

Bhopal, Dated: 4th January 2006

No.37/MPERC/2006. In discharge of its functions under section 86(1) (i) of the Electricity Act, 2003 (No.36 of 2003), Section 9 (j) of Madhya Pradesh Vidyut Sudhar Adhiniyam 2000, clause 20 of the conditions of Distribution licence for Distribution licensee (including deemed licensee), 2004 and in exercise of powers contained in section 181(1), of Electricity Act, 2003, MPERC specifies the Madhya Pradesh Electricity Distribution Code as a part of M.P. Electricity Grid Code notified by the Commission.

MADHYA PRADESH ELECTRICITY DISTRIBUTION CODE (G-29 of 2006)

PART 1 - GENERAL

SECTION 1 : INTRODUCTION

1.1 Introduction

1.1.1 Madhya Pradesh Electricity Regulatory Commission hereby specifies a “Distribution code” to be followed by the Distribution licensee (including deemed licensee) in discharge of its functions under Electricity Act, 2003 and under M.P. Vidyut Sudhar Adhiniyam 2000. This Code shall come into force from the date of their publication in the official gazette of the Government of Madhya Pradesh. This code shall extend to the whole of the state of Madhya Pradesh.

1.1.2 Among the functions to be discharged by SERC, there is mentioned the responsibility for specifying or enforcing standards with respect to quality, continuity and reliability of service by licensees. This Distribution Code seeks to provide the framework of basic rules and procedures that shall govern all technical aspects of operation, maintenance, development, connectivity, and use of the distribution systems of the Licensee in its area of supply. The Distribution Licensee shall adhere to the standards of service quality and shall ensure compliance with the provisions in this Distribution Code together with the provisions of M.P. Electricity Grid code which will ensure that the supply system of the Licensee operates efficiently to provide reliable, economic and continuous service to all consumers or users.

1.1.3 This Distribution Code lays down the principles, however detailed procedures shall be developed and followed by Distribution Licensee.

1.2 Structure of Distribution Code

1.2.1 The Distribution Code has been divided into following four parts:

(i) Part 1: General Code

Section 1: Introduction

Section 2: Definitions and Glossary

Section 3: General Conditions

Section 4: Management of Distribution Code

(ii) Part 2: Distribution Planning and Connection Code

Section 5: Distribution Planning Code

Section 6: Distribution Connection Conditions

(iii) Part 3: Distribution Operation Code

Section 7: Distribution Operation Planning

Section 8: Cross Boundary Safety

Section 9: Operational Event and Accident reporting

(iv) Part 4: Distribution Metering and Protection Code

Section 10 : Distribution Metering Code.

Section 11: Distribution Protection Code

SECTION 2 DEFINITIONS AND GLOSSARY

2.1 Definitions

Words or expressions occurring in this Code and not defined herein shall have the same meaning as defined in the Electricity Act 2003, Madhya Pradesh Electricity Grid Code and Rules & Regulations framed by MPERC.

Act

The Electricity Act 2003 (Central Act No. 36 of 2003)

Agreement

An agreement means with its grammatical variations and cognate expressions an agreement entered into by the Licensee and the Consumer or User.

Apparatus

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

Area of Supply

The area of supply means the geographical area within which a distribution licensee is authorized by his license to supply electricity.

Breakdown

Breakdown means an occurrence relating to equipment of electrical energy supply system or other electrical line, which prevents its normal functioning.

Code

Code means the “Distribution Code” as in force from time to time.

Civil Emergency

Civil Emergency means any national disaster or other emergency which is declared by the State/Central Government as such and which is likely to disrupt electricity supplies.

Coincidence Factor

Ratio of combined peak demand of group of loads to the sum of peaks demands of the individual load.

Commission

Commission means Madhya Pradesh Electricity Regulatory Commission constituted under sub-section (1) of section 82 and under Chapter 2 of The Madhya Pradesh Vidyut Sudhar Adhiniyam 2000.

Conductor

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 Point/Interconnection

Connection point means the point at which the User's plant or apparatus or the Consumer's installation is connected to the Licensee's distribution system.

Consumer

Consumer means any person who is supplied with electricity for his own use by a Licensee or the Government or by any other person engaged in the business of supplying electricity to the public under this 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, the Government or such other person, as the case may be and shall also include Consumer whose installation has been temporarily disconnected.

Captive Power Plant / CPP

For the purpose of Grid Code, a Power Station that is primarily operated to meet a captive demand and is connected to State Transmission System but not supplying power to the Grid under normal circumstances.

Designated Officer

Designated Officer/Authority of the Licensee means an authority that has been notified as such by the Licensee in the manner prescribed by the Commission to exercise powers under specific provisions of this Code.

Distribution System

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. In M.P. context, it shall not include any part of the Transmission System except the terminal equipment (metering system, CT and PT) connected at consumer end and used for the supply of electricity to extra high voltage (66KV and above) consumers.

Diversity Factor

Ratio of the sum of peak demand of individual loads to the combined peak demand of the group of loads.

DSOCC

Distribution System Operations Control Centre established by Distribution licensee having adequate communication facilities including SCADA (Supervisory control and data acquisition).

Extra High Voltage

Extra High Voltage means a voltage which exceeds 33,000 volts under normal conditions subject to the percentage variation allowed under the Indian Electricity Rules 1956.

EHV Consumer

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

Grid Code

The set of principles and guidelines prepared in accordance with the terms of section 86 (1)(h) of the Electricity Act 2003.

Generating Company

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

High Voltage

High Voltage means a voltage, which is higher than 650 volts but does not exceed 33,000 Volts under normal conditions, subject to the percentage variation allowed under the Indian Electricity Rules 1956.

HV Consumer

High Voltage Consumer means a Consumer to whom electricity supply is arranged by the Licensee from the Distribution system at high voltage. The HV Consumer is a Consumer of the Distribution Licensee.

Independent Power Producer

Independent power producer, being a Power station within the State, owned by Generator who is not part of MPPGCL, STU or Central sector generation and is not classified as CPP.

Licensee

“**Licensee**” means the entity, which has been granted a distribution license or is a deemed licensee under the first or fifth proviso of Section 14 of the Central Act;

Licensed Contractor

Licensed Contractor means a Contractor licensed under Rule 19 and 45 of the Indian Electricity Rules 1956.

Load Factor

System load factor shall mean the ratio of average load to peak load over a designated period. 'Load Factor' of any consumer or consumer category is the ratio of the total number of units consumed during a given period to the total number of units that would have been consumed had the load been maintained throughout the same period and is usually expressed as a percentage, that is,

$$\text{Load factor in percentage} = \frac{\text{Actual units consumed during a given period}}{\text{* Load in KW x Total Number of Hrs. during the given period}} \times 100$$

*Note: - Load means Sanctioned load in KW in case of LT Installation and Contract demand in KW in case of HT Installation.

Low Voltage

Low Voltage means a voltage, which does not exceed 250 Volts between phase and neutral under normal conditions, subject to the percentage variation allowed under the Indian Electricity Rules 1956.

LV Consumer

Low Voltage Consumer means a Consumer to whom electricity supply is arranged by the Licensee from the Distribution system at low voltage. The LV Consumer is a Consumer of the Distribution Licensee.

MPPGCL

Madhya Pradesh Power Generation Company Limited.

Non-tariff Consumer

Non-tariff Consumer means a Consumer who purchases electricity under the terms of a special agreement and who is subject to the Electricity Grid Code and/or the Distribution Code either by virtue of a License or pursuant to an agreement with Distribution Company (Licensee), or otherwise agreed.

Occupier

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.

Operator

Operator means any person who either owns and/or operates generating plant connected to the distribution Licensee's system or holds a License under section 160 (1) of the Act.

Operational Boundary

Operational Boundary means the physical boundary between the equipment and apparatus operated by the Licensee and another User.

Performance Standards

Performance Standards mean the standards of performance referred under section 57 (1) read with section 86(1) (i) of Electricity Act 2003.

Primary Distribution System

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 33kV and 11kV used for transporting electricity to the Consumers of the Distribution Licensee.

Rules

The Indian Electricity Rules, 1956 or as (notified) framed by CEA.

Safety Management

Safety Management means the procedures adopted by the Licensee and Users to ensure the safe operation of its system and the safety of personnel required to work on that system.

Safety Procedure

Safety Procedure means the procedures specified within a safety management system.

Secondary Distribution System

Secondary Distribution System means a system in the Licensee's distribution system consisting of service lines and overhead lines having an operating voltage of 400V used for transporting electricity from the 11/0.4kV distribution transformers to the service mains of the Consumers.

Sub-Transmission System

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 Licensee for the purposes of distribution of electricity from one sub-station to another sub-station 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.

SLDC

SLDC means the State Load Dispatch Centre established under sub-section (1) of section 31 of the electricity Act 2003..

State Transmission Utility (STU)

The Board or Government Company specification as such by the State Government under sub-section(1) of section 39 of the Act.

Transmission License

The License to be granted to STU by the Commission under Section-V of Madhya Pradesh Vidyut Sudhar Adhiniyam 2000 as well as under section 14 of Electricity Act 2003.

Transmission System

The system of EHV electric lines and electrical equipment operated and/or maintained by STU or any Transmission Licensee for the purpose of the transmission of electricity between Power Stations, External Interconnections and the Distribution System.

User

A person, including Generator within Madhya Pradesh directly connected to distribution system, Distribution Licensee, any other Distribution Licensee in the same area of supply. User shall also mean a consumer connected to the distribution system including the ones availing Open Access in transmission or distribution system and who must comply with the provisions of the Distribution Code.

Year

Year means financial year commencing on the first day of April month.

SECTION 3 GENERAL CONDITIONS

3.1 Scope

3.1.1 Distribution Code shall be applicable to the Licensee and consumers and all users of the licensee's distribution system unless an exemption has been granted in writing by MPERC.

3.2 Interpretation

3.2.1 This code prescribes a uniform policy of distribution of electrical energy by the Licensee within its area of supply. Relevant acts, rules, Commission's orders, regulations and directives shall however remain in force.

