency may also arise on a 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 the point of interconnection.

- ii.) The Distribution Licensee shall develop a Contingency procedure to achieve the restoration of the associated Distribution 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. The procedure shall be regularly updated with change in distribution network configuration and shall also be made available in the website of the Distribution Licensee. The Distribution Licensee in coordination with the Transmission Licensee and the System Operator shall organize an annual training programme for its operators including mock exercises.
- iii.) The Distribution Licensee shall provide all assistance to the Transmission Licensee for the development of the overall contingency plans.
- iv.) In cases of failure of the Apparatus of the Transmission Licensee, the Distribution Licensee shall immediately contact the authorised person at the substation of the Transmission Licensee, and assess the probable period of restoration and the probable restriction of load drawl from the affected substation. The Distribution Licensee shall effect the demand management plan accordingly.

### 36. Demand Management and Load Shedding

- i.) Temporary Load Shedding may be resorted to for maintaining the load generation balance as advised by the System Operator. This may also be necessary due to loss of any Circuit or equipment or any other operational contingency like any overloading of line/s or transformer/s.
- ii.) The Distribution Licensee shall estimate loads that may be shed in discrete blocks at each Connection Point or in overall Area of Supply. Such Users shall co-operate with the Distribution Licensee in this regard. The Distribution Licensee shall work out the sequence of load shedding operations. In case of automatic load shedding through under frequency relays, the Circuits and the amount of load to be

interrupted with corresponding relay settings shall be coordinated with the System Operator and persons in charge of the substations of the Distribution Licensee as necessary.

- iii.) If the duration of unplanned load shedding to any part of the Distribution System exceeds 60 minutes, the affected Consumers at HV, MV level and the essential services such as public hospital public water works, sewage works, etc. shall be intimated over the telephone wherever possible.

### 37. Metering

This section specifies the procedure for metering in Distribution System with respect to operational metering as well as tariff and commercial metering. This section also specifies the general guidelines for protection of Distribution System.

#### i.) Operational Metering

The minimum requirement of operational metering at Distribution Licensee's substations shall be as follows for 66kV/33kV or 66kV/11kV or 33/11 kV substations and transformers:

- a) 66/33/11 kV bus voltage;
- b) 66/33/11 kV incoming /outgoing current in each phase and each circuit/feeder;
- c) Primary and secondary currents in each phase of every transformer;
- d) Facility to record energy in MWh and MVARh (preferably electronic meters) and preferably frequency at a predefined interval at point of connection with Transmission Licensee.

#### ii.) Tariff and commercial metering

- a) Tariff metering shall be provided at the Connection Points between the User's system and the Distribution System and shall be governed by the provision in the agreement with the User.
- b) All the meters, instrument transformers (CT/PT), metering cubicles and testing procedures shall conform to the relevant standard as specified by the Authority.
- c) All the instrument transformers used in conjunction with commercial (tariff) metering shall also be of appropriate accuracy class and conform to the Codes

and Standards approved by the Authority. The rating shall be suitable for catering the burdens of lead wires and metering.

- iii.) At each Connection Point with an Embedded Generator, a Transmission Licensee or another Distribution Licensee, the Distribution Licensee should meter the following quantities: active energy import; active energy export; reactive energy import; and reactive energy export.
- iv.) Each metering point associated with the determination of energy exchanged between the Generation Licensees, Transmission Licensees and Distribution Licensees shall be provided with both main and check meters. The Standard of accuracy of these meters shall conform to the Codes and Standards approved by the Authority.
- v.) In case of electronic energy metering systems, Data collection devices shall be used to integrate pulses from meters over each integration period, store values, and to transmit the same to the data collection system of the Distribution Licensee. Data shall be collected from both the main and check metering schemes.
- vi.) Voltage failure relays shall be provided to initiate alarm on loss of one or more phases of the voltage supply to the meter.
- vii.) Main and check meters shall be provided at all Connection Points with an Embedded Generator. All the meters shall be tested and calibrated according to the guidelines provided in the relevant Codes/Standards at least once a year. Records of these calibrations and tests shall be maintained for reference.
- viii.) The System Operator shall formulate a metering scheme and procedure covering summation, collection and processing of tariff meter readings at various interconnection sites in consultation with Generation Licensees, Transmission Licensee and Distribution Licensees.

ix.) The ownership, responsibility of maintenance and testing of these meters shall be as mutually agreed to between the Users and the concerned licensees.

