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# Maharashtra Electricity Regulatory Commission, Mumbai

## MAHARASHTRA ELECTRICITY REGULATORY COMMISSION (STATE GRID CODE) REGULATIONS 2006

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# Maharashtra Electricity Regulatory Commission, Mumbai

## MAHARASHTRA ELECTRICITY REGULATORY COMMISSION (STATE GRID CODE) REGULATIONS 2006

### Introduction

The State Grid Code lays down the rules, guidelines and standards to be followed by various agencies and participants in the intra-State transmission system to plan, develop, maintain and operate the intra-State transmission system, a part of Western Region Grid System, in the most efficient, reliable and economic manner, while facilitating a healthy competition in the generation and supply of electricity.

This State Grid Code contains the following parts, namely:

**Part A: General** - This part largely deals with the scope and application of these regulations and with Grid Coordination Committee;

**Part B: Planning Code** - This Code specifies the principles, procedures and criteria that shall be used in planning and development of intra-State transmission system;

**Part C: Connection Conditions** - Connection Conditions specify the minimum technical and design criteria that shall be complied with by a Transmission Licensee and User connected to or seeking connection to the intra-State transmission system;

**Part D: Operating Code** - This Code describes the conditions under which the State Load Despatch Centre shall operate the intra-State transmission system and under which Users shall operate their facilities, in so far as necessary to maintain the security and quality of supply and safe operation of the intra-State transmission system, under both normal and abnormal operating conditions;

**Part E: Scheduling and Despatch Code**- This Code deals with the provisions related to development of Scheduling and Despatch Code for the State of Maharashtra;

**Part F: Metering Code**- Metering Code provides for development of minimum requirements and standards for Installation and Operation of meters, for commercial and operational purposes, to be provided by User or Transmission Licensee at the Connection Point;

**Part G: Miscellaneous**- This part deals with a number of miscellaneous aspects including compliance with the State Grid Code and dispute resolution.

### Objectives of State Load Despatch Centre

Operation and management of intra-State transmission system is an important and complex activity which regularly requires addressing a number of complex, and often conflicting, issues and a State Load Despatch Centre plays the most important role in this.

The functions of State Load Despatch Centre have been articulated in Electricity Act 2003. However, it is important to define the underlying objectives of State Load Despatch Centre, which are sought to be achieved through these functions. These objectives of State Load Despatch Centre have been defined as under:

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- To ensure reliable power supply, within available generation capacity, to all consumers located at all points of the system;
  - To ensure frequency and voltage conditions within permissible limits;
  - To supply power in most economic manner possible; and
  - To limit the duration and extent of repercussions due to faults and restore normal functioning of the network as soon as possible.

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# Maharashtra Electricity Regulatory Commission, Mumbai

## MAHARASHTRA ELECTRICITY REGULATORY COMMISSION (STATE GRID CODE) REGULATIONS 2006

### ELECTRICITY ACT, 2003

No.MERC/Legal/151/State Grid Code/0338 - In exercise of the powers conferred by clause (zp) of section 181 read along with clause (h) of section 86 of the Electricity Act, 2003 (36 of 2003), the Maharashtra Electricity Regulatory Commission hereby makes the following regulations, namely: -

#### **1 Short title, extent and commencement**

- 1.1 These Regulations may be called the Maharashtra Electricity Regulatory Commission (State Grid Code) Regulations, 2006.
- 1.2 These Regulations shall extend to the whole of the State of Maharashtra.
- 1.3 These Regulations shall come into force with effect from 1<sup>st</sup> April 2006.

#### **2 Definitions**

- 2.1 In these Regulations unless the context otherwise requires:
  - (a) “**Act**” means the Electricity Act, 2003 (36 of 2003), including amendments thereto;
  - (b) “**Automatic Voltage Regulator**” means a continuously acting automatic excitation control system to control the voltage of a Generating Unit measured at the generator terminals;
  - (c) “**Black Start Procedure**” means procedure necessary to recover the grid from a partial or a total blackout;
  - (d) “**Commission**” means the Maharashtra Electricity Regulatory Commission;
  - (e) “**Connection Agreement**” means an agreement setting out the terms relating to connection to and/or use of the intra-State transmission system;
  - (f) “**Connection Point**” means a point at which a User’s or Transmission Licensee’s Plant and/or Apparatus connects to the intra-State transmission system;
  - (g) “**df/dt Relay**” means a relay which operates when the rate of change of system frequency (over time) goes higher than a specified limit and initiates load shedding;

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- (h) **“Disturbance Recorder”** means a device provided to record the behaviour of the pre-selected digital and analog values of the system parameters during an Event;
  - (i) **“Data Acquisition System”** means a device provided to record the sequence of operation in time, of the relays/equipments/system parameters at a location;
  - (j) **“Event”** means an unscheduled or unplanned occurrence in the intra-State transmission system including faults, incidents and breakdowns;
  - (k) **“Event Logger”** means a device provided to record the sequence of operation in time, of the relays/ equipments at a location during an Event;
  - (l) **“Fault Locator”** means a device provided at the end of a transmission line to measure/indicate the distance at which a line fault may have occurred;
  - (m) **“Flexible Alternating Current Transmission (FACT)”** means facilities that enable power flows on A.C. lines to be regulated, to control loop flows, line loading etc.
  - (n) **“High Tension”** or **“HT”** means all voltages defined as “high” or “extra high” voltage under clause (av) of sub-rule (1) of Rule 2 of the Indian Electricity Rules, 1956 and corresponding voltage classifications as may be specified in accordance with clause (c) of sub-section (2) of Section 185 of the Act;
  - (o) **“Intra-State Transmission System”** (I<sub>n</sub>STS) means any system for conveyance of electricity by transmission lines within the area of the State and includes all transmission lines, sub-stations and associated equipment of transmission licensees in the State:

Provided that the definition of point of separation between a transmission system and distribution system and between a Generating Station and transmission system shall be guided by the provision of the Regulations notified by the Authority under clause (b) of Section 73 of the Act;

- (p) **“Low Tension”** or **“LT”** means all voltages other than those defined as “high” or “extra high” voltage under clause (av) of sub-rule (1) of Rule 2 of the Indian Electricity Rules, 1956 and corresponding voltage classifications as may be specified in accordance with clause (c) of sub-section (2) of Section 185 of the Act;
- (q) **“Maximum Continuous Rating”** means the normal rated full load MW output capacity of a Generating Unit which can be sustained on a continuous basis at specified conditions;
- (r) **“Operation”** means a scheduled or planned action relating to the operation of a System;
- (s) **“Single Line Diagram”** means diagrams which are a schematic representation of the HV/EHV apparatus and the connections to all external circuits at a Connection Point incorporating its numbering nomenclature and labeling;

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- (t) **“Site Common Drawing”** means drawings prepared for each Connection Point, which incorporates layout drawings, electrical layout drawings, common protection/control drawings and common service drawings;
  - (u) **“Spinning Reserve”** means generating capacity with some reserve margin, at standard rated frequency of 50 Hz, that is synchronized to the system and is ready to provide increased generation at short notice pursuant to dispatch instruction or instantaneously in response to a frequency drop;
  - (v) **“Static VAR Compensator”** means an electrical facility designed for the purpose of generating or absorbing Reactive Power;
  - (w) **“Sub-Load Despatch Centre”** means the offices and associated facilities of State Load Despatch Centre set up at Ambazari (Eastern Maharashtra) for monitoring and control of the State Grid and includes any such offices and associated facilities set-up by State Load Despatch Centre in future;
  - (x) **‘Under Frequency Relay’** means a relay which operates when the system frequency falls below a specified limit and initiates load shedding;
  - (y) **“User”** means persons, including in-State Generating Stations, Distribution Licensees Consumers of the Distribution Licensees directly connected to intra-State transmission system and persons availing of Open Access, who are connected to and/or use the intra-State transmission system:

Provided that User for the purpose of Regulation 36.4 to Regulation 36.9 of these Regulations shall also include in-State Generating Stations which are connected to the Distribution System of a Distribution Licensee.

