

# **ISTS Communication Planning Procedure**

**January, 2022**

**Central Transmission Utility of India Ltd.**

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# **PROCEDURE FOR PLANNING OF COMMUNICATION FOR INTER-STATE TRANSMISSION SYSTEM**

## **1. Outline**

**1.1** This procedure has been prepared by Central Transmission Utility of India Ltd. (CTUIL), hereinafter referred to as CTU, in discharge of its functions under Section 38(2)(b) of the Act and CERC (Communication System for inter-State transmission of electricity) Regulations, 2017 as the nodal agency for planning and coordination for development of communication system for inter-State transmission system users in general.

## **2. Applicability**

**2.1** This procedure shall be applicable to stakeholders such as Central Government, State Governments, Central Transmission Utility (CTU), Central Electricity Authority (CEA), Regional Power Committees (RPCs), State Transmission Utilities (STUs), Generation companies, Power System Operation Corporation limited (POSOCO), State Load Dispatch Centres (SLDCs), Transmission Licensees, Bulk Customer and any other person or agency notified by the Central Government on their behalf.

This Procedure shall come into effect from the date it is published on CTU website.

## **3. Definitions**

All the definitions used in this document shall be as per CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 and CERC (Communication System for inter-State transmission of electricity) Regulations, 2017.

## **4. Planning Philosophy**

**4.1** A robust, strong and flexible ISTS communication network acts as an enabler for seamless transfer of power from any generator to Load centres anywhere in the country in an efficient, reliable and economic manner. CTU is the nodal agency for planning and coordination of the communication system for the said ISTS network which shall provide reliable data & voice communication and tele-protection for power system at national, regional, cross-border (international) and Inter-State level. The communication system shall be capable to provide integration with supervisory control and data acquisition system, wide area measurement system, video conferencing system, automatic meter reading, electronic private automatic branch exchange, voice over internet protocol and tele-protection etc. in line with functional requirement of CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 and other applicable documents /regulations/ guidelines for communication of CEA and CERC and as amended from time to time.

**4.2** The planning of Communication for ISTS–shall be categorised into following two categories:

- a) Communication system associated with new ISTS
- b) Communication system associated with existing ISTS for:
  - new ISTS
  - Missing links
  - Redundancy / System strengthening
  - Capacity upgradation (Terminal equipment)
  - Completion of life of existing communication system elements
  - Other standalone project e.g., Cyber Security (Cyber security guidelines issued by CEA and Cyber Security policy of GoI), Unified-NMS, New and emerging Technologies etc.

**4.3** Communication requirements e.g. Bandwidth, Technology etc. for new system operation requirement scenarios shall be worked out so as to reflect the system performance and upgradation/ augmentation requirements.

**4.4** While planning the communication system options of upgrading the existing system in place of building new communication system (such as increasing bandwidth capacity, direction enhancement etc.) shall be explored considering the life cycle of communication system projects and ever-changing cyber security threats/ scenario, for optimally utilizing the existing assets.

## **5. Planning Procedure Cycle**

**5.1** Planning of communication schemes for ISTS shall be prepared by CTU based on the data obtained from STUs, POWERGRID/ Transmission Licensees, Regional Power Committees (RPCs), SLDCs and POSOCO. To facilitate the same, there shall be at least two nominated nodal officers from STUs, SLDCs, POSOCO, POWERGRID/ Transmission licenses, CEA, RPCs. The said communication schemes shall be deliberated among the nodal officers.

After finalisation of the Communication Scheme, the same shall be uploaded on the CTU website for seeking comments from all stake holders. Finally, the scheme shall be published at CTU website after incorporating comments of all stake-holders.

**5.2** Towards this, the entire process for communication planning exercise shall be undertaken on a continuous basis, twice a year, as detailed in **Table-1**. Hereinafter, this shall be referred to as “ISTS Communication System Planning Cycle”:

*Table 1: ISTS Communication Planning Cycle*

Sl. No.	Activities	Responsibility*	Timeline	
			(Apr- Sep)	(Oct-Mar)
1.	Data Collection: <ul style="list-style-type: none"> <li>• Data to be submitted by POWERGRID, Other ISTS Licensees</li> <li>• Data to be submitted by the STUs (RPCs to facilitate)</li> <li>• Operational Feedback to be submitted by NLDC/ RLDCs/ SLDCs</li> </ul>	ISTS Licensees, STUs, POSOCO and SLDCs.	30 <sup>th</sup> Apr	31 <sup>st</sup> Oct
2.	Data validation and Rectification	CTU, ISTS Licensees & STUs	30 <sup>th</sup> May	30 <sup>th</sup> Nov
3.	Preparation of communication Schemes	CTU	30 <sup>th</sup> June	31 <sup>st</sup> Dec
4.	Region wise deliberation on the communication scheme prepared by CTU	CTU, CEA, POSOCO, ISTS Licensee, RPCs and STU(s)	31 <sup>st</sup> July	31 <sup>st</sup> Jan
5.	Publishing the Scheme on CTU website for stakeholders' comments	CTU	31 <sup>st</sup> Aug	28 <sup>th</sup> Feb
6.	Stakeholders' comments on the preliminary proposal	Stake-holders	15 <sup>th</sup> Sep	15 <sup>th</sup> Mar
7.	Finalisation of schemes considering comments / suggestions of stakeholders and publishing of the final scheme on CTU website	CTU	30 <sup>th</sup> Sep	31 <sup>st</sup> Mar

## **6. Data requirement from all stakeholders**

CTU shall be the nodal agency for compilation of data required for the purpose of ISTS Communication planning.