### 38. Protection System

i.) No item of electrical equipment shall be allowed to remain connected to the system unless it is covered by the appropriate protection aimed at reliability, selectivity, speed and sensitivity. The Distribution Licensees shall cooperate with the Transmission Licensee to ensure correct and appropriate settings of protection to achieve effective, discriminatory isolation of faulty line/equipment.

ii.) The settings of protective relays for 33kV, 11kV and 6.6 kV lines shall be such that a fault in any section does not affect the section between the generating unit and the faulty section under all conditions. The Transmission Licensee shall notify the initial settings and any subsequent changes to the Users from time to time. Routine checks on the performance of the protective relays shall be conducted and any malfunction shall be noted and corrected as soon as possible. The malfunctions, changes in the system configuration, if any, and revised settings of relays shall be discussed and finalized in the System Coordination Committee.

iii.) All generating units and all associated electrical equipment of the Generation Licensee connected to the Distribution System shall be protected by adequate protection, as per relevant Codes and Standards approved by the Authority so that the system does not suffer due to any disturbances originating at the generating unit.

iv.) Distribution System: For Power Transformers of HV class in the Distribution System, differential protection shall be provided for 10 MVA and above along with backup time lag over current and earth fault protection. Transformers of 1.6 MVA and above but less than 5 MVA shall be protected by time lag over current and earth fault relays. In addition, all power transformers shall be provided with gas operated relays, winding and oil temperature alarm and or trip protection.

v.) Distribution lines: All the 33kV, 11kV, and 6.6 kV lines at Connection Points shall be provided with a minimum of over current and earth fault relays as follows:

- a) Plain radial feeders: Non-directional time lag over current and earth fault relays with suitable settings to obtain discrimination between adjacent relay settings; and
  - b) Parallel/ring feeders: Directional time lag over current and earth fault relay.
- vi.) Fire Protection: All adequate precaution shall be taken and protection shall be provided against fire hazards to all apparatus in the System conforming to the relevant Codes/Standards.

### 39. Safety Coordination

- i.) The Distribution Licensee and the Users of the Distribution System shall observe safety rules and precautions when work is to be carried out on any Apparatus, Switchgear or Circuits in any part of the Distribution System or in any part of the Users system.
- ii.) The objective of safety coordination is to enforce principles of safety as prescribed and to devise codes and practices to implement the same.
- iii.) There shall be coordination between persons of the Distribution Licensee and its Users, between persons of two Distribution Licensees having common electrical interfaces for carrying out work on any Apparatus, Switchgear, or Circuits belonging to either party at the point of connection.
- iv.) The Distribution Licensee and all Users and any other Licensee having common electrical interface with the Distribution Licensee shall designate suitable persons to be responsible for safety coordination.
- v.) The disconnecting device/or devices at each electrical interface, which shall be capable of effectively disconnecting the System of the Distribution Licensee and the other Users and Earthing the respective System at the control boundary shall be identified and marked by the Distribution Licensee and respective User and shall be maintained in good order at all times. Such disconnecting devices shall

be provided with electrical and mechanical interlocks to prevent inadvertent switching operations by unauthorized persons.

vi.) Permission in writing shall be issued by the appropriate persons at the electrical interface to his counterpart for carrying out work on any Apparatus Switchgear or Circuits beyond the electrical interface.

vii.) The procedures and check list shall be issued to all concerned by the Distribution Licensee for implementation.

viii.) The Distribution Licensee shall prepare a safety manual incorporating all Safety Rules and Safety Precautions applicable to its Distribution System and the User's System and circulate the same among all Users for compliance.

#### 40. Maintenance of Sub-stations and Distribution Lines

The Distribution Licensee shall carry out annual/half yearly/quarterly/monthly preventive maintenance works on all equipment such as:

i.) Power Transformers, Distribution Transformers, Voltage Transformers, Current Transformers, Circuit Breakers and Isolators switches and the details of maintenance works carried shall be entered in a register;

ii.) Apart from regular maintenance, the Distribution Licensee shall carry out regular inspection at regular intervals on all 33kV, 11kV and LV lines; and

iii.) The Distribution Licensee shall coordinate the maintenance works of all Sub-stations with the Transmission Licensee, so as to minimize interruptions.