Words or expressions used herein and not defined shall have the meanings assigned to them under the Act.

## **PART A: GENERAL**

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### **3 Scope of regulation and extent of application**

3.1 These regulations shall apply to-

- (i) the State Load Despatch Centre;
- (ii) every Transmission Licensee in the State including State Transmission Utility;
- (iii) every User who is connected to and/or uses the intra-State transmission system:

Provided that the Commission may issue directions relieving any Transmission Licensee or User, either suo-motu or based on an application submitted by such Transmission Licensee or User, of their obligations to implement or comply with the State Grid Code to the extent as may be stipulated in the directions.

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- 3.2 Transmission Licensee, forming part of the I<sub>n</sub>STS, and User ,having connection(s) to the I<sub>n</sub>STS, as on date of notification of these Regulations shall be given a maximum period of one year to comply with the following requirements under these Regulations:
- (i) Entering into a connection agreement in accordance with Regulation 14;
  - (ii) Providing for protection systems in accordance with Regulations 16.2 and 16.3;
  - (iii) Providing for communication facilities in accordance with Regulation 17;
  - (iv) Providing for system recording instruments in accordance with Regulation 18;
  - (v) Developing Single Line Diagrams in accordance with Regulation 19.3.1;
  - (vi) Developing Site Common Drawings in accordance with Regulation 19.4.2; and
  - (vii) Installation and Operation of meters in accordance with Metering Code developed as per Regulation 34.
- 3.3 The date of applicability of provisions related to Free Governor Action, as provided in Regulation 22.9, Regulation 22.10, Regulation 22.11 and Regulation 22.12 of these Regulations, shall be consistent with relevant provisions as provided in the Grid Code specified by Central Electricity Regulatory Commission under clause (h) of Section 79 of the Act.
- 3.4 Persons availing of open access, who are connected to and/or use the I<sub>n</sub>STS, shall comply with Transmission Open Access Regulations and Distribution Open Access Regulations notified by the Commission.

#### **4 State Grid Code**

- 4.1 The Commission shall put up a copy of the State Grid Code on its Internet website and make available, through State Load Despatch Centre and State Transmission Utility, a copy of the applicable State Grid Code to any person requesting it, at a price not exceeding the reasonable cost of reproducing it.
- 4.2 The Commission shall make available a copy of the notified State Grid Code to the State Load Despatch Centre and State Transmission Utility for it to be put up on the Internet websites of State Load Despatch Centre and State Transmission Utility respectively.

#### **5 Grid Coordination Committee**

- 5.1 A Grid Coordination Committee shall be constituted by the State Transmission Utility within thirty (30) days from the date of notification of these Regulations.

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5.2 The Grid Coordination Committee shall be responsible for the following matters, namely-

- (i) facilitating the implementation of these Regulations and the rules and procedures developed under the provisions of these Regulations;
- (ii) assessing and recommending remedial measures for issues that might arise during the course of implementation of provisions of these Regulations and the rules and procedures developed under the provisions of these Regulations;
- (iii) review of the State Grid Code, in accordance with the provisions of the Act and these Regulations; and
- (iv) such other matters as may be directed by the Commission from time to time.

5.3 The Grid Coordination Committee shall comprise of the following members:

- (a) One member from State Transmission Utility;
- (b) One member of the State Load Despatch Centre;
- (c) One member to represent the generating companies in the State;
- (d) One member to represent the Transmission Licensees in the State, other than the State Transmission Utility;
- (e) One member to represent the state-owned Distribution Licensees in the State;
- (f) One member to represent the privately-owned Distribution Licensees in the State;
- (g) One member to represent the Electricity Traders in the State;
- (h) One member to represent the Western Region Load Despatch Centre; and
- (i) Such other persons as may be nominated by the Commission.

Provided that the member from State Transmission Utility shall be the Chairperson of the Committee:

Provided that Chairperson shall nominate one person from State Load Despatch Centre as the Convener of the Grid Coordination Committee:

Provided further that the State Transmission Utility shall, in coordination with State Load Despatch Centre, facilitate and manage the functioning of the Grid Coordination Committee.

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- 5.4 The members of the Grid Coordination Committee shall be selected as follows:
- (i) the concerned Director of State Transmission Utility, having the responsibility of looking after technical activities of State Transmission Utility shall be the member referred to in clause (a) of Regulation 5.3 above;
  - (ii) the member referred to in clause (b) of Regulation 5.3 above shall be the head of State Load Despatch Centre;
  - (iii) the members referred to in clauses (c), (d), (e), (f), (g) and (h) of Regulation 5.3 above shall be nominated by their respective organizations, which organizations will be selected in rotation from among all such organizations in the State. The term of each such member, selected in rotation, shall be one (1) year.

Provided that the members nominated by each of the organisation to the above Committee shall be holding a senior position in their respective organization.

## **6 Grid Code Review**

- 6.1 State Grid Code shall be reviewed by the Grid Coordination Committee at least once in every twelve (12) months.
- 6.2 Upon completion of such review, the Grid Coordination Committee shall send a report to the State Transmission Utility providing information regarding:
- (a) outcome of the review; and
  - (b) any proposed revisions to the State Grid Code.
- 6.3 The State Transmission Utility shall send the report, referred in Regulation 6.2, to the Commission.

## **7 SLDC Responsibility**

State Load Despatch Centre shall discharge the functions assigned to it under the provisions of the Act and these Regulations in an independent and unbiased manner:

Provided that in event of a State Load Despatch Centre being operated by the State Transmission Utility, as per first proviso of sub-section (2) of Section 31 of the Act, adequate autonomy shall be provided to the State Load Despatch Centre for it to able to discharge its functions in the above mentioned manner.

## **PART B: PLANNING CODE**

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### **8 Transmission System Planning**

- 8.1 The State Transmission Utility shall publish on its Internet website the transmission system plan for the I<sub>n</sub>STS and shall also make the same available to any person upon request.

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- 8.2 The transmission system plan shall cover a plan period of five (5) years commencing from the financial year immediately following the year in which it is published:

Provided that the transmission system plan shall be updated by the State Transmission Utility each year and published in the manner specified in Regulation 8.1 by the 30th day of September each year and shall cover a plan period of five (5) years commencing from the financial year immediately following the year in which it is published.

- 8.3 The form of the transmission system plan shall be provided by the State Transmission Utility.