**6.1** Stakeholders shall provide requisite data in the form and manner specified in Format A, B, C as attached, on bi-annual basis as per **Table-1** above.

**6.2** In case, stakeholders do not submit data within prescribed timelines as specified in **Table-1** above, suitable assumptions would be made for the studies. However, data submitted after the timelines shall be considered in the next cycle.

**6.3** STUs/SLDCs/RLDCs/NLDC/POWERGRID/TSPs shall provide Network Utilization/ Congestion Report, Link Loss Measurement, to CTU on quarterly basis.

**6.4** Stakeholders shall also provide details related to expected timelines for commissioning of under construction and planned communication system.

### **6.5 Data and information to be provided by**

**A.** POSOCO shall facilitate CTU with real time and historical data of communication system link outages, data intermittency data reliability & redundancy and latency.

#### **B. ISTS Grid Operator shall also provide the following data:**

- a) List of Links on single OPGW/Fiber.
- b) List of links on public domain communication network (GPRS / Leased line).
- c) Any future requirement/s.

#### **C. STUs**

STUs shall provide for submission of updated communication maps, power maps (132kV and above) and link details of their communication network of their transmission network.

STUs shall provide the data required as specified in Format A, B, C as attached, on bi-annual basis.

#### **D. ISTS Licensee**

ISTS Licensee shall be responsible for submission of updated communication maps, power maps (132kV and above) and link details of their communication network.

ISTS Licensee shall provide the data required as specified in Format A, B, C as attached, on bi-annual basis.

## **7. Publication of Scheme**

**7.1** Based on the inputs received from stake-holders, CTU shall prepare the preliminary proposal for proposed communication system for ISTS schemes with following details:

- a) Detailed justification for the scheme along with details of the complete scheme.
- b) Recommendations regarding network system strengthening (as required).
- c) Estimated cost of schemes.

**7.2** The scheme shall be deliberated between various stakeholders for their review and observation before final publication and approval.

**7.3** The details of finalized communication schemes along with their implementation timelines and status of approval shall be published and reviewed as per ISTS Communication Planning Cycle mentioned above.

**Format for Database for ISTS communication**

**A. For OPGW**

**Region:** \_\_\_\_\_

Sr. No.	Name of Line		Voltage Level (in kV)	Owner of line	OPGW Available (Y/N)	Commissioning Year	No. of Fibres (24/48)	Link Length (in Kms)	No of Fibers used		Owner of OPGW	No. of E/W peaks used for OPGW	Remarks
	From	To							ULDC/ system operation purpose	Powertel /other utilities			
1			400		Y		24						
2			132		Y		48						
3													
4													
5													



**B1. For Communication Equipment**

**Region:** \_\_\_\_\_

Sr. No.	S/s name	Voltage Level	SDH Details								PDH Details					Remarks				
			Substation Owner	Equipment (Eqpt)	Capacity (STM-1/4/16/64)	Make	Model	Port (direction) Used	Port (direction) available	Owner	Commsg. year	Equipment (Eqpt)	Make	Model	Owner		Spare Capacity available for future integration ( 64 Kbps)	Commsg. year		
1	Station -A	400		1																
				2																
				3																
				4																
2																				
3																				

**B2. For VSAT Equipment**

**Region:** \_\_\_\_\_

<b>Sr. No.</b>	<b>Name of Station</b>	<b>Voltage Level</b>	<b>Substation Owner</b>	<b>Equipment Type VSAT</b>	<b>Make / Model</b>	<b>Ownership</b>	<b>Commissioning year</b>
1							
2							
3							
4							
5							
6							
7							

**C. For Cyber Security**

**Region:**

Sr No	Name of Substation	Substation Owner	Voltage Level (in kV)	Substation architecture (SAS/ Conventional/ Hybrid/ Process Bus)	Communication Media/ Technology used (OPGW/ UGFO/ GPRS/ Leased Line etc.)	Existing Cyber Security Measure (Firewall/Network Encryption/NIPS/NIDS/ Anti-Virus/ Patch Management/Any Other	Firewall Specifications (Can be attached as separate annexure)	Details of protocols used IEC 61850, 60870-5-101/104, C37-118, H.323, SIP Mod Bus etc.	Status Details of the latest Cyber Audit as per guidelines of MOP Security audit.	Latest Cyber Audit Done	Details of Cyber Security measure taken at local equipment's / NMS	Remarks
1												
2												