### **Embedded Generation**

#### 41. Objective

The objective of this section is to set out the technical compliances to be met by an Embedded Generator.

#### 42. Connection Agreement

Distribution Licensee must ensure that its Distribution System has adequate capacity of receiving supply of electricity from an Embedded Generator connected to its Distribution System. The Embedded Generator shall enter into a Connection Agreement with the Distribution Licensee on the terms and conditions of dispatch, connection and disconnection as stipulated by the Distribution Licensee.

#### 43. Supply Frequency

An Embedded Generator must ensure that its generating units are capable of continuous uninterrupted operation at the system frequency of 50 Hz and variations in accordance with the provisions in the Grid Code.

#### 44. Co-ordination and Compliance of Embedded Generators

i.) An Embedded Generator must ensure that its generating units, and any equipment within it that is connected to a Distribution System complies with the Distribution Code and is maintained in a safe condition.

ii.) An Embedded Generator must ensure that protection equipment is effectively coordinated with the electrical characteristics of the Distribution System.

iii.) An Embedded Generator must have:

- a) an excitation control system including voltage regulator;
- b) a governor system responsive to system frequency changes;
- c) safe shutdown arrangement without affecting external electricity supply;
- d) appropriate restart arrangement following loss of external electricity supply;
- e) response to disturbances; and
- f) appropriate nameplate with its rating and features.

#### 45. Negative Sequence Voltage

An Embedded Generator must ensure that its unit's contribution to the negative sequence voltage at the point of connection between the Embedded Generator and the Distribution System is less than 1%.

#### 46. Fault levels

The Distribution Licensee shall ensure that the fault level contributed by the Embedded Generator shall not exceed the withstand capabilities of the Distribution System.

### **Guaranteed Service Levels**

#### 47. Objective

The Objective of this section is to specify the minimum guaranteed service levels required to be provided by Distribution Licensees. The Distribution Licensee may undertake measures to provide enhanced Guaranteed Service Levels.

#### 48. Requirement to Meet Service Levels

- i.) Distribution Licensees shall maintain the standards of performance specified in this section provided that any time limits set out here shall refer to the maximum time permitted for performing the activities to which they relate.
- ii.) Any failure by a Distribution Licensee to maintain the standards of performance specified here shall render the Distribution Licensee liable to payment of compensation to a person claiming such compensation under the provisions of the Act.

#### 49. Quality of Supply and System of Supply

- i.) Except with the written consent of the consumer or with prior sanction of the Authority, the Distribution Licensee shall not permit the voltage at the point of supply to vary from the declared voltage in accordance with Section 32(ii).
- ii.) Except where otherwise previously approved by the Authority, the Distributions Licensee shall give supply of energy in accordance with Section 31 .

#### 50. Period for Giving Supply

A Distribution Licensee, shall on an application by the owner or occupier of any premises, communicate the applicable charges to be borne by the applicant, and give supply of electricity to such premises in accordance with the time limits set out below:

<b>Situations</b>	<b>Communication of Charges (Within the Period)</b>	<b>Installation of Supply (Within the Period)</b>
Where supply can be provided by extending the service cable from existing distribution networks	5 days from the date of *Initial Application	7 days from the date of **Complete Application
Where supply requires extension of LV Distribution System	7 days from the date of *Initial Application	1 month from the date of **Complete Application
Where supply requires installation of distribution transformer, purchased and delivered by customer at his cost.	15 days from the date of *Initial Application	Within 1 month from the date of **Complete Application and delivery of transformer at the work site
Where supply requires extension of MV Distribution System including the arrangement and installation of transformer by BPC at the cost of customer	15 days from the date of *Initial Application	6 months from the date of **Complete Application

Note:

*\*Initial Application – first application submitted to BPC for supply of new extension;*

*\*\*Complete Application – receipt by BPC of (i) payment of all charges, (ii) required documents, and (iii) statutory clearances.*

## 51. Restoration of Power Supply

- i.) In case of the supply disruption, the Distribution Licensee shall restore power supply in Urban and Rural areas in accordance with the time limits set out below:

<i>Situation</i>	<i>In Urban Areas</i>	<i>In Rural Areas</i>
In the case of burnt meters	1 day of the receipt of complaint	2 day of the receipt of complaint
In the case of normal fuse-off calls	1 day of the receipt of complaint	2 day of the receipt of complaint
In the case of MV distribution overhead line breakdowns	1 day of the receipt of complaint	2 day of the receipt of complaint
In the case of distribution transformer failure	1 day of the receipt of complaint	2 day of the receipt of complaint
In the case of Underground cable faults	1 day of the receipt of complaint	2 day of the receipt of complaint

- ii.) The period of interruption as a result of any scheduled outage shall be specified in a public notice of such scheduled outage, provided that such scheduled outage shall not normally exceed twelve (12) hours on any day.

## 52. Reconnections

Where the Distribution Licensee has disconnected supply to a consumer for a period of not more than six months, then if such consumer pays all amounts due and payable to the satisfaction of the Distribution Licensee or, in case of a dispute, pays such amounts under protest, the Distribution Licensee shall reconnect supply within:

- i.) One (1) Day from payment of dues by the consumer in Urban Areas;  
and  
ii.) Two (2) Days from payment of dues by the consumer in Rural Areas.

Provided that where the period of disconnection exceeds six (6) months, an application for reconnection of supply shall, after either payment of amounts due or upon settlement of dispute, be treated as a fresh application for supply of electricity under the provisions of the Act.

### 53. Consumer Charter/Service

- i.) Where a Distribution Licensee makes an appointment with a Customer, he shall keep this appointment in good faith and shall not fail to keep this appointment unless there is a valid reason.
- ii.) Every authorised representative of the Distribution Licensee shall visibly display his name-tag and, if so, required by a consumer, produce for scrutiny, proof of identity and authorization of the Distribution Licensee for the purpose of any interaction with a consumer.
- iii.) The Distribution Licensee shall maintain, in every specified Division within the Area of Supply, at least one consumer service centre which shall be open for not less than eight (8) hours a day, on all Days of the week, for essential services to be provided to consumers and with a collection facility for collection of payments from consumers.
- iv.) Besides the Distribution Code, any other approved Terms and Conditions of Supply along with the prevailing approved tariff schedule shall be made available on demand by the Distribution Licensee to any consumer on payment of reproduction charges, at any of the offices or Consumer Service Centres of the Distribution Licensee.

### 54. Other Services

- i.) Reading of each consumer's meter shall be undertaken by an authorised representative of the Distribution Licensee at least once in every three (3) months.
- ii.) Any change of name or change of tariff category shall be effected by the Distribution Licensee before the expiry of the second billing cycle after the date of receipt of application.
- iii.) Where the consumer applies for closure of account with the Distribution Licensee, the Distribution Licensee shall, subject to satisfaction of all amounts due from the consumer, repay all outstanding amounts due to the consumer within a period of thirty (30) Days from the date of receipt of such application for closure of the account.

## 55. Reliability Indices

- i.) The Distribution Licensee shall calculate the reliability of Distribution System on the basis of number and duration of sustained interruptions in a year, using the following indices:
  - a) System Average Interruption Frequency Index (SAIFI);
  - b) System Average Interruption Duration Index (SAIDI); and
  - c) Customer Average Interruption Duration Index (CAIDI).

Provided that while calculating the above indices, the following types of interruptions shall not be taken into account:

- a) Scheduled outages;
  - b) Momentary outages of a duration of less than five minutes;
  - c) Outages due to failure of the grid;
  - d) Outages due to reasons described in Section 56(i.) below; and
  - e) Outages due to reasons described in Section 18.
- ii.) The Distribution Licensee shall calculate the reliability of Distribution System for momentary interruptions of less than five (5) minutes, using Momentary Average Interruption Frequency Index (MAIFI).
- iii.) The Distribution Licensee shall submit their annual outages plan by end of the year for the activities to be carried out in following year and the actual outage plan executed in that year at the beginning of the next year.
- iv.) The Distribution Licensee shall calculate the reliability indices for each Distribution Zone:
  - a) Including all types of outages;
  - b) As per Section 55(i.) and (ii.); and
  - c) For only planned or schedule outage.
- v.) The Distribution Licensee shall maintain all power interruption data for each Distribution Zone.

vi.) The Distribution Licensee shall upload at the end of each month such monthly information on reliability indices on the internet website of the Distribution Licensee for each Distribution Zone and shall submit such information to the Authority on quarterly basis.

vii.) The Authority shall fix standards of reliability to be achieved by the Distribution Licensee.