- 8.4 The transmission system plan shall describe the plan for the I<sub>n</sub>STS and shall include the proposed intra-State transmission schemes and system strengthening schemes for the benefit of all Users:

Provided that the transmission system plan may include information related not only to intra-State transmission lines but also additional equipment including transformers, capacitors, reactors, Static VAR Compensators and Flexible Alternating Current Transmission Systems:

Provided further that the transmission system plan shall also include information on progress achieved on the identified intra-State transmission schemes and system strengthening schemes.

- 8.5 The State Transmission Utility may, for the purpose of preparing the transmission system plan under these Regulations, seek such information as may be required by it, including generation capacity addition, system augmentation and long-term load forecast and all applications for open access:

Provided that the Distribution Licensees shall have the primary responsibility for developing long term load forecasts for their respective license areas. The Distribution Licensee may be guided by applicable provisions related to load forecasting as provided in Terms and Conditions of Tariff Regulations notified by the Commission.

Provided also that the State Transmission Utility shall consider, but not be bound by, the information provided under this Regulation in preparing the transmission system plan.

- 8.6 The State Transmission Utility shall also consider the following for the purpose of preparing the transmission system plan under these Regulations -

- (i) Plans formulated by the Authority for the transmission system under the provisions of clause (a) of Section 73 of the Act;
- (ii) Electric Power Survey of India report of the Authority;
- (iii) Grid Standards specified by the Authority under clause (d) of Section 73 of the Act;

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- (iv) Transmission Plan formulated by Central Transmission Utility under the provisions of Grid Code specified by Central Electricity Regulatory Commission under clause (h) of Section 79 of the Act;
  - (v) Transmission Planning Criteria and Guidelines issued by the Authority;
  - (vi) Recommendations/ inputs, if any, of the Regional Power Committee
  - (vii) Reports on National Electricity Policy which are relevant for development of I<sub>n</sub>STS; and
  - (viii) Any other information/data source suggested by the Commission.
- 8.7 The State Transmission Utility shall, while submitting its application under subsection (1) of Section 64 of the Act to the Commission for approval, also submit therewith its investment plan based on the identified intra-State transmission schemes and system strengthening schemes projected in the transmission system plan.
- 8.8 The cost of the transmission system planning study undertaken in accordance with this Regulation shall be allowed in the determination of the charges of the State Transmission Utility under clause (b) of sub-section (1) of Section 62 of the Act.

## **9 Planning Criterion**

- 9.1 The planning criterion shall be based on the security philosophy on which the I<sub>n</sub>STS has been planned. The security philosophy may be as per the Transmission Planning Criteria and other guidelines as given by the Authority.

Provided that State Transmission Utility shall carry out appropriate system studies while developing the transmission system plan.

- 9.2 The intra-State transmission system, as a general rule, shall be capable of withstanding and be secured against the following contingency outages without necessitating load shedding or rescheduling of generation during Steady State Operation:
- (i) Outage of a 110kV/132kV D/C line or,
  - (ii) Outage of a 220kV D/C line or,
  - (iii) Outage of a 400kV S/C line or,
  - (iv) Outage of a single Interconnecting Transformer or,
  - (v) Outage of a one pole of HVDC Bipole line or,
  - (vi) Outage of a 765kV S/C line.

Provided that the above contingencies shall be considered assuming a pre-contingency system depletion (planned outage) of another 220kV D/C line or 400kV S/C line in another corridor and not emanating from the same substation.

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- 9.3 All the Generating Units may operate within their reactive capability curves and the network voltage profile shall be maintained within voltage limits specified.
- 9.4 The intra-State transmission system shall be capable of withstanding the loss of most severe single infeed without loss of stability.
- 9.5 Any one of the events defined in the Regulation 9.2 above shall not cause:
- (i) Loss of supply;
  - (ii) Prolonged operation of the system frequency below and above specified limits;
  - (iii) Unacceptable high or low voltage;
  - (iv) System instability;
  - (v) Unacceptable overloading of I<sub>n</sub>STS elements.
- 9.6 In all substations (66kV/110kV/132kV and above), except HVDC, suitable number and capacity of transformers shall be provided to have adequate redundancy required to maintain firm capacity at the substation. In HVDC substations, at least one spare converter/inverter transformer shall be kept ready to use at any time.
- Explanation – for the purpose of Regulation 9.6, the term firm capacity shall mean the minimum transformation capacity available at the substation in case of outage of any one transformer.
- 9.7 State Transmission Utility shall carry out planning studies for Reactive Power compensation of I<sub>n</sub>STS including reactive power compensation at the in-State Generating Station's switchyard.

## **10 Planning Data**

- 10.1 Transmission Licensees and Users are to supply following types of data to the State Transmission Utility for purpose of developing the transmission plan:
- (i) Standard Planning Data;
  - (ii) Detailed Planning Data
- 10.2 Standard Planning Data
- 10.2.1 Standard Planning Data shall consist of details which are expected to be normally sufficient for the State Transmission Utility to investigate the impact on the I<sub>n</sub>STS due to User/Transmission Licensee development.

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10.2.2 Transmission Licensees and Users shall provide the following data to the State Transmission Utility from time to time in the standard formats provided by State Transmission Utility:

- (a) Preliminary project planning data;
- (b) Committed project planning data; and
- (c) Connected planning data.

Provided that the State Transmission Utility shall provide a date for submission of information in the said formats, after providing reasonable time to Transmission Licensees and Users:

Provided that the State Transmission Utility shall develop standard formats, for submission of above mentioned data, within one (1) month from notification of these regulations and make the same available on its Internet website:

Provided also that the State Transmission Utility shall be guided by the formats, developed for submission of above mentioned data, under the provisions of Grid Code specified by Central Electricity Regulatory Commission under clause (h) of Section 79 of the Act.

### 10.3 Detailed Planning Data

10.3.1 Detailed Planning Data shall consist of additional, more detailed data not normally expected to be required by State Transmission Utility to assess the impact of User/Transmission Licensee development on the I<sub>n</sub>STS.

10.3.2 Detailed Planning Data shall be furnished by the Users and Transmission Licensees as and when requested by the State Transmission Utility.

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## **PART C: CONNECTION CONDITIONS**

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### **11 Connection Standard**

The applicable technical standards for construction of electrical plants, electric lines and connectivity to the I<sub>n</sub>STS shall be as per the standards notified by the Authority under clause (b) of Section 73 of the Act:

Provided that the prevailing guidelines of the Authority shall be considered until the standards are notified under clause (b) of Section 73 of the Act by the Authority.

### **12 Safety Standard**

The applicable safety requirements for construction, operation and maintenance of electrical plants and electric lines shall be as per the standards notified by the Authority under clause (c) of Section 73 of the Act:

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Provided that the prevailing guidelines of the Authority shall be considered until the standards are notified under clause (c) of Section 73 of the Act by the Authority.

### **13 Application for connection**

- 13.1 Application for establishing new arrangement or modifying existing arrangement of connection to and/or use of the I<sub>n</sub>STS shall be submitted by the concerned Transmission Licensee or User to the State Transmission Utility:

Provided that the standard format for application mentioned in the Regulation 13.1 shall be developed by State Transmission Utility and shall be made available at its Internet website within two (2) months of notification of these Regulations.

