CENTRAL ELECTRICITY REGULATORY COMMISSION

3rd & 4th floors,Chanderlok Building, 36,Janpath,New Delhi-11001

Telephone: 011-23753917

No:CERC/Engg./X/TF-CS/2014-15 Dated: 18th May, 2015

To

The Members of the Task Force

(As per List Enclosed)

Subject: Minutes of the **First Meeting of Task Force for giving inputs for framing of Draft Regulation on "Communication Systems in Power Sector**

Madam/Sir,

Please find enclosed herewith minutes of the 1st Meeting of the Task Force for giving inputs for framing of Draft Regulation on "Communication Systems in Power Sector" held in CERC on 08.05.2015.

Yours faithfully,

SD/-

Encl: As above (Vikram Singh)

Dy.Chief (Engineering)

(Convenor of Task Force)

Members of the Task Force

SI. No.	Name of the Member	Name of the Organization	Designation
1	Smt.Neeraja Mathur	—	Ex-Chairperson, CEA
2	Shri AK Saxena	CERC	Chief (Engg.)
3	Shri D.K.Jain	CEA	CE (EI)
4	Shri H.H.Sharan	POWERGRID	Addl. G.M. (LD&C)
5	Shri P.K.Agarwal	POSOCO	AGM
6	Shri Dinkar Devate	NTPC	GM (Electrical)
7	Shri Chandrashekharaiah	KPTCL	Executive Engineer
8	C.G.Thakkar	GETCO	Dy. Engineer (Engg.)
9	Shri Hitesh Kakati	AEGCL	AGM Comm.
10	Shri H.K.Samantaray	OPTCL	Sr.G.M.Telecom
11	Shri A.D.Thirumoorthy	IWPA	Chief Technical Advisor
12	Shri Vikram Singh	CERC	DC (Engg.)

Minutes of the First Meeting of Task Force for giving input for framing of Draft Regulations on "Communication Systems in Power Sector"

1. First Meeting of Task Force for giving input for framing of Draft Regulations on "Communication Systems in Power Sector" was held at CERC, New Delhi on 8th May, 2015. List of participants is enclosed as ***Annexure-I***. Chairperson of the Task Force, Smt. Neerja Mathur, Ex Chairperson, CEA, welcomed the participants. She briefly mentioned the Terms of Reference of Task Force as given below and requested members to give their views :

   (i) Specifying the principles and procedures which shall be used for planning and development of communication systems in power sector.

   (ii) Specifying necessary communication system required for transfer/exchange of data, voice and control signals between Generating Stations including Renewable energy sources, Substations, control centres at national, regional, state, area, utility and discom level

   (iii) Specify principles of up-gradation, operation & maintenance, resource and cost sharing of data, voice and video, dedicated and reliable communication system for the power sector

   (iv) Specifying roles & responsibilities of various organizations (CEA, CTU, STUs, POSOCO, Users etc) & their linkages to facilitate development and smooth operation of communication in power sector

   (v) Specifying Information and Communication requirements for smart-grid

   (vi) Suggesting measures to address Security of communication systems.

2. Shri P.K.Aggarwal, AGM, POSOCO was requested to give an overview of telecommunication requirements of power sector. Relying on one of his presentations, he mentioned that communication system is required to control, monitor, protection, data acquisition, metering, maintenance, research and customer interface. The evolution of communication needs for power sector, provision in IEGC regarding requirement of communication system and communication need for major upcoming projects like Unified Real Time Dynamic State Measurement System (URTDSM), National Transmission Asset Monitoring Centres (NTAMC), and Smart Grid were covered in the presentation. Need for reliable communication for various schemes like Special Protection Systems (SPS), System Integrity Protection Schemes (SIPS) and integration of renewable energy into the grid were discussed. Requirement for high speed data transmission network for URTDSM was also underlined.

