

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

No.- L-1/210/2016/CERC

CORAM:

**Shri Jishnu Barua, Chairperson
Shri I. S. Jha, Member
Shri Arun Goyal, Member
Shri P. K. Singh, Member**

Date of Order: 19th January, 2024

In the matter of:

Approval of “Guidelines on Availability of Communication System” under the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.

Order

The Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 (hereinafter referred to as the ‘Communication Regulations’) were published on 29.05.2017 in the Gazette of India Extraordinary (Part-III, Section-4, No. 218).

2. Regulation 7.3 of the Communication Regulations requires NPC to prepare Guidelines on “Availability of Communication System” in consultation with the stakeholders and submit the same for approval of the Commission.
3. Accordingly, NPC has submitted the “Guidelines on Availability of Communication System”, after stakeholder consultation, for approval of the Commission.

4. The Commission has examined the Guidelines submitted by NPC, and after incorporating suitable changes, the Commission hereby approves the “Guidelines on Availability of Communication System” which are enclosed as an Annexure to this Order.

Sd/-	Sd/-	Sd/-	Sd/-
(P. K. Singh)	(Arun Goyal)	(I. S. Jha)	(Jishnu Barua)
Member	Member	Member	Chairperson

**GUIDELINES
ON
AVAILABILITY OF COMMUNICATION SYSTEMS**

Prepared in Compliance

To

Central Electricity Regulatory Commission

(Communication System for inter-State transmission of electricity)

Regulations, 2017

January 2024

GUIDELINES ON AVAILABILITY OF COMMUNICATION SYSTEM

1. INTRODUCTION:

1.1 As per Regulation 7.3 of the Central Electricity Regulatory Commission (Communication System for inter-State transmission of Electricity), Regulations, 2017, National Power Committee (NPC) has been entrusted to prepare Guidelines on Availability of Communication System in consultation with RPCs, RLDCs, CTU and other stakeholders. Accordingly, these Guidelines have been prepared for determining Availability of Communication System.

1.2 The relevant provisions in the Central Electricity Authority (Technical Standards for Connectivity to the Grid), Regulations, 2007, CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 and CERC (Indian Electricity Grid Code) Regulations, 2023 in respect of Communication System are as follows:

1.2.1 **Regulation 6(3) of the CEA (Technical Standards for Connectivity to the Grid)** stipulates that *'the requester and user shall provide necessary facilities for voice and data communication and transfer of online operational data, such as voltage, frequency, line flows and status of breaker and isolator position and other parameters as prescribed by the appropriate load dispatch centre.'*

1.2.2 **Regulation 5(1) of the CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020** stipulates that user shall be capable of transmitting all operational data as required by appropriate control centre.

1.2.3 **Regulation 11 of the Indian Electricity Grid Code (IEGC) 2023 stipulates as follows:**

"11. DATA AND COMMUNICATION FACILITIES (1) Reliable speech and data communication systems shall be provided to facilitate necessary communication, data exchange, supervision and control of the grid by the NLDC, RLDC and SLDC in accordance with the CERC (Communication System for inter-State Transmission of Electricity) Regulations, 2017 and the CEA Technical Standards for Communication.

(2) The associated communication system to facilitate data flow up to appropriate data collection point on CTU system including inter-operability requirements shall also be established by the concerned user as specified by CTU in the Connectivity Agreement.

(3) All users, STU and participating entities in case of cross-border trade shall provide, in coordination with CTU, the required facilities at their respective ends as specified in the connectivity agreement. The communication system along with data links provided for speech and real time data communication shall be monitored in real time by all users, CTU, STU, SLDC and RLDC to ensure high reliability of the communication links.”

2. DEFINITION:

2.1 Words and expressions used in these guidelines shall have the same meaning assigned in the Electricity Act, Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulation ,2007, CEA (Technical Standards for Communication System in Power System Operation) Regulations, 2020, CERC (Communication System for Inter-State transmission of Electricity), Regulations, 2017 and Indian Electricity Grid Code Regulations, 2023 and amendments thereof.

2.2 Other words have been explained as per the context in these Guidelines.

3. SCOPE AND APPLICABILITY:

3.1 As per Regulation 5 (i) of the CERC (Communication System for inter-State transmission of Electricity), Regulations, 2017, *“These regulations shall apply to the communication infrastructure to be used for data communication and tele -protection for the power system at National, Regional and inter-State level and shall also include the power system at the State level till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commissions.”*

3.2 Accordingly, these guidelines shall be applicable to the CTU for the Communication System Infrastructure of inter-State Transmission System. The guidelines shall also be applicable to STU for the Communication System Infrastructure of intra-State Transmission System, till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commission.