- 13.2 The application mentioned in Regulation 13.1 shall include the following details:
- (a) Report stating the purpose of the proposed connection and/or modification, transmission licensee to whose system connection is proposed, description of apparatus to be connected or modification of the apparatus already connected and beneficiaries of the proposed connection;
  - (b) Construction schedule and target completion date; and
  - (c) Confirmation that the Transmission Licensee or the User shall abide by the provisions of State Grid Code, Indian Electricity Rules and various standards including Grid Connectivity Standards made pursuant to the Act.
- 13.3 The State Transmission Utility shall forward a copy of the application to the Transmission Licensee in whose system the connection is being sought, to State Load Despatch Centre and to every Transmission Licensee within the State whose Transmission System is likely to be affected by such application.
- 13.4 The State Transmission Utility or Transmission Licensee, in whose system the connection is being sought, may carry out the power system studies as considered appropriate before allowing any new connection.
- 13.5 The State Transmission Utility shall, within Thirty (30) days, from the receipt of an application under Regulation 13.1 and after considering all suggestions and comments received by the parties identified under Regulation 13.3
- (a) accept the application with such modification or such conditions as may be specified by the State Transmission Utility;
  - (b) reject the application for reasons to be recorded in writing if such application is not in accordance with the provisions of these Regulations.
- 13.6 In case of acceptance of an application as per sub-section (a) of Regulation 13.5, the State Transmission Utility shall make a formal offer to the applicant:

Provided that the State Transmission Utility shall forward a copy of the offer to the Appropriate Transmission Licensee.

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13.7 The voltage level at which the applicant is offered to be connected to the I<sub>n</sub>STS shall be governed by the standards notified by the Authority and prevailing guidelines adopted by the State Transmission Utility.

13.8 The applicant and the Appropriate Transmission Licensee, in whose system the connection is being sought, shall finalise a Connection Agreement on acceptance of the offer by the applicant.

Provided that the State Transmission Utility shall be provided with a copy of the Connection Agreement:

Provided further the State Load Despatch Centre shall be provided with a copy of the above mentioned Connection Agreement by the State Transmission Utility on request.

13.9 The State Transmission Utility shall, upon compliance of the required conditions by the concerned Transmission Licensee/ User, shall notify the concerned Transmission Licensee/User that it can be connected to the I<sub>n</sub>STS.

#### **14 Connection Agreement**

14.1 Connection Agreement shall include, as appropriate, within its terms and conditions, the following information relating to the connection of the User or Transmission Licensee to the I<sub>n</sub>STS:

- (a) a condition requiring both parties to comply with the State Grid Code;
- (b) details of connection, technical requirements and commercial arrangements;
- (c) details of any capital expenditure arising from necessary reinforcement or extension of the system, data communication etc and demarcation of the same between the concerned parties;
- (d) Site Responsibility Schedule;
- (e) General philosophy and guidelines on protection;
- (f) Protection systems;
- (g) System recording instruments;
- (h) Communication facilities; and
- (i) Any other information considered appropriate by the State Transmission Utility or the Commission.

14.2 State Transmission Utility shall develop a model Connection Agreement within two (2) months and submit to the Commission for approval.

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## **15 Grid Parameter Variations**

### 15.1 General

15.1.1 Transmission Licensees and Users shall ensure that Plant and Apparatus requiring service from or providing service to the I<sub>n</sub>STS is of such design and construction that satisfactory operation of such Plant and Apparatus will not be prevented by variation in instantaneous values of system frequency and voltage from their nominal values and that such Plant and Apparatus shall not induce any adverse affect on the I<sub>n</sub>STS.

### 15.2 Frequency Variation

15.2.1 Rated frequency of the system shall be 50.0 Hz and shall normally be controlled within the limits as per regulations specified by the Authority.

### 15.3 Voltage Variation

15.3.1 The variations of voltage may not be more than the voltage range specified in the regulations framed by the Authority.

## **16 Equipment at Connection Points**

### 16.1 Sub-station Equipment

16.1.1 All Extra High Voltage (EHV) sub-station equipments shall comply with Bureau of Indian Standards/International Electro technical Commission/prevaling Code of practice.

16.1.2 All equipment shall be designed, manufactured and tested and certified in accordance with the quality assurance requirements as per the standards of International Electro technical Commission or the Bureau of Indian Standards.

16.1.3 Each connection between a User and I<sub>n</sub>STS shall be controlled by a circuit breaker capable of interrupting, at the connection point, at least the short circuit current as advised by State Transmission Utility in the specific Connection Agreement.

### 16.2 Fault Clearance Times

16.2.1 The fault clearance time for primary protection schemes, when all equipments operate correctly, for a three phase fault (close to the bus-bars) on Users' equipment directly connected to I<sub>n</sub>STS and for a three phase fault (close to the bus-bars) on I<sub>n</sub>STS connected to Users' equipment, shall not be more than:

- (a) 100 milli seconds for 800 kV class & 400 kV
- (b) 160 milli seconds for 220 kV & 132 kV/110kV

16.2.2 Back-up protection shall be provided for required isolation/protection in the event of failure of the primary protection systems provided to meet the above fault clearance time requirements. If a Generating Unit is connected to the I<sub>n</sub>STS directly, it shall be capable of withstanding, until clearing of the fault by back-up protection on the I<sub>n</sub>STS side.

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### 16.3 Protection

- 16.3.1 Protection Systems shall be provided by all Transmission Licensees and Users to isolate the faulty equipments and protect the other components against all types of faults, internal/external to them, within specified fault clearance time with reliability, selectivity and sensitivity:

Provided that all Users or Transmission Licensees shall provide protection systems as specified in the Connection Agreement.

- 16.3.2 Relay setting coordination shall be done at regional level by Regional Electricity Board/Regional Power Committee.

### 16.4 Reactive Power Compensation

- 16.4.1 Reactive Power compensation and/or other facilities shall be provided by Users, as far as possible, in the low voltage systems close to the load points thereby avoiding the need for exchange of Reactive Power to/from the I<sub>n</sub>STS and to maintain the I<sub>n</sub>STS voltage within the specified range.

- 16.4.2 Line Reactors may be provided to control temporary over voltage within the limits as set out in connection agreements.

- 16.4.3 The additional reactive compensation to be provided by the User shall be indicated by State Transmission Utility in the Connection Agreement for implementation.

- 16.4.4 Users shall endeavour to minimize the Reactive Power drawal at an interchange point when the voltage at that point is below 95% of rated voltage, and shall not inject Reactive Power when the voltage is above 105% of rated voltage. Interconnecting Transformer taps at the respective drawal points may be changed to control the Reactive Power interchange as per a User's request to the State Load Despatch Centre, but only at reasonable intervals.

- 16.4.5 Switching in/out of all 400 kV bus and line Reactors throughout the grid shall be carried out as per instructions of State Load Despatch Centre. Tap changing on all 400/220 kV Interconnecting Transformers shall also be done as per the instructions of State Load Despatch Centre only.

## **17 Communication Facilities**

- 17.1 Reliable and efficient speech and data communication systems shall be provided to facilitate necessary communication and data exchange, and supervision/control of the State Grid by the State Load Despatch Centre, under normal and abnormal conditions.