## 56. Exemptions

i.) These Guaranteed Service Levels shall not apply where, in the opinion of the Authority, the Distribution Licensee is prevented from meeting his obligations under these Regulations such as cyclone, earthquake, floods, storms, war, riot, strike, landslides, fire or any other occurrences which are beyond the control of the Distribution Licensee. The Distribution Licensee shall notify the Authority in writing for such occurrences to be relaxed as per Section 56 (ii.) and should report as per Section 65 (i.). This relaxation shall not be excused from failure to maintain the standards of performance under these Regulations where such failure can be attributed to negligence or deficiency or lack of preventive maintenance of the Distribution System or failure to take reasonable precaution on the part of the Distribution Licensee.

ii.) A Distribution Licensee may submit an application to the Authority for relaxation of the Guaranteed Service Levels, detailing:

- a) The description of the interruption and reasons why the Distribution Licensee considers it ought to be relaxed; and
- b) Evidence of the impact of the interruption on the Distribution Licensees Reliability Performance or Guaranteed Service Levels.

iii.) The Authority may by general or special order, exempt the Distribution Licensee from any or all of the Guaranteed Service Levels for such period as may be specified in the said order.

## 57. Determination of Compensation

- i.) Where the Distribution Licensee finds that it has failed to meet the standards of performance specified under these Regulations, either of its own knowledge, or upon written claim filed by any person affected, the Distribution Licensee shall be liable to pay such person and all other persons similarly affected, such compensation as has been determined by the Authority in Appendix A to these Regulations. The Authority may revise the compensation rates periodically.
- ii.) Failure by the Distribution Licensee to pay the compensation in accordance with Section 57(i.) shall constitute a dispute, which shall be dealt with in accordance with the procedure set out in the Bhutan Electricity Authority -Dispute Resolution Procedure.
- iii.) The payment of such compensation shall be made by the Distribution Licensee within thirty (30) days of a direction issued by the Authority.
- iv.) Compensation shall not be paid unless a written claim for compensation has been lodged with the licensee within six (6) months after either customer learning of the act giving rise to claim, or the completion of any works in respect of which compensation is sought whichever is later.

## **Information Exchange**

### 58. Objective

This section describes the various obligations to be maintained by the Distribution Licensee as well as Consumers to evolve a process of transparent information exchange so as to facilitate better interaction for planning and operational function.

### 59. Distribution Licensee's Obligations

- i.) The Distribution Licensee shall provide a Customer Charter to each HV and MV Consumer and the Authority:
  - a) on request;
  - b) at least once every five (5) years; and
  - c) to each Consumer at the time the Consumer is connected.

- ii.) The Distribution Licensee's Customer Charter must summarize all current rights, entitlements and obligations of Distribution Licensees and Consumers relating to the supply of electricity, including:
  - a) the identity of the Distribution Licensee;
  - b) the Distribution Licensee's Guaranteed Service Levels; and
  - c) other aspects of their relationship under the Distribution Code and other relevant Codes and Regulations approved by the Authority.
  
- iii.) The Distribution Licensee must provide information on reliability of supply including where applicable an explanation for any interruption to supply (whether planned or unplanned but excluding breakdowns) to the HV/MV Consumer's premises or through its website. If the Consumer requests that such information or explanation be in writing, it must be given in writing within twenty (20) Days of the request. In the event of any planned interruption of supply in the LV service area, the Distribution Licensee shall at least two (2) Days in advance inform through local newspapers or in some other form about the affected area, brief reasons for the interruptions and tentative duration.
  
- iv.) If the Distribution Licensee is required to undertake a specific test on the request of the customer to determine the quality of supply, the Distribution Licensee may levy charges for this service in accordance with its approved statement of charges.
  
- v.) If the results of the test under Section 59(iv.) show that the Distribution Licensee is not complying with its obligations under the Code, it must take appropriate remedial action and the charges levied by it for carrying out the tests shall be refunded.
  