3.2.2 The meaning of terms used in the Distribution Code shall be in accordance with the definitions in SECTION 2: "Definitions and Glossary".

3.2.3 SECTION 2 of this Code has been developed on the premise that accepted engineering terms do not require additional definitions.

3.2.4 The term "Distribution Code" means any or all parts of this document.

3.3 Responsibility for implementing Distribution Code

3.3.1 In discharging its duties under the Distribution Code, Distribution Licensee has to rely on information, which Users supply regarding their requirements and intentions.

3.3.2 Any Licensee and Users shall provide such reasonable co-operation and assistance as Distribution Licensee may require in such circumstances. Distribution Licensee shall not be held responsible for any consequences that arise from its reasonable and prudent actions on the basis of such information.

3.4 Compatibility with Indian Electricity Grid Code, State Grid Code and IE Rules

3.4.1 This Distribution Code is prepared such that it is consistent / compatible with the Indian Electricity Grid Code (IEGC), Madhya Pradesh Electricity Grid Code and Indian Electricity Rules 1956.

3.5 Non-compliance

- 3.5.1 The Distribution Licensee shall be required to comply with the provisions of the Distribution Code, in accordance with the implementation plan approved by the Commission.
- 3.5.2 All Users are required to comply with the provisions of the Distribution Code, approved by the Commission. In case any User is not able to comply with any of the provisions of the Distribution Code, User shall promptly refer the matter to the Licensee and/or the Commission, as the case may be.
- 3.5.3 Non-compliance of any provision of the Code by the Licensee shall be brought to the notice of Commission. The Commission may exempt the Licensee from compliance of any sub-section for a particular period if it is found that compliance is not feasible at that particular point of time, considering the resources available and the circumstances prevailing. However, a repeated non-compliance can be penalized by the Commission and can lead to cancellation of the License by the Commission.

3.6 Confidentiality

- 3.6.1 Under the terms of the Distribution Code the Licensee will receive information from Users relating to their business.
- 3.6.2 The licensee shall not, other than as required by the Distribution code, disclose such information to any other person without the prior written consent of the provider of the information.

3.7 Communication between Licensee and Users

All communications between Licensee and Users shall be in accordance with the provision of the relevant section of the Distribution Code and shall be made to the designated nodal officer appointed by Licensee.

Unless otherwise specifically required by the Code all communications shall be in writing, save that where operation time scales require oral communication, these communications shall be confirmed in writing as soon as practicable.

3.8 Settlement of Disputes

In the event of any dispute between any User and the Licensee, regarding interpretation of any regulations provided in the Distribution Code, the matter shall be resolved mutually among the parties or may be referred to the Commission. The Commission will be the final arbitrator whose decision shall be final and binding on both the parties.

SECTION 4 MANAGEMENT OF DISTRIBUTION CODE

- 4.1.1 The Licensee shall periodically review this Code and its implementation. For the above purpose a Distribution Code Review Panel, hereinafter called Panel, shall be established. The Panel shall consist of the following members:
 - (a) One member from each of the Distribution Licensee not below the rank of Chief Engineer. He should preferably be the member of the Grid code review committee;
 - (b) One member from STU not below the rank of Chief Engineer. He should preferably be the member of the Grid code review committee also;

- (c) One member nominated by MPERC who will also be the convener of the Distribution code review panel; and
 - (d) One member from among EHV/HV Consumers in MP State to represent all such Consumers.
- 4.1.2 The Panel shall meet at least once in six months.
- 4.1.3 The Panel shall carry out the following functions:
- (a) Periodical review of the code and associated standards and their implementation.
 - (b) Review all suggestions for amendments to this code.
 - (c) Prepare a time bound implementation plan.
- 4.1.4 The Distribution Code Review Panel shall be constituted by MPERC based on the recommendations of Distribution licensees. Commission shall nominate one of its officers to be the convener of the Distribution Code Review Panel. The convener of the review committee shall be responsible for arranging the meetings timely. The review Panel meetings shall be held in the office of the Commission. Secretarial support to the Panel shall be given by the Licensee. Licensees shall inform all Users of the names and addresses of the members of the Panel within 15 days of the constitution of the Panel, and shall inform Users in writing of any subsequent changes.
- 4.1.5 After every review, the Chairman of the Panel shall submit a report to the Commission about details of proposals received and accepted or not accepted by the Panel for revision in the code. The report shall include justification of proposed revision or rejection of the proposal.
- 4.1.6 Subject to the conditions in the next paragraph of this section, all revisions in the Code shall be made by consensus in the meeting of Distribution Code Review Panel with majority of members voting for the revision. In the event of no consensus being reached, the matter shall be referred to the Commission for decision. All revisions in the Distribution Code shall be approved by the Commission.
- 4.1.7 In any unusual situation where normal day-to-day operation is not possible without revision of some section(s) of the Distribution Code, a provisional revision may be implemented before the approval of the Commission is received, but only after discussions at a special meeting of Distribution Code Review Panel convened on an emergency basis. The Commission shall be intimated at the earliest but not later than 15 days of the provisional revision by recorded means of communication.
- 4.1.8 The changes/revisions proposed by the Distribution Code Review Panel shall be consistent/ compatible with Grid code.
- 4.1.9 The Commission may issue directives requiring Licensee to revise, supplement or replace the Distribution Code in such manner as may be specified in those directives and Licensee shall forthwith comply with any such directives.

PART 2 – DISTRIBUTION PLANNING AND CONNECTION

SECTION 5 DISTRIBUTION PLANNING

5.1 Introduction

- 5.1.1 The Distribution Planning covers technical and design criteria and procedures to be applied by the Licensee in planning and development of the distribution system including the sub-transmission system and provides for timely data exchange.
- 5.1.2 The Distribution Planning also applies to the Users of the Licensee's system in planning and development of their systems in so far as they affect the Licensee's distribution system.
- 5.1.3 To meet the requirements mentioned above, the reinforcement or extension of the licensee's distribution system may involve various works at the following locations:
- (i) At a connection point between a User's system and a Licensee's distribution system
 - (ii) On the distribution system or other facilities which join a connection point to the remainder of the Licensee's system
 - (iii) At any point of the distribution system other than mentioned in (i) and (ii) above.

5.2 Objectives

The objective of the Distribution Planning is:

- (a) To enable the distribution system to be planned, designed and constructed conforming to the relevant Electricity Acts, Rules, Safety Standards, Bureau of Indian Standards Specifications, Conditions of the License issued by the Commission and other relevant Construction Manuals, Maintenance Manuals and Standards such that economical, reliable and safe operation is assured.
- (b) To facilitate the use of the distribution system by any User connected or seeking connection to it.
- (c) To facilitate the Licensee in carrying out load forecast, anticipate future demand on the DistributionSystem and for reasons including, but not limited to:
 - (i) Planning the expansion of distribution system for any of the reasons mentioned below:
 1. Any development in a User's system connected to a distribution system
 2. Introduction of a new connection point between a User's system and a distribution system
 3. Increase in system capacity for maintaining Distribution operating standards and removing operating constraints
 4. Renovation, Up gradation and modernization of existing system

- (ii) Intimating the anticipated increases in demand and planned developments in distribution system to the Transmission Licensee to enable the latter to plan and execute corresponding extensions required in the transmission system.
 - (iii) Optimizing power procurement for meeting long term requirements;
- (d) To enable the Licensee to comply with the requirements of the Grid Code and to establish methods in which the Licensee shall co-operate with the Transmission Licensee in furnishing data for Transmission System Planning.

5.3 Planning Criteria and Procedure

- 5.3.1 The Licensee shall plan and develop its distribution system observing the technical and design criteria stated below and consistent with Indian Electricity Rules, other States and any other relevant Acts, Laws and Rules which are in force.
- 5.3.2 The distribution system shall be planned and developed to meet the load demand of all existing Users connected to it and all future Users seeking connection. To meet this objective all the apparatus and circuits of the distribution system shall have adequate capacity to carry electricity as per the demand under peak load conditions in future years in the plan period (Five year business plan under Conditions of licence) in an economical, safe and reliable manner.
- 5.3.3 It shall be the prime responsibility of the Licensee to assess appropriately the load demand of various categories of Consumers or users and forecast the demand of power annually within the area of supply in each of succeeding 5 years and this shall be updated annually This shall serve as input to the planning process of the Transmission Licensee. The planning process of the Licensees shall be coordinated with the planning process of the Users and STU.
- 5.3.4 The Licensee shall maintain the database of historical data for the load and the Distribution system for forecasting and system expansion studies. The Licensee shall prudently utilise modern forecasting tools in forecasting load demand and in addition, shall apply its knowledge of the electricity Consumers and an understanding of their usage of electricity and other economically viable sources of energy.
- 5.3.5 The methodology used in demand forecasting shall be in line with Clause 5.4. The methodology adopted and the results shall be approved by the Commission.
- 5.3.6 Due care should be taken during planning so that the load centres are not dependent on single sources of supply, particularly for high load density area/critical loads/essential services. The network should provide alternative feeding arrangements for meeting exigencies caused by the outage of normal feeding source. Cost effective alternate feeding arrangements like ring feeders with arrangement to open at various points shall be considered.
- 5.3.7 The distribution systems shall be so designed such that they are adequate to meet not only active power demand but also reactive power requirements. The system expansion plans shall include installation of capacitors of optimum capacity at optimum locations. However, a reasonable assumption may be made for the response of Consumers/ users of all categories in installing capacitors in their own systems.
- 5.3.8 Locations of 33/11kV Sub-stations and distribution transformers shall be made meticulously with an objective of optimisation from technical and economic considerations such that distribution technical losses and voltage regulation are within

permissible and reasonable limits. Mapping & revising the maps shall be done every year.