- 17.2 All Users and Transmission Licensees shall provide the required facilities at their respective ends as specified in the Connection Agreement:

Provided that the equipments/devices for communication and data exchange shall be provided considering the guidelines of State Load Despatch Centre, the interface requirements and other such guidelines/specifications as applicable.

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## **18 System Recording Instruments**

- 18.1 Recording instruments such as Data Acquisition System/Disturbance Recorder/Event Logger/Fault Locator (including time synchronization equipment) shall be provided in the I<sub>n</sub>STS for recording of dynamic performance of the system
- 18.2 All Users and Transmission Licensees shall provide all the requisite recording instruments as specified in the connection agreement in accordance with the agreed time schedule.

## **19 Responsibilities for operational safety**

- 19.1 Transmission Licensees and the Users shall be responsible for safety as indicated in Site Responsibility Schedules for each connection point.
- 19.2 Site Responsibility Schedule
- 19.2.1 Site Responsibility Schedule shall be produced by the concerned Transmission Licensee and the User detailing the ownership responsibilities of each, before execution of the project or connection, including safety responsibilities.
- 19.2.2 The Site Responsibility Schedule shall be developed by the concerned Transmission Licensee pursuant to the relevant Connection Agreement and shall state the following for each item of plant and apparatus installed at the Connection point:
- (i) Ownership of the Plant/Apparatus;
  - (ii) Responsibility for control of the Plant/Apparatus;
  - (iii) Responsibility for operation of the Plant/Apparatus;
  - (iv) Responsibility for maintenance of the Plant/Apparatus; and
  - (v) Responsibility for all matters relating to safety of any persons at the connection point.
- 19.2.3 The format, principles and basic procedure to be used in the preparation of Site Responsibility Schedules shall be formulated by State Transmission Utility within three (3) months of notification of these regulations and shall be provided to each User and Transmission Licensee for compliance:
- Provided that the State Transmission Utility shall put up the information related to above mentioned format, principles and procedures on its Internet Website.
- 19.3 Single Line Diagrams
- 19.3.1 Single Line Diagram shall be furnished for each connection point by the connected User or Transmission Licensee to the State Transmission Utility:
- Provided that the State Transmission Utility shall furnish the above information to the State Load Despatch Centre on request.

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- 19.3.2 Single Line Diagram shall include all High Tension (HT) connected equipment and the connections to all external circuits and incorporate numbering, nomenclature and labeling.
- 19.3.3 In the event of a proposal to change any equipment, the concerned User or Transmission Licensee shall intimate the necessary changes to State Transmission Utility and to all concerned. Single Line Diagram shall be updated appropriately by the concerned Users or Transmission Licensee and a copy of the same shall be provided to the State Transmission Utility.
- 19.4 Site Common Drawings
- 19.4.1 Site Common Drawings shall be prepared for each Connection Point and will include the following information:
- (i) Site Layout;
  - (ii) Electrical Layout;
  - (iii) Details of Protection/Control; and
  - (iv) Common Services Drawings.
- 19.4.2 Detailed drawings shall be prepared by Transmission Licensee and User in respect of their system/facility at each Connection Point and copies of the same shall be made available to concerned User and Transmission Licensee respectively.
- 19.4.3 In case of any changes in the Site Common Drawings that are found necessary by Transmission Licensee or User in respect of their system/facility at the Connection Point, the details of such changes shall be furnished to the other party as soon as possible.

## **20 Access at Connection Site**

- 20.1 The Transmission Licensee or User owning the Connection Site shall provide reasonable access and other required facilities to another Transmission Licensee or User whose equipment is proposed to be installed / installed at the Connection Site for installation, operation, maintenance, etc.
- 20.2 Written procedures and agreements shall be developed between Transmission Licensees and Users to ensure that mandatory access is available to the concerned Transmission Licensee or User at the same time safeguarding the interests of Transmission Licensee and User at the connection site.

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## **PART D: OPERATING CODE**

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### **21 Operating conditions**

- 21.1 State Load Despatch Centre shall supervise the overall operation of the intra-State transmission system.
- 21.2 State Load Despatch Centre shall develop, document and maintain detailed operating procedures for managing the State Grid. These internal operating procedures shall include the following:
- (i) Black start procedures;
  - (ii) Load shedding procedures;
  - (iii) Islanding procedures; and
  - (iv) Any other procedures considered appropriate by the State Load Despatch Centre:

Provided that such procedures shall be developed in consultation with Regional Power Committee and Regional Load Despatch Centre:

Provided further that such procedures shall be submitted, within three (3) months, to the Commission for approval.

- 21.3 The control rooms of the State Load Despatch Centre including Sub-Load Despatch Centres, Power Plants, substations of 132 kV and above and any other control centres of Transmission Licensees and Users shall be manned round-the-clock by qualified and adequately trained personnel.

### **22 System security aspects**

- 22.1 All Users and Transmission Licensees shall endeavour to operate their respective power systems and power stations in synchronism with each other at all times, such that the entire system within the State operates as one synchronised system.
- 22.2 No part of the State Grid shall be deliberately isolated from the rest of the I<sub>n</sub>STS except
- (i) under an emergency, and conditions in which such isolation will prevent a total grid collapse and/or will enable early restoration of power supply;
  - (ii) when serious damage to a costly equipment is imminent and such isolation will prevent it;
  - (iii) when such isolation is specifically instructed by the State Load Despatch Centre.
- 22.3 Complete synchronism of the State Grid shall be restored as soon as the conditions again permit it. The restoration process shall be supervised by State Load Despatch Centre as per the operating procedures separately formulated.