- vi.) On request by a Consumer, the Distribution Licensee must provide the Consumer or the Consumer's electrician with reasonable information on the Distribution Licensee's requirements in relation to any proposed new electrical installation of the Consumer or changes to the Consumer's existing electrical installation, including appropriate advice about supply extensions.

## 60. Consumer's Obligations

A Consumer must inform its Distribution Licensee as soon as practicable if there is any:

- i.) proposed change to wiring or plant or equipment in the Consumer's electrical installation which may affect the quality of the supply of electricity to any other person;
- ii.) change affecting access to the Distribution Licensee's equipment located at the Consumer's supply address; and
- iii.) major change to the quantity of electricity likely to be used by the Consumer at the Consumer's supply address.

## 61. Planning Information

- i.) The User on request from the Distribution Licensee, shall provide details of loads connected or planned to be connected to the Distribution System which are required for the purpose of the Distribution System planning. The Distribution Licensee shall assist the LV consumers to furnish the information required, such as:
  - a) The location /address of the Consumer at which the loads are connected or proposed to be connected;
  - b) Expected maximum demand in kVA or kW;
  - c) Existing load in kWh and kVARh;
  - d) Existing peak loads; and hourly load profile in kW/kWh;
  - e) Anticipated new loads;
  - f) Any proposed changes in load scheduling; and
  - g) Annual planned outages programme.
- ii.) The Distribution Licensee must on request from another Distribution Licensee provide such information concerning a point of connection as the other Distribution Licensee may reasonably require for the purpose of the integrated planning of the system.

## 62. Confidentiality

The Distribution Licensee shall ensure that any classified information obtained as a result of its activities shall not be revealed to anyone, except for persons who are authorised to receive such information. The Distribution Licensee shall also ensure that such information is not used for conducting any other activities, other than the licensed activity, except:

- i.) With the prior written consent of the person or business entity to whose affairs the information relates;
- ii.) If the information is already known to the public;
- iii.) If the Distribution Licensee is required or permitted to disclose the information to comply with these license conditions, under the order of the Authority or any effective legislation; and
- iv.) When the information is required to be disclosed in the normal course of performing licensed activity.

## **Incident / Accident Reporting**

### 63. Introduction

This Section cover procedure of incident / accident reporting in the event of its occurrence in Distribution System by User to Licensee and Licensee to User and the Authority.

### 64. Accident Reporting

- i.) If any accident occurs in connection with the Distribution System or supply or use of electricity in or in connection with, any part of the electric lines or electrical plant of any person and the accident results or is likely to have resulted in loss of human or animal life or in any injury to a human being or an animal, the Distribution Licensee shall give notice of the occurrence and of any such loss or injury actually caused by the accident to all concerned in such form and within such time as may be prescribed by the Authority .
- ii.) The Authority may, if it thinks fit, by order appoint an Electrical Inspector, to inquire and report:

- a) As to the cause of any accident affecting the safety of the public, which may have been occasioned by or in connection with, the distribution, supply or use of electricity; or
  - b) As to the manner and extent to which the provisions of the Act or rules and regulations made hereunder or of any Licensee, so far as those provisions affecting the safety of any person, have been complied with.
- iii.) The Distribution Licensee, Consumers and agreed parties shall provide access to information, entry to the premises for investigating the accident by the Inspector appointed by the Authority.

#### 65. Incident Reporting

- i.) The Distribution Licensee shall send a preliminary report to the Authority of all the significant Incidents in the Licensee's Area of Supply, which results in interruption to service, substantial damage to equipment within one week of its occurrence followed by a detailed report within one month.
- ii.) The Distribution Licensee and the Users shall establish a format and procedure for exchange of information.
- iii.) The Users shall furnish information to the Distribution Licensee regarding any major incident occurring in their Systems promptly.

#### 66. Reporting Procedure

- i.) All reportable incidents occurring in the lines and equipment of 33 kV and below substations shall be promptly reported orally by the Licensee whose equipment has experienced the incident, to all other significantly affected Users identified by the Distribution Licensee as well as to the Transmission Licensee and BEA. If the reporting incident is of significant nature, the written report shall be submitted within two hours duly followed by a comprehensive report within five (5) working days of the submission of the initial written report.
- ii.) The Transmission Licensee, may call for a report from any Distribution Licensee on any reportable incident affecting other Users and particularly in case such User whose equipment might have been a source of the reportable incident.