5.4 Load Forecast Methodology

5.4.1 The load forecast for various categories of consumers shall be carried out separately and aggregated for obtaining drawals from the system and for estimating total energy requirements, peak load, minimum system load, daily load curves on days of system peak, in different seasons, working days and holidays, connected load, diversity factors (or coincident factors) and load factors for the following shall be required:

- (a) Each category of Consumers
- (b) Each 33kV Sub-station / 11 kV distribution transformers
- (c) Each 33kV / 11 kV feeder emanating from EHV sub-stations of STU
- (d) Each District and
- (e) Entire area of the Licensee

5.4.2 The Licensee shall carry out Load forecast for the following categories of Consumers:

- (a) Domestic
- (b) Non-domestic and Commercial including X-Ray Plants.
- (c) Public Water Works, Sewage Pumping, etc.
- (d) Industrial (Both LT & HT separately)
- (e) Irrigation Pumping and Agriculture
- (f) Public Street Lighting
- (g) Railway Traction
- (h) Any other category the Licensee may decide or the Commission may prescribe in the latest Tariff order.

5.4.3 Realistic estimates of future growth of electrical load shall be prepared by the Licensee utilising sound modern tools and methods and various factors including but not limited to the following shall be taken into account:

- (a) Historic load growth trends for at least last three years
- (b) Historic annual rate of increase in the number of consumers for each category and the expected increase rates in future years
- (c) Historic increase in connected load per consumer and energy consumption per Consumer and the expected increase in future years for various categories
- (d) Co-coordinating with the forecasts of Government Departments including the Statistics, Economic Planning and Agriculture Departments for the growth in Industries, Railway Traction, Residential, Public Lighting, Agriculture etc.

- (e) Data directly obtained from HV and EHV consumers regarding their proposed development plans
- 5.4.4 The data obtained by the methods mentioned in sub-section 5.3 shall be analyzed and processed together and the entire data shall form the input for load forecast by various methodologies. The Licensee shall evaluate the results of the Load Forecast carried out by various methods. The Licensee shall submit the recommended forecasted results to the Commission with proper justifications. .
- 5.4.5 After forecasting process is completed (in any case well before 31st March of every year), the forecasted MW, MVAR and annual energy expected to be drawn by the Licensees from the Transmission System at each existing and proposed interconnection points, for the entire Licensee's System shall be intimated to the Transmission Licensee. The Commission expects that the forecast done shall tally with the load forecast submitted under MPERC (Power purchase requirement) Regulation'2005 and MPERC (Terms & conditions of determination of Tariff) Regulation '2005
- 5.4.6 Data to be furnished by Users to the Distribution licensee.

To enable Distribution licensee to complete their planning process and furnish planning data to STU, data under the following categories shall be furnished by all users of the distribution network, RESCOs and other Users notified by the Licensees by 31st December each year:

- (a) Standard Planning Data (Consisting of details normally sufficient for the Licensees to plan Distribution System development required to meet Users requirement). This includes development plans and future power and energy requirements. For unorganized categories of Users, the Licensees shall develop the data by statistical methods.
 - (b) Detailed Planning Data (Any additional data specifically required by the Licensee)
- 5.4.7 All Users with a demand of 1 MW and above seeking connection shall furnish their load data to the Licensee in the Format given in Annexure-1. When requested by a User seeking connection, the Licensee shall furnish relevant systems data as detailed in Annexure-2.

SECTION 6 DISTRIBUTION CONNECTION CONDITIONS

6.1 Introduction

- 6.1.1 The Distribution Connection Conditions specify the minimum technical, design and operational criteria which must be complied with by any User connected or seeking connection with the Licensee's distribution system .These conditions also specify the minimum technical, design and operational criteria with which the Licensee concerned shall comply in relation to the part of the distribution system at the connection site with Users. The terms and conditions of supply (Electricity Supply Code) issued by MPERC and the performance standards by Distribution Licensee are to be read together with this "Connection Conditions".
- 6.1.2 It shall be the Licensee's responsibility to ensure that a new connection to the distribution system does not exert adverse effects on the existing Users nor shall a new connection suffer adversely due to existing Users. The ownership and responsibility for all items of equipment at every connection site are to be clearly specified.

6.2 Application for Connection

- 6.2.1 Any User seeking connection with the Distribution System may submit an application for connection to the Licensee as per the procedures and formats prescribed in “Madhya Pradesh Electricity Supply Code”. All other Users shall provide the information as per Annexure-I of the Distribution Planning Code.

6.3 Acceptance or Rejection of Applications for Connection

- 6.3.1 The acceptance or rejection of the user’s application for supply connection shall be based on the guidelines mentioned in “Madhya Pradesh Electricity Supply Code”.

6.4 Connection Agreement

The Connection Agreement shall be as prescribed in the “Madhya Pradesh Electricity Supply Code”.

6.4.1 Maintenance at Connection Site

The User’s equipment at the Licensee’s site shall be maintained promptly and properly by the User and vice versa so that the life of equipment and personnel of the site owner are not jeopardised by the neglect of the other Company.

6.4.2 Site Operational Procedures & Break down Rectifications

The Licensee and User must make available staff to take necessary safety precautions and carryout operational duties at the Site. The written operating and safety instructions must be available at the site.

6.5 System Performance

- 6.5.1 The Distribution Licensee shall comply with the Distribution Performance Standards approved by the Commission.

- 6.5.2 All equipment connected to the Distribution System shall be of such design and construction as to satisfy the requirements of the relevant Indian Standard Specification. Where no BIS exist, the appropriate CBIP Manuals, IEC Standard or equivalent International Standard will apply.

- 6.5.3 Installation of all electrical equipment shall comply with IE Rules 1956.

- 6.5.4 For every new connection sought, the Licensee shall specify the connection point and the voltage to be used, along with the metering and protection requirements as specified in the relevant sections (SECTION 10: Distribution Metering Code and SECTION 11: Distribution Protection Code).

- 6.5.5 Insulation coordination of the Users’ equipment shall conform to applicable Indian Standards/Codes. Rupturing capacity of switchgear shall not be less than that specified by the Licensee.

- 6.5.6 Protection and Metering schemes shall be as detailed in the relevant sections of this Code.

6.6 Connection Points and Boundaries

- 6.6.1 Connection to Transmission System:

This shall be governed by the relevant Clauses of Madhya Pradesh Electricity Grid Code.

6.6.2 Connection of Generators to distribution systems:

The switchyard of the generating station shall be owned by the Generator. The outgoing feeder breaker from the generating station switchyard shall be the interface point with the other system.

6.6.3 CPPs and HV Consumers:

The outgoing cables from the tariff metering are connected to a set of fuse units, a circuit breaker, an Incoming Triple Pole Switch or an Incoming Double Pole Switch. The outgoing terminals to this isolating device are the boundary connection points.

6.6.4 Low Voltage and Medium Voltage Consumers:

The voltage may be 33kV or 11kV. The sub-stations are owned by the Users. The boundary shall be the feeder entry in the premises of the Users.

6.7 General Principle

To ensure system integrity and fairness to all Users, restrictions and controls as specified in section 11 are to be complied with..

6.7.1 Safety

All equipment of the Users including cables, wiring and overhead lines shall be compatible with safety standards prescribed under Indian Electricity Rules 1956 or safety regulations specified by Central electricity Authority under section 53 of the Electricity Act 2003 in respect of:

- (i) Manufacture quality
- (ii) Erection and location of installation

6.7.2 Insulation

The User's and the Distribution licensee's 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.

6.7.3 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 the IE Rules or the corresponding document which comes into force any time superseding the IE Rules.

6.7.4 Earthing

All components of Users' systems must be properly earthed as per 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 shall also be earthed appropriately.

6.7.5 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 and the resulting voltage dip at 11/ 0.4 KV substation is less than 5%. The Licensee can advise the User to change over to “auto-transformer” starting if other types of starters for a particular motor cause unacceptable system distortions.

6.7.6 Access to User’s Plant by the Licensee

Subject to the general protocols 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.

6.7.7 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 it is requisitioned in writing by the Licensee as an exceptional arrangement. The switchgear and controls of the User’s systems shall be so designed as to prevent back-energisation. This does not apply to Generating units intended for parallel operation with the Licensee’s System.

6.7.8 Power Factor

The Power Factor at which energy is imported by any user or Distribution licensee 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 user or Distribution licensee also receiving the energy.

6.7.9 Schedule of Assets of Distribution System

The Distribution licensee shall submit annually to the Commission by 30th September each year a schedule of Distribution assets (like supports, conductors, cables, insulators,

earth wires, meters and metering equipments of all overhead and underground network and Transformers, protective devices, gantry structures, control cables, control panels along with all civil and mobile assets pertaining to Distribution licensee) which contribute the Distribution System as on 31st March of that year indicating ownership on which distribution licensee has operational control and responsibility.

PART 3 – DISTRIBUTION OPERATION

SECTION 7 DISTRIBUTION OPERATION PLANNING

7.1 Introduction

7.1.1 This section specifies procedures and codifies practices to be followed by the Licensee and Users whose electric lines and electrical plant are connected to the Licensee's distribution system, for safe and efficient operation of their respective systems. This shall also apply to electrical interface between any two Distribution Licensees for safe and efficient operation of the interface. Operational matters pertaining to interfaces between distribution and transmission systems are dealt in the Electricity Grid Code with

which all Licensees have to comply and to enable such compliance obtain necessary and timely inputs, actions and flow of data from Users.

7.1.2 The following aspects of system operation are covered in this section:

- (a) Demand Estimation
- (b) Maintenance of Sub-stations and Distribution Lines
- (c) Outage Planning
- (d) Contingency Planning
- (e) Demand Management/Load Shedding
- (f) Interface with small Generators
- (g) System Protection and Fire Protection
- (h) Operational Labeling
- (i) Voltage/Frequency/Power Factor Monitoring and Control
- (j) Harmonics

7.2 Demand Estimation

7.2.1 The Licensee shall estimate its requirement (demand and energy) for 15 minutes blocks at Transmission - Distribution Interface points on day-ahead/week-ahead/month-ahead basis based on following inputs:

- (a) Historical information
- (b) Requirement from EHT and HT Consumers /Open access consumers
- (c) The generators connected to distribution system shall furnish their availability on 15 minutes basis at least 10 days before the commencement of the each calendar month or as required as per the Balancing and Settlement Code specified by the Commission.
- (d) Reasonable estimation of system losses

7.2.2 The Licensee shall maintain adequate historical data and shall use scientific techniques / methods for demand estimation.