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- 22.4 No important element of the State Grid shall be deliberately opened or removed from service at any time, except when specifically instructed by State Load Despatch Centre or with specific and prior clearance of State Load Despatch Centre. The list of such important grid elements on which the above stipulations apply shall be prepared by the State Load Despatch Centre in consultation with the Transmission Licensees and Users and shall be available at the State Load Despatch Centre.
- 22.5 In case of opening/removal of any important element of the State Grid under an emergency situation, the same shall be communicated to State Load Despatch Centre at the earliest possible time after the event.
- 22.6 Any tripping, whether manual or automatic, of any of the elements of the State Grid, referred in Regulation 22.4, shall be precisely intimated by the concerned Transmission Licensee or User to the State Load Despatch Centre at the earliest. The reason, to the extent determined, and the likely time of restoration shall also be intimated. All reasonable attempts shall be made for the elements' restoration as soon as possible.
- 22.7 A Generating Unit shall be capable of continuously supplying its normal rated active/reactive output at the rated system frequency and voltage, subject to the design limitations specified by the manufacturer.
- 22.8 A Generating Unit shall be provided with an Automatic Voltage Regulator, protective and safety devices, as set out in Connection Agreement.
- 22.9 Each Generating Unit shall be fitted with a turbine speed governor having an overall droop characteristic within the range of 3% to 6% and such turbine speed governor shall always be in service:
- Provided that if any generating unit of over fifty (50) MW size is required to be operated without its governor in normal operation, the State Load Despatch Centre shall be immediately advised about the reason and duration of such operation.
- 22.10 Facilities available with/in load limiters, Automatic Turbine Run-up System, Turbine supervisory control, coordinated control system, etc., shall not be used to suppress the normal governor action in any manner. No dead bands and/or time delays shall be deliberately introduced.
- 22.11 Each Generating Unit shall be capable of instantaneously increasing output by 5%, when the frequency falls, subject to limit of 105% of Maximum Continuous Rating. Ramping back to the previous generation level, in case the increased output level cannot be sustained, shall not be faster than 1% per minute:
- Provided that any generating unit of over Fifty (50) MW size not complying with the above requirements, shall be kept in operation (synchronized with the State Grid) only after obtaining the permission of State Load Despatch Centre:
- Provided also that User can make up the corresponding short fall in spinning reserve by maintaining an extra spinning reserve on the other generating units of the User.
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- 22.12 The recommended rate for changing the governor setting, i.e., supplementary control for increasing or decreasing the output (generation level) for all generating units, irrespective of their type and size, would be one (1.0) per cent per minute or as per manufacturer's limits. However, if frequency falls below 49.5 Hz, all partly loaded generating units shall pick up additional load at a faster rate, according to their capability.
- 22.13 Except under an emergency, or to prevent an imminent damage to costly equipment, no User shall suddenly reduce his generating unit output by more than a limit as specified by the State Load Despatch Centre, without prior intimation to and consent of the State Load Despatch Centre, particularly when frequency is falling or is below 49.0Hz. Similarly, no User shall cause a sudden increase in its load by more than a limit as specified by the State Load Despatch Centre, without prior intimation to and consent of the State Load Despatch Centre.
- 22.14 All generating units shall normally have their Automatic Voltage Regulators in operation, with appropriate settings.
- Provided that in case a generating unit of over fifty (50) MW is required to be operated without its Automatic Voltage Regulator in service, the State Load Despatch Centre shall be immediately intimated about the reason and duration, and its permission be obtained.
- 22.15 Power System Stabilizers in Automatic Voltage Regulators of generating units, wherever provided, shall be properly tuned by the respective generating unit owner as per a plan prepared for the purpose by the State Transmission Utility from time to time. State Transmission Utility will be allowed to carry out checking of Power System Stabilizer and further tuning it, wherever considered necessary.
- 22.16 Provision of protections and relay settings shall be coordinated periodically throughout the State grid, as per a plan to be separately finalized by the Protection Committee of the Regional Electricity Board/Regional Power Committee.
- 22.17 State Load Despatch Centre, in coordination with Regional Load Despatch Centre, Users and Transmission Licensees shall make all possible efforts to ensure that the grid frequency always remains within the 49.0 – 50.5 Hz band, the frequency range within which steam turbines conforming to the IEC specifications can safely operate continuously.
- 22.18 Users and Transmission Licensees shall provide automatic under-frequency and df/dt relay-based load shedding/islanding schemes in their respective systems, wherever applicable, to arrest frequency decline that could result in a collapse/disintegration of the State grid, as per the plan separately finalized by the Regional Electricity Board/Regional Power Committee and shall ensure its effective application to prevent cascade tripping of generating units in case of any contingency.
- 22.19 Users and Transmission Licensees shall ensure that the under-frequency and df/dt relay-based load shedding/islanding schemes, mentioned in Regulation 22.18 are always functional:

Provided that the relays may be temporarily kept out of service, in extreme contingencies, with prior consent of State Load Despatch Centre.

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- 22.20 State Transmission Utility shall carry out periodic inspection of the under frequency relays and produce the report to State Load Despatch Centre. State Load Despatch Centre shall maintain the record of under frequency relay and/or df/dt relay operation.
- 22.21 Users and Transmission Licensees shall facilitate identification, installation and commissioning of System Protection Schemes (including inter-tripping and run-back), as finalized by Regional Electricity Board/Regional Power Committee, in the power system to protect against situations including voltage collapse and cascading:
- Provided that such schemes shall be prepared by State Transmission Utility after due consultations with State Load Despatch Centre, Users and other Transmission Licensees.
- 22.22 Each User and Transmission Licensee shall provide adequate and reliable communication facility internally and with State Load Despatch Centre, other Users and other Transmission Licensees to ensure exchange of data/information necessary to maintain reliability and security of the grid. Wherever possible, redundancy and alternate path shall be maintained for communication along important routes, e.g., SLDC to Users.
- 22.23 User and Transmission Licensee shall send the requested information/data including disturbance recorder/sequential event recorder output etc to State Load Despatch Centre for purpose of analysis of any grid disturbance/event. No User or Transmission Licensee shall block any data/information required by the State Load Despatch Centre for maintaining reliability and security of the State or Regional Grid and for analysis of an event.
- 22.24 State Load Despatch Centre, Users and Transmission Licensees shall make all possible efforts to ensure that the grid voltage always remains within the following operating range:

Voltage- (kV rms)		
Nominal	Maximum	Minimum
400	420	360
220	245	200
132	145	120
66	73	60

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## **23 Demand forecast**

- 23.1 The State Load Despatch Centre shall set out the responsibilities for short term (one day to 52 weeks) demand estimation of active power as well as reactive power. It shall also provide for procedures as well as timelines to be followed for exchange of information between concerned entities for arriving at these estimates/forecasts:

Provided that the State Load Despatch Centre shall refer to the demand forecast considered by the State Transmission Utility while developing the transmission system Plan under Regulation 8 of these Regulations.

- 23.2 The demand estimation shall cover the time scales as applicable for operational purposes. The time scales should be decided after giving due considerations to the requirements under other existing regulations for furnishing demand forecast related information.

## **24 Manual Demand Disconnection**

- 24.1 Users shall endeavour to restrict their actual drawal within their respective drawal schedules whenever the system frequency is below 49.5 Hz:

Provided that, in case of frequency falling below 49.0 Hz., the State Load Despatch Centre shall direct the concerned Users to effect manual load shedding to curtail over-drawal:

Provided further that such directions shall include the time period or the system conditions until which the issued directions shall be applicable.

- 24.2 In case of certain contingencies and/or threat to system security, the State Load Despatch Centre may direct Users to decrease their drawals and such Users shall act upon such directions immediately:

Provided that any non-compliance with such directions shall be dealt with as per provisions of Regulation 36 of these Regulations.

- 24.3 Users shall make arrangements that will enable manual disconnection to take place as instructed by the State Load Despatch Centre.

## **25 Reports**

- 25.1 A weekly report shall be put up by State Load Despatch Centre on its Internet website to inform about the performance of the State Grid for the previous week. The weekly report shall contain the following:

- (i) Frequency profile;
- (ii) Voltage profile of selected substations;
- (iii) Demand and Supply Situation;
- (iv) Major Generation and Transmission Outages;

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- (v) Transmission Constraints; and
  - (vi) Instances of persistent / significant non-compliance of State Grid Code.

Provided that the weekly report shall be available on the Internet website of State Load Despatch Centre for at least twelve (12) weeks:

Provided further that a copy such report shall be made available to any User or Transmission Licensee on request.

- 25.2 The State Load Despatch Centre shall prepare a quarterly report which shall bring out the system constraints, reasons for not meeting the requirements, if any, of security standards and quality of service, along with details of various actions taken by different Users/Transmission Licensees, and the Users/Transmission Licensees responsible for causing the constraints.

