

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**PREAMBLE**

The Central Commission has been assigned the function to regulate inter-state transmission of electricity and to specify the Grid Code having regard to Grid standard under clause (c) and (h) of sub-section (1) of Section 79 of the Electricity Act, 2003. Communication system forms the backbone of the inter-State transmission of electricity and smooth operation of the power system keeping in line the importance of the communication system in a vast meshed network at the inter-regional, regional and State level in India, a need has been felt to specify the regulations regarding communication system in inter-State transmission of electricity, the purpose of the regulations is to lay down the rules, guidelines and standards to be followed by various persons and participants in the system for continuous availability of data for system operation and control including market operations. Further, the regulations deal with the planning, implementation, operation & maintenance and up gradation of reliable communication system for all communication requirements including exchange of data for inter-State transmission of electricity.

**NOTIFICATION(DRAFT)**

**File No. L-1/210/2016/CERC:** In exercise of the powers conferred under Section 178 of the Electricity Act, 2003 (36 of 2003), read with clause (c) and (h) of sub-section (1) of Section 79 and all other powers enabling it in this behalf the Central Electricity Regulatory Commission hereby makes the following regulations, namely:

**1. SHORT TITLE AND COMMENCEMENT:**

- (i) These regulations may be called the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2016.
- (ii) These regulations shall come into force on the date of their publication in the official Gazette

**2. DEFINITIONS AND INTERPRETATIONS:**

- (i) In these regulations, unless the context otherwise requires,-
  - a) “Act” means the Electricity Act, 2003 (36 of 2003) as amended from time to time;
  - b) “Ancillary Services” means in relation to power system (or grid) operation, the services necessary to support the power system (or grid) operation in maintaining power quality, reliability and security of the grid e.g. active power support for load following, reactive power support, black start, etc.;
  - c) “Associated communication system” means a communication system associated with a project set up for exchange of voice/video data with load despatch centre as per IEGC.
  - d) “Commission” means the Central Electricity Regulatory Commission referred to in sub-section (1) of section 76 of the Act;
  - e) "Central Transmission Utility" means any Government company which the Central Government may notify under sub-section (1) of section 38;
  - f) “State Transmission Utility” means the board or the government company specified as such by the state government under sub-section (1) of section 39 of the Act;
  - g) “communication system” is a collection of individual communication networks, , relaying stations, tributary stations, terminal equipment usually capable of interconnection and interoperation to form an integrated whole. It also includes existing communication system of Inter

State Transmission System, Satellite and Radio Communication System and their auxiliary power supply system etc. used for regulation of inter-state transmission of electricity;

- h) "Communication network" means a combination of media from one node to another node, either directly or through intermediary node(s);
- i) "Data" means is a set of values of analogue and digital signal including a text, voice, video, tele-protection, alarm, and weather, parameter of a machine or the power system.
- j) Date of Commercial Operation or COD in relation to a communication system or an element thereof shall mean the date declared by the communication system provider from 0000 hour of which the Communication system or element thereof is put into regular service after completion of site acceptance test including transfer of voice, video and data to respective control centre as certified by the respective Regional Load Despatch Centre.

Provided that in case an element of communication system is ready for use for regular service but is prevented from providing such service for reasons not attributable to the communication system provider, its supplier or contractor, the Commission may approve the date of commercial operation prior to the communication system coming into regular service.

- k) Forecasting Service Provider (FSP) means a service provider who provides forecast related to weather/Renewable Energy Resources and Demand for use of Users.
- l) "Generating station" means a generating station as defined in Clause 2 (30) of the Act.
- m) "Grid Code" means the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 as amended from time to time or subsequent re-enactment thereof.

- n) "Inter-State transmission system" means the ISTS as defined in clause 2 (36) of the Act.
- o) "Meter" means a device suitable for measuring, indicating and recording consumption of electricity or any other quantity related with electrical system and shall include, wherever applicable, other equipment such as Current Transformers (CT), Voltage Transformer (VT) or Capacitor Voltage Transformer (CVT) with necessary wiring and accessories.
- p) "National Load Despatch Centre" means the Centre established under sub- section (1) of section 26 of the act;
- q) "Operation and maintenance expenses" or "O & M expenses" means the expenditure incurred on operation and maintenance of the communication system, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;
- r) "PMU(Phasor Measurement Unit): means a device which provides phasor information (both magnitude and phase angle) for one or more three phase AC voltage or current waveforms in real time.
- s) "Real time operation" means action to be taken at a given time at which information about the electricity system is made available to the concerned Load Despatch Centre;
- t) "Real time data" denotes information relating to current operating state of power system in accordance with system operation and control requirements.
- u) "Regional Load Despatch Centre" means the Centre established under sub- section (1) of section 27 of the act;
- v) "Remote Terminal Units" (RTU) means a device suitable for measuring, recording and storing the consumption of electricity or any other quantity related with electrical system and status of the equipment in real time basis and exchanging such information with the data acquisition system for display and control and shall include, wherever applicable, other equipment such as Transducers, relays with necessary wiring and accessories.