7.2.3 Revision of Demand Forecast

When certain events occur changing the circumstances and necessitating revision of Demand Forecast, the revised values of demand shall be promptly intimated

- (a) by Users to the Licensees by Fax, immediately after revision
- (b) by the Licensees to STU by Fax, immediately after revision

The revised values hold good for the balance period of a day, a week or a month as relevant and supersede the data originally furnished.

7.3 Maintenance of Sub-stations and Distribution Lines

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

- (a) Power Transformers, Distribution Transformers, Voltage Transformers, Current Transformers, Circuit Breakers and Isolator (AB) switches and the details of maintenance works carried shall be entered in a register. The Engineer or Officer-In-Charge of Distribution Licensee shall sign the register.
- (b) Apart from regular maintenance, the Licensee shall carry out pre-monsoon/post monsoon inspection and maintenance every year on all 33kV, 11kV and LV lines.
- (c) The Licensee shall coordinate the maintenance works of all Sub-stations with STU maintenance works so as to minimize interruptions.

7.4 Outage Planning

7.4.1 The licensee shall furnish a proposed outage program to the SLDC/Sub-LDC for next financial year by 30th November of each year.

7.4.2 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 quantum of load restricted at any interconnection point during outage. Further the licensee shall get the information published in newspapers about the shut downs of the system one day prior to its occurrence.

7.4.3 After the SLDC/Sub-LDC releases the finally agreed transmission outage plan by 1st March of each year, the outage plan by the licensee shall be released by 31st March so as to coincide distribution system outage with it.

7.4.4 Before any lines or equipment of 11 KV and above (except Distribution transformers) are taken out of service, the licensee shall obtain consent of the designated officer of the SLDC/Sub-LDC even though the same is already included in the approved plan.

7.4.5 In addition to the above, in case of lines and equipments of 132kV or above, specific release of SLDC shall be obtained.

7.4.6 The above procedure shall not apply under the following circumstances:

- i) In cases where the estimated drawal at interconnection point is not affected;
- ii) Emergency situations to save plant and machinery;
- iii) In case of unforeseen emergency situations requiring isolation of line or equipment to save human life;
- iv) Disconnection to be effected on any user's or consumer's installation due to violation of agreement.

In such cases the SLDC shall be informed wherever the load to the extent of 5 MW or more is affected.

7.4.7 Outage of Users' Plant

All Users shall submit their tentative outage plans to its Licensee by 20th October each year. The HV and EHV Consumers, small Generators and CPPs shall each indicate three options of the date of commencement of outage - first, second and third preference. The Licensees shall harmonize the outage plan of distribution system elements and the Users'

outages and the comprehensive outage plan shall be communicated to the Users by 10th November. The Licensee shall endeavour to accommodate the first preference dates of outage commencement of the Users. By 20th November the Users shall convey either their acceptance of the revised programme (if revised by the Licensee) or their inability to accept the same. The Licensee shall further revise the outage plan incorporating the requirements of all Users by 25th November. The Licensee may convene coordination meetings with the Users before the second revision.

7.4.8 Implementation of Distribution Outage Plan

On receipt of final verified overall Outage Plan as agreed by all users from STU on 1st March, each Licensee shall prepare a list of outages which involve interruption of supply to its areas/large consumers. The Licensees shall intimate the Consumers of the date and time of interruption. Area interruption is to be announced in the media while large Consumers and Organizations which cater essential loads shall be intimated individually. A list of essential loads is given in Annexure-3 of this section. However maximum effort shall be made to arrange alternate feeding to essential loads. If interruption is inevitable, the duration shall be minimized. The Licensees shall synchronize outages for maintenance of 33/11kV Transformers, 33kV and 11kV lines, Distribution Transformers and LV lines with one another and with the Transmission outages involving interruption of supply. That is, maintenance works from upstream to downstream points of power flow in the total system (up to 33 KV lines and 33/11 KV substations) shall be carried out in one interruption, wherever alternate feeding cannot be arranged. The Licensees shall take action to draw additional power from the transmission system during outages of small Generators and CPPs. The Licensees shall transmit the relevant parts of the final verified overall outage plan to its Users immediately, after it is received from STU.

7.4.9 Specific Release from SLDC before Actual Shut-down

Notwithstanding any approved outage plan the Licensee shall not take any feeder or equipment out of service nor permit any small Generator to shut-down without specific release from SLDC unless:

- (a) The drawal at any connection point does not increase beyond the scheduled value
- (b) The shut-down will not lead to avoidable repeated interruption to Consumers' loads

Even in cases (a) and (b), SLDC or the relevant EHV Sub-station shall be informed telephonically before the shut-down operations are conducted.

7.5 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.

7.5.1 Contingency Mitigation and Contingency Averting

- (a) The Licensee and the Users shall have standing joint action procedures for responding to:
 - (i) An impending emergency/blackout, when alerted, with a view to avert the emergency;

- (ii) Grid Warnings from SLDC to meet an impending emergency by conducting necessary operations efficiently with an objective to minimize the impact of the contingency;
 - (iii) Urgent requests for emergency load relief by pre-planned programmes to arrange load relief with minimum disruption to essential loads and process industries. This action may avert system collapse due to low frequency. This issue is dealt in detail in section 7.5.
- (b) The Licensees shall pass on the advance warnings received from SLDC to selected Users.
- (c) Establishment of the **Distribution System Operations Control Centre (DSOCC)** :

All Licensees shall identify important 33kV Sub-station(s) which is / are strategically located near the geographic centre and load centres of each Licensee's supply area to act as *Distribution System Operations Control Centre (DSOCC)* having adequate communication facilities including SCADA (Supervisory control and data acquisition). The **DSOCC** shall be manned round the clock with additional shift staff during emergency periods.

The action to be taken as a response to the Grid Warnings from SLDC as decided by the Managers of the Distribution Licensee shall be conveyed to the operation staff by the **DSOCC**. Standing instructions may also be spontaneously followed by **DSOCC** by conveying remedial actions and standard responses to various stations and Officers in various situations.

DSOCC shall be responsible to coordinate with SLDC and for receiving instructions regarding blackout management, emergency operating instructions, restoration etc.

7.6 Demand Management or Load Shedding

- 7.6.1 Load shedding shall be carried out by the Licensees promptly whenever requisitioned by SLDC for maintaining load-generation balance and system frequency.
- 7.6.2 Advance information from SLDC will enable preparation for load shedding by the Licensees with minimum disruption and minimum inconvenience to Users.
- 7.6.3 Amount of Load Shedding required at any time shall be assessed as per
- (i) The information and instructions received from SLDC and
 - (ii) The system frequency as indicated by the frequency meters installed at DSOCC and other locations

The quantum of load shedding depends on the amount of generation shortage and expressed as a percentage of existing load.

7.6.4 Duration of Load Shedding

The nature of load shedding may be classified as under:

- (i) Temporary, one time basis
- (ii) Repetitive and periodic (e.g. a given amount of load to be shed during peak load hours every day)

- (iii) Continuous, till a new generating station or a new power transformer is commissioned or
- (iv) Emergency basis (unforeseen cause)

The load relief is therefore specified by a percentage of existing load or by the amount of load in MW to be shed and the duration and commencement time and whether one time, repetitive continuous or periodic.

7.6.5 Communication of Load Relief Requirement

The Licensee shall communicate the requirements of load relief using **DSOCC** and media. **DSOCC** shall inform all 33kV sub-stations, which shall in-turn intimate the users in their jurisdiction of supply in case of scheduled load shedding. If necessary, load relief operations may be conducted in the sub-stations by tripping 11kV feeders. Load shedding planned in advance (day earlier etc) shall be published in the newspaper widely circulated in the area where intended load is to be shed.

7.6.6 Guiding Principles

The total load relief required in the Licensee's area is to be spread in the entire area and to be distributed among maximum number of consumers so that the impact is mitigated. Also when long term load relief is required rotational load shedding should be resorted to. To the extent possible essential loads and process industries to be exempted.

The Licensee shall study the behavior of its system especially under ABT and try to establish links between grid frequency and load shedding time such as to minimize unscheduled load shedding under low grid frequency conditions.

7.7 **Interface with small Generators**

The electrical power generated at small generating stations (6 MW or less) pertaining to power projects based on non-conventional energy sources , usually owned by private developers shall have to be evacuated by connecting them to the distribution systems. In such cases the provisions in the sub-section 6.6 also apply in addition to the provisions of the Power Purchase Agreement/Wheeling Agreement and Connection Agreement (SECTION 6).

7.7.1 Paralleling with the Distribution System

Paralleling a small generating unit and significant change in load shall be joint operations of the Licensee and the small generator. When the Licensee desires that a generating unit isolated for any purpose such as maintenance works on part of the distribution system to which the generating unit is normally connected, the generator shall provide a guaranteed isolation.

7.7.2 Harmonics

Whenever the Licensee finds salient pole synchronous generating units are producing harmonics causing system disturbances, it shall advise the generator to install filters within a prescribed time limit, failure to comply will entail penalty or disconnection.

7.7.3 Induction Generators

Adequate precautions shall be taken by the generators to limit system disturbances, when the induction generator (e.g. Wind Mill Generator) is synchronized. Induction

generators shall install adequate capacitors to compensate the reactive power drawal. Also whenever the power factor is found very low during starting period and causes voltage dip in the Licensee's system the Licensee may advise the Generator to install capacitors and the generator shall comply the same. Failure to comply entails penalty.

7.8 Protection

7.8.1 The Licensees shall attend Protection Committee Meetings according to the MP Electricity Grid Code. They shall organise quarterly protection review meetings with Users to review the functioning of protections in service in distribution system and Users' systems to ensure protection coordination and correct gradation of relay settings and to suggest modifications. Other protection issues are dealt in a separate section 9.

7.9 Fire Protection

7.9.1 Fire fighting equipment as per safety standards shall be provided at all 33/11 kV Sub-stations. The personnel on duty shall be trained to use the fire fighting equipment. At the Distribution System Operations Control Centre an additional set of fire fighting equipment shall be provided.