## **26 Operational Liaison**

### 26.1 Operations and events on the State Grid

- 26.1.1 State Load Despatch Centre shall, before any Operation is carried out on State grid, inform each User and Transmission Licensee, whose system may or will experience an operational effect, and give details of the operation to be carried out.
- 26.1.2 State Load Despatch Centre shall, immediately following an event on State grid, inform each User and Transmission Licensee, whose system may or will experience an operational effect following the event, and give details of what happened in the event but need not give the reasons for the same.

### 26.2 Operations and events on Users' or Transmission Licensees' System

- 26.2.1 Before any Operation is carried out on system of a User or a Transmission Licensee, the concerned User or Transmission Licensee shall inform the State Load Despatch Centre, in case the State Grid may or will, experience an operational effect, and shall give details of the operation to be carried out.
- 26.2.2 User or a Transmission Licensee shall, immediately following an event on its system, inform the State Load Despatch Centre, in case the State Grid may or will, experience an operational effect following the event, and give details of what happened in the event but need not give the reasons for the same.

## **27 Outage planning and coordination**

- 27.1 All Users and Transmission Licensees shall provide State Load Despatch Centre with their proposed outage programmes in writing for the next financial year by 30<sup>th</sup> November of each year. These shall contain identification of each Generating Unit/Transmission Line/Interconnecting Transformer for which outage is being planned, reasons for outage, the preferred date for each outage and its duration and where there is flexibility, the earliest start date and latest finishing date.
- 27.2 State Load Despatch Centre shall come out with a draft outage programme for the next financial year by 31<sup>st</sup> December of each year for the State Grid:

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Provided that outage plan shall be developed after giving due considerations to system security and reliability and shall be developed such that the extent of unmet system demand on account of such a plan is kept to a minimum:

Provided further that in case of hydro generating stations such a plan shall also endeavor to maximize the utilization of water for purpose of power generation subject to applicable constraints related to alternate use of such water.

27.3 Transmission Outage Planning shall be harmonized with Generation Outage Planning and Distribution System Outage Planning shall be harmonized with Generation and Transmission Outage Planning.

27.4 The final outage plan shall be intimated to all Users and Transmission Licensee latest by 31<sup>st</sup> January each year:

Provided that the State Load Despatch Centre shall finalise the outage plan in consultation with the Users and Transmission Licensee:

Provided further that the above annual outage plan shall be reviewed by State Load Despatch Centre on monthly basis in coordination with all parties concerned, and adjustments made wherever found to be necessary.

27.5 Each User or Transmission Licensee shall, at least two (2) weeks prior to availing an outage as per the planned schedule, inform the State Load Despatch Centre about the same and obtain prior approval from State Load Despatch Centre for the same.

27.6 The State Load Despatch Centre shall have the authority to defer any planned outage in case of occurrence of following events:

- (i) major grid disturbances (e.g. total black out);
- (ii) system isolation;
- (iii) any other event in the system that may have an adverse impact on the system security by the proposed outage.

Provided that the State Load Despatch Centre shall inform about the revised outage plan, with appropriate reasons for revisions in the outage plan, as soon as possible.

27.7 In case of emergency in the system, which may include events like loss of generation, break down of transmission line, grid disturbances and system isolation, the State Load Despatch Centre may appropriately review the situation before clearance of the planned outage.

## **28 Recovery Procedures**

28.1 Detailed plans and procedures for restoration after partial/total blackout shall be finalized by State Load Despatch Centre in coordination with the Regional Load Despatch Centre, Users and Transmission Licensees.

28.2 The procedure shall be reviewed, confirmed and/or revised once every subsequent year. Training programs including workshops and simulation exercises of the

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procedure for different sub-systems shall be carried out by the State Load Despatch Centre, in coordination and consultation with Users and Transmission Licensees, at least once every six months.

- 28.3 List of generating stations with black start facility, inter-State/inter regional ties, synchronizing points and essential loads to be restored on priority, shall be prepared by and be available with State Load Despatch Centre.
- 28.4 State Load Despatch Centre shall be authorized during the restoration process following a black out, to operate with reduced security standards for voltage and frequency as necessary in order to achieve the fastest possible recovery of the grid.
- 28.5 All communication channels required for restoration process shall be used for operational communication only, till grid normalcy is restored.

## **29 Event information**

### 29.1 Reportable Events

29.1.1 Any of the following events shall require reporting by User/Transmission Licensee or State Load Despatch Centre as the case may be:

- (i) Violation of security standards;
- (ii) Grid indiscipline;
- (iii) Non-compliance of State Load Despatch Centre's instructions;
- (iv) System islanding/system split;
- (v) Black out/partial system black out;
- (vi) Protection failure on any element of intra-State transmission system;
- (vii) Power system instability; and
- (viii) Tripping of any element of the State Grid.

### 29.2 Reporting Procedure

29.2.1 User or Transmission Licensee, after having initially reported about the event orally to the State Load Despatch Centre, shall provide a written report within two (2) weeks of the occurrence of the event to the State Load Despatch Centre in accordance with Regulation 29.2.3.

29.2.2 State Load Despatch Centre, after having initially reported about the event orally to the Users/Transmission Licensees, shall provide a written report within two (2) weeks of the occurrence of the event to the concerned Users/Transmission Licensees in accordance with Regulation 29.2.3.

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29.2.3 A written report shall be sent to State Load Despatch Centre or Users/Transmission Licensees, as the case may be, and shall confirm the oral notification together with the following details of the event:

- (i) Time and date of event;
- (ii) Location;
- (iii) Plant and/or Equipment directly involved;
- (iv) Description and cause of event;
- (v) Antecedent conditions;
- (vi) Demand and/or Generation (in MW) interrupted and duration of interruption;
- (vii) All relevant system data including copies of records of all recording instruments including Disturbance Recorder, Event Logger and Data Acquisition System;
- (viii) Sequence of trippings with time;
- (ix) Details of Relay Flags; and
- (x) Remedial measures.

29.2.4 Events affecting a generation capacity or a load of more than 1000MW shall immediately be reported in writing to the Commission by the State Load Despatch Centre, Transmission Licensee or User, as the case may be:

Provided that a summary document including brief detail of the event, extent and probable causes of the event shall be sent across to the Commission within 24 hours of occurrence of such event.

## **30 State Load Despatch Centre and Sub-Load Despatch Centres**

30.1 Procedures and processes developed by State Load Despatch Centre, in discharge of its functions under the provisions these Regulations, shall clearly provide for the following aspects, wherever applicable:

- (i) Roles and Responsibilities of Sub-Load Despatch Centres;
- (ii) Communication facilities between the State Load Despatch Centre and Sub-Load Despatch Centres;
- (iii) Information flow between State Load Despatch Centre and Sub-Load Despatch Centres; and
- (iv) Any other aspect considered appropriate by the State Load Despatch Centre or the Commission.

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**31 State Load Despatch Centre, Transmission Licensees and Users**

31.1 Procedures and processes developed by State Load Despatch Centre, in discharge of its functions under the provisions these Regulations, shall clearly provide for the following aspects, wherever applicable:

- (i) Roles and Responsibilities of State Load Despatch Centre, Users and Transmission Licensees;
- (ii) Information flow between State Load Despatch Centre, Users and Transmission Licensees; and
- (iii) Any other aspect considered appropriate by the State Load Despatch Centre or the Commission.