- w) “Requester” means a person such as a Generating Company including Captive Generating Plant, RE Generator or Transmission Licensee (other than the Central Transmission Utility and State Transmission utility) or Distribution Licensee or Bulk Consumer, whose electrical system is proposed to be connected to the ISTS;
- x) “State load despatch centre(SLDC)” means the centre established under subsection (1) of section 31 of the Act;
- y) “Supervisory/system control and data acquisition (SCADA)” means a system of remote control and telemetry used to monitor and control the transmission system;
- z) “system operation function” includes monitoring of grid operations, supervision and control over the Inter-State Transmission System, real-time operations for grid control and dispatch, system restoration following grid disturbances, compiling and furnishing data pertaining to system operation, congestion management, black start coordination and any other function(s) assigned to the RLDC by the Electricity Act 2003 or by any regulations and orders of the Commission;
- aa) “Users” means a person such as a Generating Company including Captive Generating Plant, RE Generator or Transmission Licensee (other than the Central Transmission Utility and State Transmission utility) or Distribution Licensee or Bulk Consumer, whose electrical system is connected to the ISTS.

3. Save as aforesaid and unless repugnant to the context or the subject-matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or the Grid Code or any other regulations of this Commission shall have the meanings assigned to them respectively in the Act or the Grid Code or any other regulations.

## GENERAL

### INTRODUCTION

#### 4. **OBJECTIVE:**

These regulations provide for planning, implementation, operation & maintenance and up-gradation of reliable communication system for all communication requirements including exchange of voice, video, data and tele-protection for inter-State transmission of electricity.

#### 5. **SCOPE & APPLICABILITY:**

- (i) These regulations shall apply to the communication infrastructure to be used for voice, video and data communication and tele-protection for the power system.
- (ii) All Users, SLDCs, RLDCs, NLDC, CEA, CTU, STUs, RPCs, Renewable Energy Management Centre (REMC), FSP and Power Exchanges shall abide by the principles and procedure as applicable to them in accordance with these regulations.

#### 6. **NODAL AGENCY:**

- (i) The nodal agency for planning, and coordination for development of communication system for ISTS shall be the Central Transmission Utility (CTU).
- (ii) The nodal agency for planning, and coordination for development of communication system for intra state transmission system shall be the State Transmission Utility (STU).
- (iii) Nodal agency for integration of communication system with SCADA, WAMS, VCS, AMR, EPABX, Tele-protection system shall be respective RLDC for ISTS and SLDCs for intra-State system.

## **7. ROLE & RESPONSIBILITIES OF VARIOUS ORGANIZATIONS AND THEIR LINKAGES:**

### **7.1 Role of CEA**

- (i) CEA shall formulate communication planning criterion/ philosophy and guidelines for development of reliable Communication system for power system, duly considering requisite redundancy as well as requirements of smart grid and cyber security.
- (ii) CEA shall formulate and notify technical standards, cyber security requirements, protocol for the communication system for Power Sector within the country including the grid integration with the grid of the neighbouring countries.
- (iii) CEA shall constitute and notify a Standing Committee for Communication System in Power Sector. The Standing Committee shall be responsible to:
  - a. prepare a perspective plan for communication duly considering optimal utilization of transmission assets for communication purposes having regards to the transmission planning carried out by CEA through Standing Committee on Power System Planning.
  - b. carry out periodic review of the perspective plan.
  - c. monitor and facilitate timely completion of schemes and projects for improving and augmenting the communication system along with transmission system in the power sector.

### **7.2 Role of CTU**

- (i) The CTU shall in due consideration of the planning criteria/philosophy and guidelines formulated by CEA, be responsible for planning and coordination for development of reliable national backbone communication system among National Load Dispatch Centre,

Regional Load Despatch Centre(s) and State Load Despatch Centre(s) along with Central Generating Stations, ISTS Sub-Stations, UMPPs, inter-State generating stations, IPPs, renewable energy sources connected to the ISTS, Centralised Coordination/Control Centres for generation and transmission.

- (ii) CTU shall also plan communication up to the national boundary for integration with the communication system for cross border exchange of power.
- (iii) CTU shall integrate communication planning with transmission and generation project planning in a comprehensive manner.
- (iv) The CTU shall discharge the above function in consultation with the CEA, State Transmission Utilities, ISGS, IPPs, Regional Power Committees, NLDC and RLDCs.

### **7.3 Role of RPCs:**

The RPC Secretariat shall monitor instances of non-compliance of CERC (Communication System for Inter-State Transmission of Electricity) Regulation, 2016 as amended from time to time and try to sort out issues in the respective region in such a way that cases of non compliance are prevented in future. Unresolved issues and non-compliance of these Regulations shall be reported by the Member Secretary of RPC to the Commission.

### **7.4 Role of NLDC:**

- (i) The National Load Despatch Centre (NLDC) shall prepare and issue guidelines on the interfacing requirements in respect of terminal equipment, RTUs, SCADA, PMUs, Automatic Generation Control (AGC), AMI, etc. and for data communication from the User's point to the respective control centre(s) based on technical standards issued by CEA



as mentioned in para 6.1 herein earlier. Till the time technical standards are framed by CEA, NLDC shall adopt necessary standards.