- iii.) The Major incidents that would affect the distribution and supply system are:
- a) Major breakdowns in the Distribution System having supply interruption for more than 12 hours at a stretch;
  - b) Major breakdowns in lines/cables/equipment; and
  - c) Any other incident which the Licensee may consider worth reporting with regard to safe and reliable operation of the Distribution System.

The reportable significant incidents, however, shall not be limited to the above categories only and may also be determined by the concerned Licensee.

- iv.) The format for such a report 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 or outage;
  - 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) Suggested remedial measures; and
  - m) Name and designation of the reporting person.

- v.) The report shall contain sufficient detail to describe the event to enable the recipient to assess the implications and risks arising out of the same. The recipient may ask for clarifications and additional information wherever necessary and it is obligatory that the reporting User shall put his best efforts and provide all the necessary and reasonable information.

- vi.) In case of a request by either party, the oral report shall be written down by the sender and dictated by way of a telephone message or sent by Fax/e-mail to the

recipient. In case of an Emergency the report can be given only orally and followed by written confirmation.

## Appendix A: Compensation for Failure to Meet Standards of Performance

### A.1 Quality of Supply

<i>Situation</i>	<i>Standard</i>	<i>Compensation</i>
Maintenance of Voltage within the specified range of the declared voltage	HV: $\pm 10\%$	Nu. 100 per week or part thereof for which voltage varies beyond the specified range
	MV: $\pm 10\%$	
	LV: $\pm 6\%$	

### A.2 Communication of Applicable Charge for Connection

<i>Situation</i>	<i>Standards</i>	<i>Compensation</i>
Where supply can be provided by extending the service cable from existing distribution network	Within 5 days of initial application	Nu. 100 Per Week or Part thereof
Where supply requires extension of LV Distribution System	Within 7 days of initial application	Nu. 100 Per Week or Part thereof
Where supply requires an extension of MV Distribution System including installation of transformer	Within 15 days of initial application	Nu. 100 Per Week or Part thereof

### A.3 Installation of Supply

<i>Situation</i>	<i>Standards</i>	<i>Compensation</i>
Where supply can be provided by extending the service cable from existing distribution network	Within 7 days of complete application	Nu. 100 Per Week or Part thereof
Where supply requires extension of LV Distribution System	*Within 1month of complete application	Nu. 100 Per Week or Part thereof
Where supply requires an extension of MV Distribution System including installation of transformer	**Within 6 months of complete application	Nu. 100 Per Week or Part thereof

### A.4 Restoration of Supply and Reconnection

<i>Situation</i>	<i>In Urban Areas</i>	<i>In Rural Areas</i>	<i>Compensation</i>
In the case of burnt meters	1 day of the receipt of complaint	2 day of the receipt of complaint	Nu. 100 per day or part thereof
In the case of normal fuse-off calls	1 day of the receipt of complaint	2 day of the receipt of complaint	Nu. 100 per day or part thereof
In the case of MV distribution overhead line breakdowns	1 day of the receipt of complaint	2 day of the receipt of complaint	Nu. 100 per day or part thereof
In the case of distribution transformer failure	1 day of the receipt of complaint	2 day of the receipt of complaint	Nu. 100 per day or part thereof
In the case of Underground cable faults	1 day of the receipt of complaint	2 day of the receipt of complaint	Nu. 100 per day or part thereof
Reconnection	1 day of the receipt of complaint	2 day of the receipt of complaint	Nu. 100 per day or part thereof

### A.5 Customer Charter

<i>Situation</i>	<i>Compensation</i>
Keeping of appointment with Customer	Nu. 50 for each instance of default
Visible display by authorized representative of Distribution Licensee of name-tag and, if required by Consumer, produce proof of identity and authorization	Nu. 50 for each instance of default

### A.6 Other Services

<i>Situation</i>	<i>Standards</i>	<i>Compensation</i>
Reading of customer's meter	Once every 3 months	Nu. 100 Per month or Part thereof
Change or name or tariff category	Second billing cycle	Nu. 100 Per Week or Part thereof
Closure of account	30 days	Nu. 100 Per Week or Part thereof

*The amended version approved in the Eighty Ninth Commission Meeting held on March 19, 2020.*