7.10 Operational Labelling

7.10.1 The Licensee and each User shall be responsible for the provision 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. The Licensees shall indicate double feeding points at all locations by means of signboards. The list of locations of double feeding points shall be indicated in a register kept at the Sub-station and communicated to all operational staff working in the area.

7.11 Monitoring and Control of Voltage, Frequency and Power Factor

The Licensees shall comply with IE Rules 1956, the Indian Electricity Grid Code, Madhya Pradesh Electricity Grid Code, Distribution Performance Standards and other Operating Standards developed and approved. These documents shall be read in conjunction with this section.

- (i) The licensee shall monitor the voltage, frequency and power factors in the distribution system at different points at peak and off-peak hours and take reasonable measures for improvement of the same in co-ordination with the consumers with Demand of more than 1 MW, and the transmission licensee.
- (ii) The 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.
- (iii) 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 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 quality of supply as per IE Rules. The Capacitors, wherever available in the 33 kV substations shall be operated to maintain a reactive

compensation to be within acceptable limits of power factor of at least 0.9 keeping the bus voltage in view.

- (iv) Users/Consumers having loads with high harmonic content, low power factor and fluctuations shall install appropriate correction equipment.
- (v) The licensee shall abide by the instructions issued by the SLDC from time to time on load management for maintaining frequency of supply within specified limits.
- (vi) Unfair action by SLDC or WRLDC: If a particular Licensee promptly arranges load relief as required by SLDC but SLDC and WRLDC fail to obtain proportionate relief in the systems of other Licensees and States which is proved by lack of improvement of frequency despite load shedding in the Licensee's area, the matter shall be reported by the Licensee to MPERC or CERC depending on whether the default has occurred within Madhya Pradesh or in another State under the jurisdiction of Western Region respectively.

7.12 General Matters

7.12.1 Operational Data

If additional data over and above what is furnished under provisions of Distribution Planning Code and Connection Conditions is required, any User shall provide the data to the Licensee on request and vice versa. System performance is achieved by complying with standards in planning, design and construction stages but if any deviation is observed during operation then special studies such as short circuit, stability, voltage regulation, security and reliability studies shall be conducted by the Licensee independently or jointly with Users and the data required for such studies shall be supplied by the Users to the Licensee. The user or licensee requisitioning the data has to justify the need for the data if the data supplying agency (user or licensee) demands so and shall keep the data received confidential.

The data furnished by another entity shall be used by the recipient only for the purpose for which the data is supplied.

7.12.2 Communication

Reliable communication links shall be established for exchange of data, information and operating instructions between the licensees and consumers with a Demand of more than 5MW, generators connected to distribution system and the SLDC.

7.12.3 Operational Problems

The Licensee shall develop operating procedures consistent with the Distribution code for smooth and coordinated operation of the distribution system. Whenever the operators of the Licensee and the Users experiences difficulty which prevents smooth coordinated system operation at interconnection points, these operational procedures shall be followed. If the results of special studies warrant modifications to the system or some items of equipment they shall be carried out promptly by the Licensees and Users in their respective systems.

SECTION 8 CROSS BOUNDARY SAFETY

8.1 Introduction, Scope and Objectives

- 8.1.1 This section specifies safety procedures and precautions for ensuring that work in a Licensee's system or in a User's system is carried out safely in situations where it is possible to achieve safety only by operations (isolation and earthing) in the other's system across the Connection Point. User may mean another Licensee also so that this Code applies for safety across the boundary between two Licensees, by substituting "another Licensee" for "User".
- 8.1.2 Safety in Cross-Boundary Safety Code means ruling out the possibility of electrical supply with certainty to the equipment/system part on User's side or Licensee's side of a interconnection Point from the other's system (Licensee's or User's System) by means of physical and visible isolation and earthing the part of the system to which the equipment/system part is connected to enable work to be carried out safely on the equipment/system part.
- 8.1.3 For clarity and avoidance of doubt, the general safety manual for the entire system of an entity and Safety Rules of Local Installation for each station (not the Local Safety Instructions of the connection site as developed as per sub-section 10.3) of the Licensee and Users to be developed by the respective entities are the internal documents of the respective entities (which do not need the approval of an external authority), and are distinct from this Cross-Boundary Safety Code. This Code does not make any provisions in matters pertaining to the internal safety of the various entities. The following is the criterion for deciding whether Cross-Boundary Safety Code or internal Safety Manual with Local Installation Safety Rules is to be applied for a particular work:
- (a) If both installation (apparatus or lines) on which work is required to be carried out and the equipment by which the safety precautions are executed (isolating switch and earth switch) are located in the system of the same entity (either a Licensee or a User) then the Internal Safety Manual of the entity is followed.
 - (b) If the installation/apparatus/lines on which work is carried out and the isolating switch are located in the systems of different entities (i.e. systems of a Licensee and a User) then Cross- Boundary Safety Code applies.

8.2 Safety Co-ordinator

- 8.2.1 The Licensee and the Users shall designate Safety Co-ordinators for each connection point. The list of the Safety Co-ordinators with their names, addresses and telephone numbers shall be circulated to all concerned and any change shall be notified promptly to all concerned. There shall be two Safety Co-ordinators for each interconnection point - one from Licensee and the other from the User.
- 8.2.2 The Safety Co-ordinator representing a user or licensee at a connection site who requisitions for Inter System Line Clear permit (ISLCP) for carrying out work in the system shall represent/ become the Requesting Safety Co-ordinator (RSC) for a particular work.
- 8.2.3 The Safety Co-ordinator representing an entity, who, in response to the requisition for an ISLCP by an RSC representing another entity carries out the necessary operations for ensuring safety and issues an ISLCP, is the Implementing Safety Co-ordinator (ISC).

- 8.2.4 All Safety Co-ordinators shall have thorough knowledge of the parts of power system network of which they are In-Charge, the Site Common Diagrams (SCD) and Single Line Diagrams (SLD) of the relevant Connection Sites.

8.3 Local Safety Instructions

- 8.3.1 For each connection site Local Safety Instructions (LSI) shall be developed both in respect of Licensee side and the User side. That is, two documents shall exist for each connection site. The Licensee and the User shall exchange the respective LSIs. The LSI of the Licensee will become valid after approval by the User. The LSI of the User will become valid after approval by the Licensee. The LSIs of any connection site shall be revised immediately after a modification work (expansion, up gradation, etc.) is carried out and requires fresh approval from the other party. Any LSI shall be consistent with Indian Electricity Rules 1956.
- 8.3.2 If an LSI drafted and submitted by the Licensee or the User to the other party for approval, is not approved by the other party, then the party (whose approval is required) shall revise the original draft in a way acceptable to it. If the version revised by the other party is accepted by the proposing party then the same version will come into force. If the revised version of the party is not acceptable to the proposing party then the more stringent version shall come into force.

8.4 Inter-System Line Clear Permit (ISLCP)

- 8.4.1 ISLCP is a document issued by the representative (Implementing Safety Co-Coordinator) of one entity (Licensee or User) to the representative (Requesting Safety Co-Coordinator) of another entity (User or Licensee) after carrying out isolating and earthing operations in the system of the former entity and communicating that it is safe to carry out work in the system of the latter entity on the item of equipment for which ISLCP has been applied. An ISLCP is a guaranteed and confirmed declaration and certification by the issuing person that all safety precautions like isolation and earthing have been executed and the apparatus (the correct isolator and earth switch) will be maintained in the same positions as required for safety and that all operations have been carried out in accordance with the relevant Local Safety Instructions and the Indian Electricity Rules 1956. Each ISLCP refers to a unique operational work and bears a unique number, date and time. ISLCP Form has two parts. The first part pertains to issue and the second part pertains to cancellation.

8.5 Inter-System No Back Feed Certificate (ISNBFC)

- 8.5.1 This is a document in the prescribed proforma stating that a particular feeder/apparatus will not be charged from a specified source (usually a standby source, i.e. other than a normal source) thereby certifying isolation from that particular source. The ISNBFC is issued in the same form as ISLCP, writing "ISNBFC" at the top. The correct isolator shall be kept open and locked in the open position. The key shall be kept in a box having locking arrangements. Further a caution notice is affixed to the isolator handle. Precautions shall be taken to prevent inadvertent closure especially in the case of electrically or pneumatically operated isolating switches. The isolating switch chosen must be the one where the physical opening of contacts is visible. ISNBFC is applicable when an installation or feeder has multiple feeding sources and is issued by one Safety Co-ordinator to another Safety Co-ordinator. The RSC collects ISNBFCs from all Safety Co-ordinators pertaining to all possible feeding sources. The person who issues ISNBFC shall earth the feeder only after receiving an assurance from the RSC by telephone message or FAX that the system part has been isolated from all sources and will not be charged before removal of the earth. In the case of isolating from normal feeding the

relevant document is the ISLCP. The ISC shall obtain ISNBFC from RSC before earthing the system part on which ISLCP is requisitioned.

8.6 Work at Both Sides of a Connection Point

8.6.1 ISLCP may be issued by either a Licensee or a User to the other party for carrying out work. If the issuing party also plans to carry out work on its side of the connection point then the safety coordinator belonging to the issuing party who has previously issued the ISLCP to the other party in the capacity of an ISC now requests the safety coordinator of the other entity in a different capacity (RSC) to issue a separate ISLCP. The safety coordinator of the other entity shall issue a separate ISLCP bearing a separate number and code to the safety coordinator who has previously issued an ISLCP in the capacity of ISC. The two ISLCPs are treated as two different documents and bear separate numbers and codes. The equipment and System part for both ISLCPs are the same. The safety precautions are removed on the system part only after both ISLCPs are cancelled. That is, removal of earths and closing of isolators for energisation are carried out only after both ISLCPs are cancelled.

8.7 Safety Logging

8.7.1 Every Safety Co-ordinator shall maintain a Safety Log. The Safety Log is distinct from Operations Log. All messages relating to Safety Co-ordination sent and received by the Safety Co-ordinators and the operations carried out shall be recorded chronologically in the Safety Log by the respective Safety Co-ordinators. The Safety Log shall be preserved for a period not less than one year. In case of a dispute, accident or any investigation, the Safety Log shall be preserved or deposited with the authority until the issue is finally closed.