- (ii) The National Load Despatch Centre shall be responsible for integration of the Communication system at NLDC end for monitoring, supervision & control of Power System and adequate data availability in real-time.

#### **7.5 Role of RLDCs:**

- (i) The Regional Load Despatch Centre shall be nodal agency for integration of Communication System at RLDC end for monitoring, supervision & control of Power System and adequate data availability in real time.
- (ii) RLDC shall be the Nodal Agency for supervision of integration of communication system in respect of ISTS.

#### **7.6 Role of SLDCs:**

The State Load Despatch Centres shall be nodal agency for integration of Communication System in the STU network and shall be responsible for interfacing the telemetry system at SLDC end for monitoring, supervision & control of Power System and adequate data availability in real time.

#### **7.7 Role of STUs**

- (i) The STU shall be responsible for planning and coordination for development of reliable backbone communication for data communication within a State among State Load Despatch Centres, DISCOM control centres along with Generating Stations in the State, STU Sub-Stations, IPPs, and renewable energy generators within States system.
- (ii) The STU shall also plan redundant communication system up to the nearest Inter-State Transmission System wideband communication node

for integration with the inter-State communication system at appropriate nodes.

- (iii) The STU shall discharge all functions of planning related to the State backbone communication system in consultation with Central Transmission Utility, State Government and generating companies and distribution companies in the state.
- (iv) STU shall also provide access to their wide band Network for grid management by all users.

### **7.8 Role of Users and Requesters:**

- (i) The Requesters and Users including renewable energy generators shall be responsible for provision of compatible equipment for un-interrupted communication with the concerned control centres and shall be responsible for successful integration with the communication system provided by CTU/STU for data communication as per guidelines issued by NLDC.
- (ii) Requesters and Users may utilize the available transmission infrastructure for establishing communication up to nearest wide band node for meeting communication requirements from their station to concerned control centres.
- (iii) The Users shall also be responsible for expansion /up gradation as well as operation and maintenance of communication equipment at their terminal.

## **8. BOUNDARY OF THE ISTS COMMUNICATION SYSTEM**

8.1 ISTS Communication system shall cover the following nodes:

- (i) NLDC

- (ii) RLDCs
- (iii) SLDCs
- (iv) 132 kV/110 kV Substations and 132kV/110kV overhead transmission Lines connected to ISTS
- (v) All ISGS and Generating Stations connected to ISTS as well as Solar generating plants/ solar parks and wind generation pooling stations connected to ISTS and HVDC stations as required

8.2 In addition to the above, the wideband communication systems shall be planned prospectively considering the expected nodes to ensure comprehensive planning for the communication system by the respective agencies and all Grid station including polling stations may be considered for Broad Band Communication system in consultation with standing Committee to be constituted by CEA.

**9. ACCESS TO COMMUNICATION SYSTEM:**

Access to the communication system shall be allowed to the requester in line with the standards and guidelines issued under the Regulations

**10. PERIODIC TESTING OF THE COMMUNICATION SYSTEM:**

- (i) All users that have provided the communication systems shall facilitate for periodic testing of the communication system as per the standards and guidelines issued under these regulations.
- (ii) Testing process for communication network security should also be included even for third party system if exists.

**11. FAULT REPORTING:**

- (i) RLDC and SLDC in case of outage of telemetered data, or communication failure shall inform the respective user so that the user can lodge

complaints for failure of the communication to the communication system owner for quick restoration.

- (ii) The communication provider shall explore the possibility for route diversion on the existing facility in case the fault restoration is prolonged. No separate charges shall be paid for such route diversion or channel re-allocation. However such rerouting shall be discontinued once the original channel restored.

**12. COMMUNICATION SYSTEM AVAILABILITY:**

The owner of communication system shall maintain the channel availability up to 99.9%.

**13. Cyber Security:**

- (i) Communication infrastructure shall be planned, designed and executed to address the network security needs as per standard specified by CEA.
- (ii) NLDC, shall monitor case of cyber security-incidences and discuss them at RPC level and take necessary action as deemed fit.

**14. Guidelines to be issued by NLDC**

- (i) Subject to the provisions of these regulations, NLDC shall submit the Guidelines for Interfacing Requirement, calculation of availability of the Communications systems etc to the Commission for approval within 60 days of notification of these regulations in the Official Gazette:

Provided that prior to submitting the guidelines to the Commission for approval, NLDC shall make the same available to the public and invite comments by putting the draft on its website and giving a period of one month to submit comments;

Provided further that while submitting the detailed procedure to the Commission, NLDC shall submit a statement indicating as to which of the comments of stakeholders have not been accepted by it along with reasons thereof.

**15. Dispute resolution:**

In case of any dispute in giving effect to these regulations, the affected party may approach the Commission with a proper application in accordance with CERC (Conduct of Business) Regulations.

**16. Power to Relax:**

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected by grant of relaxation, may relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

**17. Power to Remove Difficulty:**

If any difficulty arises in giving effect to the provisions of these regulations, the Commission may, by order, make such provision not inconsistent with the provisions of the Act or provisions of other regulations specified by the Commission, as may appear to be necessary for removing the difficulty in giving effect to the objectives of these regulations.