3. Representative of GETCO of the view that PLCC is most reliable mode of communication for protection system, but it is not so reliable for voice and

data communication. Further, as Microwave channels have already been vacated under the directions of Department of Telecommunications, Government of India, more emphasis is now on optical fibre. Representative of POWERGRID informed that it has approximately 30,000 km of optical fiber network and around 4000 km. of OPGW is under implementation. Representative of POWERGRID was of the view that considering the reliability of OPGW and reduced cost of optical fibre, which is about 0.5% to 1.5% of transmission line cost, all new transmission lines of 132 kV and above voltage level should be provided with OPGW. Representative of GETCO mentioned that optical fibre is also required on existing lines so as to get a ring system. It was mentioned that it is possible to do so 'on-line' with the help of skilled manpower. Representative of KPTCL mentioned that data requirement below 132 kV voltage level is very low.. NTPC representative wanted the data requirement below 132 kV level to be clarified. CEA representative was of the view that below 132 kV level GPRS or VSAT or ADSS could be used. It was informed that NDPL (Tata Power Delhi Distribution Limited) has also provided OPGW on its 33 kV lines. It was suggested that while laying a new 33 kV line, optical-fiber may be laid along with right of way (ROW). It was also suggested to use All Dielectric Self Supporting (ADSS) Fiber Optic cable for 33 kV lines. POWERGRID was requested to submit the cost data of Transmission lines with and without Fibre Optic Cables. Further the cost data for other modes of communication at different voltage levels of transmission lines may also be provided.

4. While discussing the Bandwidth requirement for various applications, AGM (LD&C), POWERGRID informed that minimum Bandwidth required for RTU would be 64 kbps and for sub-station Automation it would be around 2 Mbps. Chief Engineer(EI), CEA stated that the bandwidth required would depend on application and the type of online terminal equipments used. Representative of KPTCL said that they have a bandwidth of 19.5 MHz in VSAT at a cost of about Rs. 2.5 crore per annum. Representative of GETCO suggested that tele-protection may also be included. He was of the view that in PLCC limited frequency band (45 KHz to 500 KHz) is the main constraint. He added that a good mix of PLCC, Optical Fibre & Satellite Communication on selective basis may be required. He further mentioned that communication standards may specify minimum bandwidth required for different applications. Chief Engineer (EI), CEA was also of the view that standards need to be specified for communication systems for power sector. It was decided that standards shall be framed considering bandwidth requirement as well as all other aspects of communication keeping in view of the future needs of the power sector in the country. It was decided that CEA may be requested to formulate standards in regard to Communication System for power sector. In view of the above, it was proposed that a representative from Load Dispatch & Telecommunication Division (LD&T) of CEA be co-opted as a member of the Task Force. The same was agreed by the Task Force.

5. Representative of AEGCL stated that data and speech communication should have an alternate route to control centres in order to avoid contingency situation. He was of the view that the up -gradation of the communication system should not disturb the existing system. He added that they were using GPRS services, which was giving good performance. He mentioned that performance of any system depends on the type of protocol it uses.

6. Representative of KPTCL stated that Satellite Communication is also useful for rural connectivity. He was of the view that Satellite Communication would also be useful in disaster management, when other communication system fails. He added that Satellite Communication may be provided as back up communication at certain strategic locations. CEA may also consider this aspect for providing back up Communication for disaster / natural calamity while forming the standards.

7. Members also discussed about the need for communication for Smart Grid and integration of renewable energy sources into the grid. IWPA intimated that Suzlon Energy is using optical-fiber communication for wind generators within a wind farm and the same can be integrated into the grid. Representative of IWPA further stated that wind generators in Tamil Nadu were facing a lot of problem and at present they were not having any type of communication system which was leading to problems in their scheduling. Members felt that for integration of renewable energy sources, proper communication facility is required and Tamil Nadu being a State with large amount of wind generation, representative of Tamil Nadu on the Task Force will be helpful in this exercise. It was, therefore decided to co-opt an officer from SLDC of Tamil Nadu as a member of the Task Force. Further, to understand the needs and challenges of communication required for Solar Generation, it was decided to co-opt an officer from Solar Energy Corporation of India (SECI).