SECTION 9 OPERATIONAL EVENT AND ACCIDENT REPORTING

9.1 Objective

9.1.1 A system of reporting of various Incidents and Events (which invariably occur in the distribution system) exerting varying degrees of impact on the system, by Users to the Licensees and by the Licensees to the Users and MPERC, is necessary for timely acquisition of information pertaining to system conditions by the various Agencies and for:

- (a) taking responsive action by the Licensees and the Users.
- (b) modifying subsequent planned operations to suit the new condition and status to which the system is propelled by the Incident.
- (c) taking preventive action, after analysis, to avert or reduce recurrence of such incidents which exert deleterious effects on the system.
- (d) planning measures to mitigate the adverse effects of the events already occurred and
- (e) facilitating Regulatory monitoring.

This section specifies which incidents are to be taken cognizance of and the methods and time scales of reporting.

9.2 User

- 9.2.1 In Incident Reporting Code, a 'User' has limited meaning and is defined as an EHV or HV Consumer, a small Generator, a CPP or another Licensee having contiguous supply area and with whom energy exchange takes place.

9.3 Cross-Boundary Operational Effect

- 9.3.1 An Incident in the System of a Licensee or a User is considered to cause a Cross-Boundary Operational Effect if the Incident causes the Other's system to operate differently from the way in which it would have operated in the absence of that effect.

9.4 Real Time Operational Reporting of Incidents by the Licensees and by the Users

- 9.4.1 Oral intimation of Incidents:

All Incidents, minor or major and all trippings, outages and breakdowns causing or likely to cause Cross-Boundary Operational effect shall be intimated on phone immediately after their occurrence or as soon as possible by the duty operator of a Licensee or User in whose system the Incident has occurred to the relevant duty operator of the other entity. Relevant Duty Operator means the Operator in-charge of the part of the system that requires updated knowledge about the Incident for correctly operating the part of system which is affected by the incident and of which he is In-Charge.

- 9.4.2 Information of Post Incident Normalcy:

An Incident causes an abnormal situation in the system. Immediately after normalcy is restored, the duty operator of the User's system shall intimate the fact to the duty operator of the Licensee's system on telephone if the Incident has occurred in the User's system and the Licensee's operator shall intimate the User's operator on telephone, if the Incident has occurred in the Licensee's system.

- 9.4.3 Internal Dissemination of Information of Incidents:

Each Licensee and each User shall establish an internal process whereby the information first given to the relevant contact person (duty Operator) by the other entity is disseminated to other person's in-charge of other stations in the system of the same entity who may need the knowledge about the Incident for their own operations and for coordination.

9.5 Oral and Written Reports of Incidents

- 9.5.1 Any incident considered important by a User or any incident falling in the list mentioned in 9.6 which occurs in a User's system shall be intimated orally by a responsible officer of the User to a responsible officer of the Licensee within two hours of its occurrence.

- 9.5.2 The User shall also send a detailed report by FAX or an authenticated telephone message within six hours of oral intimation furnishing details about the incident. The Fax or telephone message shall be confirmed by a signed post copy, posted within two days. This procedure constitutes a written report. If it is not possible to send a complete report by FAX within six hours of oral intimation, a preliminary report shall be faxed within six hours and the detailed report shall be sent within four days. When the incident is informed orally for the first time the Licensee may inform the User that the incident is not considered significant and exempt the User from submitting a written report. If the User does not consider an incident significant and does not intimate the Licensee, then

the Licensee, having acquired operational knowledge under the provisions of sub-section 11.6 about the incident may differ, treat the incident as significant and may request the User to send a written report. The User shall then send a report by FAX within six hours.

- 9.5.3 Similarly for incidents occurring in the Licensee's system the Officer of the Licensee shall intimate the affected User's officer within two hours of occurrence. The User may request the Licensee within two hours of oral intimation to send a written report. The Licensee shall then send a report by FAX within six hours and if all details cannot be included in this FAX, a separate detailed and complete report shall be sent within four days.

9.6 Written Reports by Users to Licensees:

- 9.6.1 The Users shall submit monthly written reports mentioning all significant and major incidents to the Licensee. The proforma is given below:

- (a) Location of incident and antecedent conditions including weather conditions
- (b) Date and time of incident
- (c) Plant, equipment and lines involved
- (d) Supplies interrupted and duration, if applicable
- (e) Amount of generation lost in the case of small generators and CPPs, if applicable
- (f) Brief Description of Incident
- (g) Time taken to return to service. If not taken into service already, expected time to return to service
- (h) How safety Interlocks functioned when the incident occurred
- (i) Whether operating instructions were followed after the incident
- (j) Damage to plant/equipment
- (k) Details of Relay Operation/Indications
- (l) Sequence of Trippings, whether cascade trippings occurred
- (m) Brief Excerpts from the Log Book
- (n) Causes of the Event as analysed by the utility/company
- (o) Remedial Measures
- (p) System parameters before and after the Incident

9.7 Written Reports by the Licensee to the Users

- 9.7.1 A Licensee shall send written reports regarding incidents to a User as and when requested by the User, furnishing the reasonable details required by the User within a reasonable period.

9.8 Intimation of Incidents in a User's System by a Licensee to other Users

- 9.8.1 An Incident occurring in a User's System may affect the Licensee's system and in addition the systems of other Users. In such a case the Licensee shall intimate all the

Users affected or likely to be affected by the Incident as soon as possible and furnish the details which are necessary for the other Users including the following:

- (a) Brief Description of the Incident, time and date
- (b) The manner in which the other Users are likely to be affected by the incident
- (c) Action taken by the Licensee to mitigate the adverse effects of the incident on the other Users
- (d) Action required by the other Users to enable the Licensee to manage the situation created by the incident

9.8.2 The information shall be given orally by the Licensee to the other Users within twelve hours or as soon as possible and the written reports shall be sent within two days.

9.9 Accidents

9.9.1 All accidents (fatal and non-fatal) shall be reported by the Users and the Licensees in accordance with the Indian Electricity Rules 1956.

9.10 Post Incident Joint Investigation

9.10.1 After an incident all Users affected and the Licensee may individually conduct investigation. Such independent investigations are the internal matters of the entities. It is provided that joint investigation of an incident may be conducted only if all parties agree. Any proposal for joint investigation by a party shall be in writing. A joint investigation dealt in this sub-section is in addition to any other joint investigation conducted under Dispute Resolution Procedure and any joint investigation ordered by MPERC or the Government.

PART 4 – METERING AND PROTECTION CODE

SECTION 10 DISTRIBUTION METERING CODE

DISTRIBUTION METERING CODE

10.1 Introduction

10.1.1 This section prescribes a uniform policy in respect of electricity metering for Distribution Licensees including metering of electrical energy supplied to the consumers of various categories and all Users of Distribution System including open access customers as per the Electricity Act 2003 in the state of Madhya Pradesh.

10.1.2 The energy received by Distribution Licensees from STU shall be governed by Transmission Metering Code (Part V of Electricity Grid Code).

1.2 Objective

1.2.1 The objective is to define metering standards, which will affect proper metering of the system parameters for the purpose of accounting, commercial billing and settlement of electrical energy and will also provide information which will help to optimize the system planning.

1.3 Scope

1.3.1 The scope is to cover the practices that shall be employed and the facilities that shall be provided for the measurement and recording of various parameters like active/reactive/apparent power/energy, power factor, voltage, frequency etc.

1.3.2 The scope specifies the requirement of calibration, testing and commissioning for metering equipments viz. energy meters with associated accessories, current transformers and voltage transformers. The other metering requirements including commercial requirements shall be read in line with Chapter 8 of Madhya Pradesh Electricity Supply Code.

10.4 Reference Standards

10.4.1 The following Indian Standards (amended up to date) shall be applicable as relevant to meters and associated equipment:

Sr. No.	Standard Number	Standard Title
i.	IS 13010	Electromechanical Whole Current Meter for Class 1 & 2
ii.	IS 13779	AC Static Watt-hour Meters for Class 1 & 2
iii.	IS 14697 (1999)	AC Static Transformer Operated Watt-hour and VAR-hour Meters for Class 0.2S and 0.5S
iv.	IS 13779 (1999) IS 14697 (1999)	AC Static Transformer Operated Watt-hour and VAR-hour Meters for Class 1.0 and 0.5
v.	IS 2705	Indian Standard for Current Transformers
vi.	IS 3156	Indian Standard for Voltage Transformers
vii.	IS 9348	Indian Standard for Coupling Capacitors and Capacitor Divider
viii.	IS 5547	Indian Standard for Capacitor Voltage Transformer
ix.	CBIP Technical Report - 88	Specification for AC Static Electrical Energy Meters
x.	CBIP Technical Report - 111	Specification for Common Meter Reading Instrument
xi.	IS 9000	Basic Environmental Testing Procedures for Electronic & Electrical items

10.4.2 The following International Standards (amended up to date) can be applicable as relevant to meters and associated equipment not complying to Indian Standards or not manufactured in India:

Sr. No.	Standard Number	Standard Title
i.	IEC 687	Specification for AC Static Watt-hour Meters for Active Energy (Classes 0.2S and 0.5S)
ii.	IEC 1036	Alternating Current Static Watt-hour Meters for Active Energy (Class 1 & 2)
iii.	IEC 1268	Alternating Current Static Watt-hour Meters for Reactive Energy (Class 2 & 3)

10.5 Definitions

All terms not defined herein but are referred in this Code shall be deemed to be as defined in the Madhya Pradesh Electricity Grid Code (MPEGC), Madhya Pradesh Electricity Distribution Code (MPEDC) or Indian Electricity Grid Code (IEGC).