3.3 The CTU (or STU as the case may be) shall have back to back co-ordination/agreement with transmission licensees, generators, dedicated transmission line owners, bulk consumers and concerned entities for providing power system communication on their network.

3.4 Responsibility of CTU and STU:

- a) CTU (or STU as the case may be) shall be responsible for submission of the details of communication channels including the redundant channels configured for use of voice / data / video exchange, protection, Tele-protection / SPS to respective RLDC (SLDC as the case may be) on monthly basis incorporating the details of new channels configured during previous month. The total number of communication channels (N) is based on the requirement of RLDCs/NLDC and the same would be decided in consultation with respective RPCs/NPC.
- b) CTU (or STU as the case may be) shall be responsible for submission of the performance/availability of configured channels of the previous month to respective RLDCs for verification by RLDCs and onward submission to respective RPC for computation of availability of the communication system for previous month.
- c) CTU (or STU as the case may be) shall submit availability reports of configured channel including the redundant channels in format prescribed by RLDC/RPC, generated from the centralized NMS. The availability report of the call logging facility (with time stamp) may be provided till commissioning of centralized NMS for availability computation.

4. TREATMENT OF COMMUNICATION SYSTEM OUTAGES:

- 4.1 Outage time of communication system elements (i.e. channels) due to acts of God and force majeure events beyond the control of the communication provider shall be considered deemed available. However, onus of satisfying the Member Secretary, RPC that element outage was due to aforesaid events shall rest with the communication provider.
- 4.2 Any outage of duration more than one (01) minute in a time-block shall be considered as not available for the whole time-block. Any outage of duration less than or equal to one (01) minute in a time-block shall be treated as deemed available provided such outages are not more than ten (10) times in a day.

Illustration: If a channel is out for a duration less than or equal to one (01) minute in a time-block, and such outages are more than ten (10) times in a day, all the time-blocks with such outages shall be treated as not available.

4.3 All other outages not covered under 4.1 and 4.2 shall be considered as not available during the whole block for the computation of channel availability.

5. METHODOLOGY FOR COMPUTATION OF AVAILABILITY OF COMMUNICATION SYSTEM:

5.1 Availability of Communication System (A_{CS}) shall be calculated as under:

$$A_{CS} = \frac{\sum_{i=1}^N A_i}{N}$$

Where - N is total number of communication channels as specified in 3.4(a) above.

- A_i is Availability of i^{th} Channel which shall be calculated as given in 5.2 below.

5.2 Availability of i^{th} Channel (A_i) shall be arrived as under:

$$A_i = \frac{B_T - B_{Ni}}{B_T} \times 100$$

Where B_T is Total number of time-blocks in a month

B_{Ni} is the total number of time-blocks, in which i^{th} channel was not available after considering deemed availability status of 4.1 & 4.2 above.

$$B_{Ni} = B_{ANi} - B_{Gi} - B_{LTTi}$$

Where- B_{ANi} is absolute number of time-blocks in which the i^{th} channel was 'not available' on account of any reason.

- B_{Gi} is Number of time-blocks out of B_{ANi} , in which i^{th} channel was 'not available' on account of act of God as specified in 4.1 above.

- B_{LTTi} is Number of time-blocks out of B_{ANi} , in which i^{th} channel was 'not available' for a duration less than or equal to one (01) minute in a time-block and not more than ten (10) times in a day as specified in 4.2 above.

Illustrations:

Case1: If there are 2880 time-blocks (B_T) in a month, and a particular channel is not available for a total of 70 time-blocks; and out of this, the above mentioned channel was not available for 20 (B_{Gi}) time-blocks due to act of God, six (06) time-blocks for less than one (01) minute (B_{LTTi}), then $B_{ANi}=70$, $B_{LTTi}=06$, $B_{Ni} = 70-20-06 = 44$, and $A_i = (2880-44)/2880 = 98.47\%$

Case 2: If there are 2880 time-blocks (B_T) in a month, and a particular channel is not available for a total of 70 time-blocks; and out of this, the above mentioned channel was not

available for 20 (B_{Gi}) time-blocks due to act of God, 11 time-blocks for less than 1 minute, then $B_{ANi}=70$, $B_{LTTi} = 0$, $B_{Ni}=70-20-0=50$, and $A_i = (2880-50)/2880 = 98.26\%$.

6. Revision of these Guidelines

6.1 As and when required, these Guidelines shall be reviewed and revised by NPC with the approval of the Commission.