8. Regarding specifying the procedure for planning and development of communication system in the country, members were of the view that principles be decided considering long term as well as redundancy requirement for Communication of Power Sector. Representative of OPTCL stated that they have notified the procedure for communication and data transmission. A copy was submitted during the meeting and is same enclosed at ***Annexure-II***. After discussion members were of the view that a Standing Committee on communication, similar to standing committee on transmission planning system be set up under the aegis of CEA, with representation from different stakeholders to plan development of the communication system for Power Sector in the country.

9. Representative of OPTCL was of the view that STU/CTU has to incur extra expenses for expansion of data channel in the communication system

including Plesiochronous Digital Hierarchy (PDH)/Synchronous Digital Hierarchy (SDH) equipment to take care of new users/applications increasing data volume and these expenses should be shared. Members were of the view that agency who installs the Communication System also be responsible for integration with the existing system. Members also felt that need for proper maintenance of the Communication System.

10. Representative of GETCO was of the view that if planning is to be done for the next 5 years, life of the communication system should be more than 7 years. Some members were of the view that OFC might have life of 15 years and the life of terminal equipment is shorter period Chairperson requested all the members to communicate their views on the life of communication equipment to Secretariat of the Task Force.

11. After discussion, the following points were concluded:

(i) Representatives from Load Dispatch & Telecommunication Division of CEA, SLDC of Tamil Nadu and Solar Energy Corporation of India were co-opted as members.

(ii) A Standing Committee on Communication System for Power Sector may be formed, under the aegis of CEA to plan development of Communication System for Power Sector.

(iii) CEA may formulate and notify standards for Communication System for Power Sector

(iv) All the members will provide input on Role and Responsibilities of various Organizations as provided in the circulated note.

(v) Representative from GETCO and IPWA will provide a brief write up in regard to data requirements and collection of data from wind farms as well as communication needs for the wind generators.

(vi) Representative of POWERGRID and POSOCO will provide write-up on Communication requirements for Smart Grid

(vii) Representative of NTPC and POWER GRID will provide write-up on Cyber Security

12. All members were requested to provide inputs on any of the issue(s) for consideration of the Task Force by e-mail to Shri Vikram Singh, Deputy Chief (Engg.), CERC at vikramsingh@cercind.gov.in and Shri Ramanjaneyulu, Asst. Chief (Engg.),CERC at ramcerc@gmail.com.

Meeting ended with a vote of thanks to the Chair.

ANNEXURE-I

First Meeting held on 8.05.2015 of Task Force for giving input for forming of Draft Regulation on "Communication Systems in Power Sector"				
SI. N	**Name of the Member**	**Name of the Organizatio n**	**Designation**	**E-mail ID**
1	Ms.Neeraja Mathur	—	Ex-Cairman,CEA	neerjamathur123@gmail.com
2	Shri AK Saxena	CERC	Chief(Engg.)	aksaxenacea@yahoo.co.in
3	Shri D.K.Jain	CEA	CE (EI)	dkj3904@gmail.com
4	Shri H.H.Sharan	POWERGRID	Addl. G.M. (LD&C)	sharan@powergridindia.com
5	Shri P.K.Agarwal	POSOCO	AGM	pkagarwal@gmail.com
6	Shri Dinkar Devate	NTPC	GM (Electrical)	dinkardevate@ntpc.co.in
7	Shri Subhash Thakur	NTPC	Add.GM (PE-Elect)	subashthakur@ntpc.co.in
8	Shri Somes Bandyopadhyay	NTPC	AGM	someshbanerjee@gail.com
9	Shri A.K.Haldar	NTPC	GM (OS)	ahaldar@ntpc.co.in
10	Shri Vinod Kumar Jain	NTPC Ltd. Corp. Comm.	DGM (Comm.)	vinodjain01@ntpc.co.in
11	Shri Chandrashekharaiah	KPTCL	Executive Engineer	eedcsign@gmail.com
12	C.G.Thakkar	GETCO	Dy. Engineer (Engg.)	detel.getco@gebmail.com
13	Shri Hitesh Kakati	AEGCL	AGM Comm.	plccghy@gmail.com
14	Shri H.K.Samantaray	OPTCL	Sr.G.M.Teleco m	telc.cle.bbs@optcl.co.in
15	Shri A.D.Thirumoorthy	IWPA	Chief Technical Advisor	adtmoorthy@gmail.com
16	Shri Akhil Kumat Gupta	CERC	JC (Engg.)	akhilkg@gmail.com
17	Shri Vikram Singh	CERC	DC (Engg.)	vikramsinghfms@gmail.com
18	Ms.Shilpa Agarwal	CERC	DC (Engg.)	shilpadce@yahoo.com
19	Ms. Savitri Singh	CERC	Asst. Chief	savitri.cerc@gmail.com
20	Shri Ramanjaneyulu	CERC	Asst.Chief	ramcerc@gmail.com
21	Ms. Pragya Singh	POSOCO	Law Officer	pragyasingh.law@gmail.com