10.5.1 Active Power

Active Power means the product of voltage and the in-phase component of alternating current measured in units of watts and standard multiples thereof, which is:

$$\begin{aligned} 1,000 \text{ W} &= 1 \text{ kW} \\ 1,000 \text{ kW} &= 1 \text{ MW}, \quad 1,000 \text{ MW} = 1 \text{ GW} \end{aligned}$$

10.5.2 Active Energy

Active Energy means the electrical energy produced, flowing or supplied by an electrical circuit during a time interval, and being the integral of the instantaneous power with respect to time, measured in units of watt hours or standard multiples thereof, which is:

$$\begin{aligned} 1,000 \text{ Wh} &= 1 \text{ kWh} = 1 \text{ Unit} \\ 1,000 \text{ kWh} &= 1 \text{ MWh} \\ 1,000 \text{ MWh} &= 1 \text{ GWh} = 1 \text{ MU (Million Units)} \end{aligned}$$

10.5.3 Apparent Power

Apparent Power means the product of voltage and current measured in units of volt amperes and standard multiples thereof, which is:

$$\begin{aligned} 1,000 \text{ VA} &= 1 \text{ kVA} \\ 1,000 \text{ kVA} &= 1 \text{ MVA} \\ 1,000 \text{ MVA} &= 1 \text{ GVA} \end{aligned}$$

10.5.4 Apparent Energy

Apparent Energy means the integral of the Apparent Power with respect to time. It is measured in Volt Ampere hour and standard multiple thereof, which is:

$$\begin{aligned} 1,000 \text{ VAh} &= 1 \text{ kVAh} \\ 1,000 \text{ kVAh} &= 1 \text{ MVAh} \\ 1,000 \text{ MVAh} &= 1 \text{ GVAh} \end{aligned}$$

10.5.5 Data Processing System (DPS)

Data Processing System means a Computer System meant for receiving data manually or downloaded through CMRI or retrieved through remote communication network, converts downloaded raw data into standard output format (e.g. ASCII, csv) and processes data for various calculations, analysis and display.

10.5.6 Common Meter Reading Instrument (CMRI or MRI)

CMRI means a common meter reading instrument with necessary accessories capable of downloading data from various makes of AC static energy meters when loaded with the corresponding meter specific downloading software(s) called meter reading instrument program(s). The CMRI can extract information about energy data, load survey data, meter status, meter anomaly and tamper data from the memory of the meter and store for retrieval at a later stage.

10.5.7 Demand Integration Period

Demand Integration Period means the period over which active power, reactive power or apparent power are integrated to produce energy value for averaging. For settlement purpose, each Demand Integration Period shall be of 15 minutes or such period as indicated by the Commission, which shall commence from 00.00 hours.

10.5.8 Demand Values

- (a) Demand value in terms of energy: Energy demand means active energy, reactive energy or apparent energy drawn during any demand period, one of which shall commence from 00.00 hours.
- (b) Demand value in terms of power: Power demand means active power, reactive power or apparent power drawn during any demand period, one of which shall commence from 00.00 hours.

10.5.9 Instrument Transformers

Current Transformer (CT) or Voltage Transformer (VT).

10.5.10 Maximum Demand (MD) in kW/kVA

Maximum Demand (MD) means the maximum value of average kW or kVA, as the case may be, delivered to the consumer at the point of supply, during any demand integration period in a month (or any other period under consideration/billing cycle) as per sliding window principle of demand measurement.

10.5.11 Meter

Meter means a device for measurement of unidirectional/bidirectional active energy, reactive energy, apparent energy, active power, reactive power, apparent power, currents, voltages, power factor, frequency and any other electrical parameter derived out of these measurements.

10.5.12 Main Meter and Check Meter

The primary meter used for billing purpose is named as Main Meter. The check meter is used as back-up to main meter for billing purpose, in case main meter fails or operates erroneously or shows error beyond permissible limits.

10.5.13 Metering Equipment

Metering equipment means set of energy meter, associated instrument transformers and cabling, local networking equipment for meters and associated wiring.

10.5.14 Metering Point

Actual metering point means the physical location of current and voltage sensing devices (i.e. CTs, VTs) and meters at which electricity is metered.

10.5.15 MPPTCL

MPPTCL means Madhya Pradesh Power Transmission Company Limited registered under the Companies Act, 1956.

10.5.16 Operational Metering

Metering equipment and associated accessories (excluding any tariff metering) installed in the sub-station for:

- (a) Operational and System Control purposes
- (b) Monitoring and Manual Recording purposes
- (c) Auditing and accounting of energy
- (d) Assessment of agricultural consumption (installed on HV or LV side of 11/0.4kV Distribution Transformers)

10.5.17 Overall Accuracy

The combined accuracy of meter, associated instrument transformers and cabling for a given metering system.

10.5.18 Reactive Power

Reactive Power means the product of voltage and current and the sine of the phase angle between them measured in units of volt amperes reactive and standard multiples thereof, that is:

$$1,000 \text{ VAr} = 1 \text{ kVAr}$$

$$1,000 \text{ kVAr} = 1 \text{ MVar}$$

$$1,000 \text{ MVar} = 1 \text{ GVar}$$

10.5.19 Reactive Energy

Reactive Energy means the integral of the Reactive Power with respect to time. It is measured in volt amperes reactive hours and standard multiple thereof, that is:

$$1,000 \text{ VArh} = 1 \text{ kVArh}$$

$$1,000 \text{ kVArh} = 1 \text{ MVarh}$$

$$1,000 \text{ MVarh} = 1 \text{ GVarh}$$

10.5.20 TOD Tariff or TOU Tariff

TOD stands for Time Of Day and TOU stands for Time Of Use, which means different tariff during different usage time in a day.

10.6 Right to Install Energy Meters

10.6.1 The consumer shall extend necessary assistance to Distribution Licensee for installation of the metering equipment by providing required access to their premises, metering system and associated electrical equipments. Refer Chapter 8 of “Madhya Pradesh Electricity Supply Code” for the details of installations and other requirements.

10.7 Facility to be Provided on Metering Locations

10.7.1 The consumer shall make available required space for metering system, irrespective of ownership and also access to the metering system. Necessary auxiliary supply shall be extended up to the metering system, if powered by only external supply.

10.7.2 The testing of meter shall be carried out at following periodicity as defined in Madhya Pradesh Electricity Supply Code:

- | | | | |
|-----|---------------------------------|---|-----------------------------|
| (a) | HT Meters including MDI | - | At least once every 1 year |
| (b) | Low Voltage Three Phase Meters | - | At least once every 3 years |
| (c) | Low Voltage Single Phase Meters | - | At least once every 5 years |

10.7.3 The consumer shall be fully responsible for proper security, protection of the metering equipment and sealing arrangement.

10.7.4 Distribution Licensee shall control the issue of its own seals and sealing pliers, and shall keep proper register/record of all such pliers and the authorized persons to whom these are issued.

10.8 Data Collection Systems and Data Downloading

10.8.1 The Distribution Licensee will arrange reading of various categories of consumers through their authorized representative. Meters or its stored data may be read manually or using CMRI through meter optical port or remote metering devices by authorized Distribution Licensee representative.

10.9 Operation and Maintenance of the Metering System

10.9.1 The operation and maintenance of the meters shall be the exclusive responsibility of the Distribution Licensee.

10.9.2 The operation and maintenance of the metering system includes proper installation, regular maintenance of the metering system, checking of errors of the CTs, VTs and meters, proper laying of control cables and protection thereof, cleaning of connections condition of meter box and enclosure, condition of seals, regular/daily reading meters and regular data retrieved through CMRI and DPS, attending any breakdown/fault on the metering system etc.

10.10 Provisions of Madhya Pradesh Electricity Supply Code

10.10.1 The provisions relevant to metering system as depicted in Madhya Pradesh Electricity Supply Code shall be applicable.

10.11 The metering and recording parameters of all new meters installed after three months of notification of this code shall be as per table below:

Table 1.

Voltage Level	Connected Load	Metering Parameters
HT	All	(a) ToD (b) KVA (MD) (c) Average Pf (d) KWH (e) Harmonics (f) RKVAH
LT	25-100 KW	(a) ToD (b) KVA (MD) (c) Average Pf (d) KWH (e) RKVAH
	15-25 KW	(a) ToD (b) KVA (MD) (c) Average Pf (d) KWH (e) RKVAH
	3-15 KW	(a) KW(MD) (b) Average Pf (c) KWH
	0-3 KW for Domestic and Non-Domestic only	(a) KW (MD) (b) KWH

10.11.1 The accuracy class of all meters and instrument transformers installed on different categories of consumers shall be as given in Table 2.0 and Table 3.0 below:

Table 2. Accuracy class of L.T., H.T. & E.H.T. Meters

Category of Consumers	Accuracy class of Meters	
	For all new meters to be installed after the date of notification of this code	For all meters in existence as on the date of notification of this code
L.T. (Whole-current)	1.0	2.0
L.T. (CT operated)	1.0	1.0
H.T. Consumers	0.5	1.0
E.H.T Consumers	0.2	0.2
Inter-Utility	0.2	0.2

Table 3. Accuracy classes of Current and voltage transformer (instrument transformers):

Category of Consumers	Accuracy classes of instrument transformers associated with meters	
	For all new instrument transformer to be installed after the date of notification of this code	For all instrument transformer in existence as on the date of notification of this code
L.T. Consumers	2.0	1.0
H.T. Consumers	0.5	1.0

Category of Consumers	Accuracy classes of instrument transformers associated with meters	
	<i>For all new instrument transformer to be installed after the date of notification of this code</i>	<i>For all instrument transformer in existence as on the date of notification of this code</i>
E.H.T Consumers	0.2	0.5
Inter-Utility	0.2	0.2

10.12 Metering Pattern for HT Consumers

10.12.1 For supply to all HT/EHT consumers, metering equipments will be outdoor type panel mounted on the double pole structure where the Distribution Licensee's line is terminated near the consumers premises.

10.12.2 The CTs used for the metering shall be of single ratio only. Existing metering equipments employing higher ratio CTs may be replaced with proper CT ratio as above.

10.12.3 CT/PT units shall be preferably of dry type to reduce routine maintenance problems at site to the minimum. If dry type CT/PT unit is not available, it may be of semi dry sealed type. Use of EHV grade oil may only be specified where oil is required.

10.12.4 CT/PT units, Kiosks etc., if procured by a consumer, shall conform to specification of Distribution Licensee and shall be from the vendors' approved by Distribution Licensee.