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**PART E: SCHEDULING AND DESPATCH CODE**

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**32** The Commission shall specify a Scheduling and Despatch Code within six (6) months from the notification of these regulations:

Provided that the Commission shall consult the State Load Despatch Centre in development of the Scheduling and Despatch Code:

Provided that the Commission shall, before finalization, put up the draft version of the Scheduling and Despatch Code on its website for inviting comments from the public and the interested parties:

Provided further that the Commission shall give a period of at least one (1) month for submission of comments by the public and the interested parties.

**33** The Scheduling and Despatch Code shall contain provisions for the following:

- (i) actions and responsibilities of the State Load Despatch Centre and Users in preparing and issuing generation/supply schedule on daily basis;
- (ii) modality of the flow of information between the State Load Despatch Centre and Users for the purpose of scheduling and despatch;
- (iii) modality of the flow of information between the State Load Despatch Centre and the Transmission Licensees for the purpose of scheduling and despatch;
- (iv) modality of the flow of information between the State Load Despatch Centre and the Regional Load Despatch Centre for the purpose of scheduling and despatch:

Provided that such provisions shall be consistent with the Scheduling and Despatch Code included in the Grid Code specified by Central Electricity Regulatory Commission under clause (h) of Section 79 of the Act;

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(v) procedures of issuing real time despatch/drawal instructions and rescheduling, if required, to the Users and compliance with the same;

(vi) appropriate arrangements for settlement of deviations of actual generation or actual drawal from schedules and mechanism for reactive power pricing:

Provided that such settlement shall be carried out in a transparent manner and shall include adequate mechanisms for data verification.

(vii) responsibilities of State Load Despatch Centre and Users in voltage and frequency management; and

(viii) any other issue considered appropriate by the Commission for inclusion in the Scheduling and Despatch Code.

## **PART F: METERING CODE**

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### **34 Metering requirements**

34.1 The State Transmission Utility shall develop a Metering Code and submit the same to the Commission for its approval within sixty (60) days of notification of these regulations:

Provided that till the time the Metering Code as mentioned above is developed and approved by the Commission, the provisions of prevailing relevant statutes shall be applicable.

34.2 Metering Code shall provide the minimum requirements and standards for Installation and Operation of meters, for commercial and operational purposes, to be provided by User or Transmission Licensee at the Connection Point:

Provided that such requirements shall be consistent with the regulations as may be specified by the Authority under Section 55 of the Act:

Provided further that such requirements shall be applicable to any other point that may be internal to the power system of the User or Transmission Licensee if information captured by such meter shall be required for commercial or operational purposes.

34.3 The Commission shall review the Metering Code submitted for approval by the State Transmission Utility and shall either-

(a) approve the Metering Code, with such conditions or modifications as the Commission may deem appropriate; or

(b) reject the Metering Code for reasons to be recorded in writing if the Metering Code is not in accordance with the Act or these Regulations or with the Grid Code specified under clause (h) of sub-section (1) of Section 79 of the Act and direct the State Transmission Utility to submit a revised draft Metering Code.

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- 34.4 The State Transmission Utility shall put up a copy of the Metering Code on its Internet website and make available a copy of the applicable Metering Code to any person requesting it, at a price not exceeding the reasonable cost of reproducing it.
- 34.5 Metering Code shall clearly identify the concerned agency, i.e. User or Transmission Licensee, responsible for ownership and maintenance of the meters.
- 34.6 Metering Code shall describe the following:
- (i) provisions related to location and installation of meters;
  - (ii) specifications and accuracy limits for the meters;
  - (iii) rights, responsibilities and procedures related to recording, collection, transfer, processing and storage of data collected from meters;
  - (iv) provisions related to ownership of metering data;
  - (v) calibration procedures to be carried out by each concerned agency to ensure conformance to the above accuracy limits;
  - (vi) procedures associated with maintenance of the meters in proper functioning state, safety of meters, testing of the new or replacement meters, sealing of meters and inspection of meters;
  - (vii) provisions related to right of access to the meters;
  - (viii) procedures to address metering discrepancies, defective equipments and meter failures;
  - (ix) procedures for resolution of disputes on matters related to metering; and
  - (x) any other aspect considered appropriate, for inclusion in the Metering Code, by the State Transmission Utility or the Commission.

## **PART G: MISCELLANEOUS**

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### **35 Dispute**

- 35.1 In the event of any dispute, regarding interpretation of any provision of the State Grid Code or rules and procedures notified under the provisions of the State Grid Code, the matter may be referred to the Commission for its decision:

Provided that the dispute may be referred to a forum as specified by the Commission.

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## **36 Compliance**

- 36.1 State Transmission Utility shall be responsible for monitoring the compliance of the Users and Transmission System Licensees with the provisions, contained in PART B, PART C and PART F of these Regulations and with the rules and procedures developed under such provisions:

Provided that the State Transmission Utility shall not unduly discriminate against or unduly prefer any User or Transmission Licensee.

- 36.2 State Load Despatch Centre shall be responsible for monitoring the compliance of the Users and Transmission System Licensees with the provisions contained in PART D and PART E of these Regulations and with the rules and procedures developed under such provisions:

Provided that the State Load Despatch Centre shall not unduly discriminate against or unduly prefer any User or Transmission Licensee.

- 36.3 In case of persistent non-compliance with the provisions of State Grid Code and/or with the rule and procedures developed under such provisions, such matter shall be reported to the Commission.

- 36.4 All directions issued by the Western Region Load Despatch Centre to any Transmission Licensee or any other Licensee of the State or generating company (other than those connected to inter State transmission system) or sub-station in the State shall be issued through the State Load Despatch Centre and the State Load Despatch Centre shall ensure that such directions are duly complied with the licensee or generating company or sub-station.

- 36.5 State Load Despatch Centre may give such directions and exercise such supervision and control as may be required for ensuring the integrated grid operations and for achieving the maximum economy and efficiency in the operation of power system.

- 36.6 Every Transmission Licensee and User connected with the operation of the power system shall comply with the direction issued by the State Load Despatch Centre under Regulation 36.5 of these Regulations.

- 36.7 If any dispute arises with reference to the quality of electricity or safe, secure and integrated operation of the State grid or in relation to any direction given under Regulation 36.5 of these Regulations, it shall be referred to the Commission for decision:

Provided that pending the decision of the Commission, the direction of the State Load Despatch Centre shall be complied with by the transmission licensee or User.

- 36.8 Consistent failure to comply with the provisions of the Grid Code or with the rule and procedures developed under such provisions, by User or Transmission Licensee, may lead to disconnection of the Plant and/or Apparatus of such User or Transmission Licensee.

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36.9 Nothing contained in Regulation 36 of these Regulations shall in any manner impact the powers conferred upon the Commission to monitor and enforce compliance of the Users and Transmission System Licensees with the provisions of State Grid Code and with the rules and procedures developed under such provisions.

**37 Power to amend**

37.1 The Commission may, at anytime, vary, alter, modify or amend any provisions of these Regulations.

**38 Power to remove difficulties**

38.1 If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.

Mumbai,  
Dated 15th February 2006

Malini Shankar  
Secretary, MERC