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ODISHA POWER TRANSMISSION CORPORATION LIMITED
(A Government of Odisha Undertaking)
Regd. Office: Janpath, Bhubaneswar-751022, Odisha

Procedure on Communication and Data Transmission

(Approved by Hon'ble Odisha Electricity Regulatory Commission vide order, dated 23-09-2011 passed in Case Nos. 41, 42 and 51/2011 followed by corrigendum order issued in letter No. 2243, dated 01-12-2011)

Statement of Object and Reasons:

As per the provisions under Sections 32, 33, 39 & 40 of the Electricity Act, 2003, the SLDC & STU respectively have been assigned many statutory functions and duties. The SLDC being the apex body shall ensure integrated operation of Power System in the State for achieving the maximum economy and efficiency in operation. Similarly, the State Transmission Utility (STU) is required to ensure development of an efficient, co-ordinated and economical system of Intra-State Transmission Lines for smooth flow of electricity from a generating station to the load centers.

In order to achieve the above objectives and to implement the Odisha Grid Code Regulation, 2006 as amended from time to time in an equitable and non-discriminatory manner, the State Transmission Utility (STU) hereby make the following procedure for regulating technical standards for connectivity to the grid and establishment of voice and data communication to SLDC, Bhubaneswar in line with the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 and Odisha Grid Code Regulations, 2006. **This is in supercession to the procedure published in the Odisha Gazette No.2162, Dt. 24-12-2010 approved vide the Commission's order, Dt. 20-09-2010 in Case No. 2/2009 and 106/2010.**

1. **Short title & commencement:**

   (i) These procedures may be called **"Procedure for Provision of Voice & Data Communication facilities".**

   (ii) These procedures shall come into force on the date of their publication in the Official Gazette.

2. Definitions:

All the words, phrases, abbreviations etc. shall have the same meaning as provided in the Electricity Act, 2003, Odisha Grid Code Regulations, 2006 and Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007.

3. Responsibility of STU:

The STU shall provide all necessary infrastructures up to all 220kV/132kV grid substations for providing voice and data communication interface points (SCADA interface points).

4. Data Requirement:

The Users/Requesters/Generators including CGPs as provided in OGC who are planning to connect to STS or connected to STS shall have to provide the data relating to voltage, frequency, line flows, status of breaker, isolator position and other parameters as prescribed by the SLDC for effective control of the transmission system and operation of Power System by SLDC.

5. Communication System Requirement:

All the Users/Requesters and Generators including CGPs who are connected to or planning to connect to STS shall provide necessary RTU at their premises and communication channels/facilities up to the nearest 220/132kV S/S of STU (SCADA interface point) as per the recommendation of the STU. However, the Users/Requesters/Generators including CGPs may use the equipments/ communication channels other than those stipulated by the STU provided that they (Users/Requesters/ Generators including CGPs) furnish an undertaking to the effect that they (Users/Requesters/ Generators including CGPs) shall be wholly responsible for fast and reliable voice/data communication to SLDC in the format annexed in the **Schedule-I** to this procedure, soon after getting permission from OPTCL for construction of line/substation to connect with OPTCL network. The undertaking shall be furnished to SLDC.