10.12.5 HT connections at consumers premises given through 33kV/11kV outdoor CTs and PTs or CT/PT units:

- (a) Only armoured cable shall be used to connect the CTs and PTs or CT/PT units to the meter box/control panel. The cable should not be embedded in the ground.
- (b) Entry of the cable into the marshalling box of the CTs and PTs or CT/PT units as also the meter box/control panel shall be through glands and check nuts which may further be sealed with epoxy compound and other sealing arrangements like lead seals/plastic seals etc.
- (c) The CTs and PTs or CT/PT units and the meters shall be kept as near as possible to each other taking into consideration the location, IE Rules etc.

10.12.6 HT metering unit including CT/PT unit and the meter itself, shall be mounted on double pole structure so located that Distribution Licensee's Officers can approach the location without having need to avail the assistance of the personnel of the HT Consumers. The location should be clearly visible from outside.

10.13 Metering Pattern for LT Consumers

10.13.1 The mounting of metering equipment and its location shall be governed by Madhya Pradesh Electricity Supply Code.

10.13.2 The meters and CTs shall be installed in standard pilferage-proof double compartment CT meter boxes.

10.13.3 Meter boxes shall have double seals so that the consumer may not pretend that the seal was broken inadvertently or by Distribution Licensee's officials who go to take meter readings. All the CTs and the meters shall also be sealed.

10.13.4 The rated VA burden, accuracy class and short circuit withstanding level of CT shall be based on requirement and in accordance with the relevant standards. The CTs shall be duly tested by Testing Wing of Licensee before the installation.

10.13.5 The CT ratio for different loads shall be selected as under. The action to replace CT with that of higher ratio CT shall be initiated as soon as load crosses 80% of upper limit:

Above 25 HP up to 35 HP	: 50/5 A
Above 30 HP up to 45 HP	: 60/5 A
Above 40 HP up to 55 HP	: 75/5 A
Above 55 HP up to 75 HP	: 100/5 A
Above 75 HP up to 100 HP	: 150/5 A

10.13.6 The service line shall be of PV cables and brought to the consumers premises with the help of supporting steel wire and through a vertical 1.5” G.I. pipe installed at the premises of the consumer and then brought into the meter box. Service lines will be so laid as to maintain minimum clearance of the service lines required in the streets as per rules.

10.13.7 All terminals shall be made by crimped termination.

10.13.8 The iron-clad switch/MCB shall be provided after the meter only.

10.14 Mechanism for Dispute Resolution

10.14.1 Any disputes relating to metering with STU/Other utilities shall be settled in accordance with procedures given under MP Electricity Grid Code, Distribution Code and Supply Code. The provision of this Code shall be binding on all existing and future customers and users of the system. In case of unresolved dispute, the matter may be referred to the Commission.

10.14.2 Any disputes relating to consumer metering shall be settled in accordance with procedures given under “Guidelines for Redressal of Consumer Grievance” read in line with “Madhya Pradesh Electricity Supply Code”.

10.15 Implementation of Distribution Metering Code

10.15.1 For existing metering system not complying with this Code, Distribution Licensee shall submit a time-bound action plan to MPERC for replacement of the metering equipment in phased manner keeping in view the emerging and future requirements like development of open power market, Electricity Act 2003 Requirements, ABT implementation in state, other tariff structures (TOD, Seasonal tariff etc.), Quality of Supply monitoring, remote monitoring/control etc.

10.15.2 For any new procurement of metering system, this code shall be applicable immediately.

10.15.3 **The Central Electricity Authority, under the requirement of section 55 (1) of the Electricity Act 2003 has also notified the draft Regulation on operation and installation of meters. If any provision of this code is inconsistent with any provision of the Regulation finalized by CEA in this regard at a later date, the provisions of Regulation finalized by CEA in this regard shall prevail.**

SECTION 11 DISTRIBUTION PROTECTION CODE

11.1 Introduction

11.1.1 In order to safeguard Distribution System, Users' system from faults it is essential that certain minimum standards for protection be adopted. This section describes these minimum standards.

11.2 General Principles

11.2.1 No item of electrical equipment shall be allowed to remain connected to the system unless it is covered by appropriate protection based on reliability, selectivity, speed and sensitivity of protective relays/devices. The Distribution Licensee shall cooperate with the Transmission Licensee to ensure correct and appropriate settings of protective relays/devices to achieve effective, discriminatory isolation of faulty line/equipment within the time target clearance specified by the transmission Licensee.

11.2.2 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.

11.2.3 The settings of protective relays for 33kV and 11kV 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. The Transmission Licensee shall notify the initial settings and any subsequent changes to the Distribution Licensee/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. Short circuit studies required for deciding the relay settings shall be conducted by the Distribution Licensee with the data collected from the Transmission Licensee and the Users. 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.

11.2.4 SLDC shall be responsible for arranging periodical meetings between the Generating companies, Transmission Licensee and the Distribution Licensees to discuss coordination of protection. The Distribution Licensee shall investigate any malfunction of protection or other unsatisfactory protection issues. The Licensees shall take prompt action to correct any protection malfunction or activity as discussed and agreed to in these periodical meetings.

11.2.5 All generating units and all associated electrical equipment of the generating company connected to the distribution system shall be protected by adequate protection, as per CBIP Manual Publication 274, so that the system does not suffer due to any disturbances originating at the generating unit.

11.2.6 For power transformers in the distribution system, differential protection shall be provided for 7.5MVA and above along with backup three phase IDMTL over current and earth fault protection. Power transformers in parallel operation shall have directional feature.

- 11.2.7 Transformers of 1.0 MVA and above but less than 7.5 MVA shall be protected by non-directional IDMT over current relays (3 nos.) and earth fault relay (1 no.) on both HV and LV side.
- 11.2.8 In addition, all transformers of 1.0 MVA and above shall be provided with Buchholz relay, winding temperature and oil temperature protection in addition to the above mentioned relays wherever circuit breakers exist.
- Provided that for existing transformers, where protection as above are not existing, above protection shall be deliberated in Protection Co-ordination Committee and provided in phased manner within 3 years.
- 11.2.9 Co-ordination of 33kV and 11kV lines with the originating EHV sub-station should be ensured to avoid major sub-station equipment/EHV transmission lines from tripping on through-faults due to delayed fault clearance in the distribution feeders. Protection on 33kV & 11kV transformers and lines (or their sectionalizing points) of HV system of Distribution Licensees shall be coordinated with settings of protection provided on 33kV & 11kV connection points at STU sub-stations.
- 11.2.10 All 33kV and 11kV lines at connection points shall be provided with a minimum of over current and earth fault relays as follows:
- (a) Non-Parallel Radial Feeders: Two-phase non-directional time-lag over current and one non-directional IDMT earth fault relay with suitable settings to obtain time discrimination. Instantaneous high set element shall also be provided on non-parallel feeders.
 - (b) Parallel Feeders/ Ring Feeders: Two phase directional time-lag over current and one directional IDMT earth fault relay with instantaneous high set element.
 - (c) Long Feeders / Transformer Feeders: For long feeders or transformer feeders, the relays should incorporate directional time lag over current and earth fault relays with instantaneous high set element.
- 11.2.11 The above provisions of this clause shall be reviewed by the Distribution Licensee and also by Distribution Code Review Panel. Amendments will be effected only after approval by Distribution Code Review Panel and shall also be conveyed to STU and MPERC.

By Order of the Commission

Ashok Sharma, Dy. Secy.

Annexure 1**Load Data for demands of 1 MW and above to be furnished by the 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 sub-station of STU)
5.	Rated Voltage at which supply is required.	
6.	Type of supply	Normal/Alternate/Dedicated (specify details)
7.	Description of Equipment	<u>Motors</u> State purpose and number of installations, voltage and kW rating, starting current, type of motors, types of drives and control arrangements
		<u>Heating</u> Type and kW Rating
		<u>Furnace</u> Type, Furnace Transformer Capacity and Voltage Ratio
		<u>Electrolysis</u> Purpose, kVA capacity
		<u>Lighting</u> kW Demand
8.	Sensitivity of demand to fluctuations in voltage and frequency of supply at the time of Peak Demand	(Give details)
	Voltage sensitivity	MW/kV MVar/kV
	Frequency sensitivity	MW/Hz MVar/Hz
9.	Phase unbalance imposed on system Maximum (%) Average (%)	
10.	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)	(Give details)
11.	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 1MW or more (With reference to Clause 5.4.7)**

S No	Description	Details
1	Topographical map of Madhya Pradesh marking boundaries of area of supply of Licensee.	One copy
2	Single line diagram of distribution system, line length and conductor sizes,	One copy

S No	Description	Details
	substation capacity, capacitor sizes, etc. to be indicated. (Restricted to the respective area of concern for the prospective Consumers).	
3	General relaying and metering arrangements at 33/11kV substations 5MVA and above	Description
4	Details of the grid substation at the point of interconnection with the distribution system	Furnish the following: <ul style="list-style-type: none"> • MVA capacity and voltage • EHV transformer sizes, voltage ratio and range of taps • Fault MVA at EHV bus and HV bus as applicable • Bus impedance • Diagram of substation layout
5	Drawal from the interconnection point(s)	Furnish the following: <ul style="list-style-type: none"> • Maximum and minimum MW drawal from each interconnection with transmission system or with any other distribution Licensee during last six months.
6	Short-circuit Data feed	Three Phase and Single Phase short-circuit level at the point of connection to the Consumer.
7	Alternate Supply arrangement feasibility	Furnish: <ul style="list-style-type: none"> • Normal Supply • Standby supply provision from a different EHV Sub-station

Annexure 3

ESSENTIAL LOADS AND PRIORITY OF RESTORATION

Priority	Type of Load	Name of the Sub-station
2.	Mining	
3.	Railways (Traction)	
4.	Ports & Important Industrial Loads	
5.	Important cities	
6.	Hospitals, Water Works, TV and Radio Stations	
7.	Process Industries	
8.	Defence Establishments	
9.	Telecommunication Exchanges/Stations	
10.	Police Stations	
11.	Fire Stations	