However, in case the User/Requester elects not to provide the aforesaid communication channels/facility himself in order to avoid the difficulty of provision of communication facility in the requisite mode, the STU may provide the same at the cost of the Requester/User by getting reimbursed at the beginning of the initial installation and running O&M cost of such communication facility from the User/Requester. In that case the undertaking under ***Schedule-I*** *shall not be required. However, such Users/Requesters shall be responsible solely for the availability of required voice/data output at their RTU.*

6. Applicability of the procedure:

This procedure for voice/data communication shall be applicable to all Users/Requesters/ Generators including CGPs intending to connect/already connected with the State Transmission System with contract demand of 5 MVA or more/injection of 5 MW or more. It is further clarified as below:

(1) For 132 connectivity, loads and generators shall be monitored irrespective of capacity.

(2) In order to provide a win-win situation to both SLDC/OPTCL and small generators including CGP (up to 25 MW) connected to STS at 33 kV can be monitored by SLDC through their metering data till establishment of ALDCs. Thereafter ALDC shall monitor them through the available metering data.

(3) The generators (including CGP) and the consumers embedded inside the Distribution System (33 kV) can be monitored through DSOCC. The above two case Nos. (2) and (3) need not be required to communicate their data directly to the nearest SCADA interface point of OPTCL.

7. Authorized person for all official correspondence:

The General Manager, Telecommunication Circle of the STU, Bhubaneswar or any authorized officer of the STU shall act as the Nodal Officer for execution and implementation of this procedure.

8. Submission of application for Voice & Data Communication:

The User upon availing permission of its connectivity to the STS of the STU shall write to the G.M., Telecommunication Circle of the STU, Bhubaneswar for preparation of communication system diagram as well as bill of quantities for provision of voice & data communication to the SLDC. The User is also required to send single line diagram of its substation and generating station well in advance to the G.M., Telecom Circle of STU.

9. Approval of the Communication System:

All the Users and Generators including CGPs who have elected to provide the communication channels/facility themselves, shall adhere to the communication scheme as approved by the G.M., Telecom Circle of the STU or any authorized officer of STU on its behalf. If any deviation is noticed, the Users have to execute an undertaking as per the provision of the clause-5 above in the format available in the **Schedule-I** of this procedure.

10. Availability of Spares & Test instruments:

It shall be the responsibility of the Users and Generators including CGPs who have elected to provide the communication channels/facilities themselves and are connected to STS to procure & keep sufficient stock of spares as per the recommendation of the STU in consultation with the manufacturers for smooth and uninterrupted operation of voice and data communication system.

11. Periodic Testing of the SCADA system:

All Users and Generators including CGPs who have elected to provide the communication channels/facility themselves shall co-operate with STU for periodic testing of the voice & data communication system as per the recommendation of STU.

12. Direction of STU to the Users:

Notwithstanding anything in this procedure, the direction of STU/SLDC as regard to operation of the voice & data communication system shall be adhered to by the respective Users or Generators including CGPs in the interest of reliable and fast voice and data communication necessary for power system operation.

13. Power to remove difficulties:

Member-Secretary, GCC shall remove operational difficulties arising out of implementation of this procedure.

14. Nodal Officer for adjudicating the dispute:

Member-Secretary, GCC shall be adjudicating authority for any dispute arising in the implementation of this procedure.

15. Penalty for non-compliance of directions:

Each User/Generator including CGPs/Requesters who are connected to STS shall have to pay penalty as per the decision of OERC for non-compliance of directions.

16. Appeal & Limitation:

Any User/Generator including CGPs who are connected to STS may appeal before the Odisha Electricity Regulatory Commission (OERC) against any decision of Member-Secretary, GCC and/or STU/SLDC in the matter of voice and data communication within three months time from the date of communication of such decision.

HEMANT SHARMA

Chairman-*cum*-Managing Director

SCHEDULE - I

UNDERTAKING

(To be executed before a Notary Public on non-judicial stamp paper worth Rs.100)

I, Shri …….....…….S/o…….....…

Aged about……..... years, permanent resident of village …...……P.O…….....

P.S……...……., in the Dist. of ……..…., State of …….....……

The authorized representative of M/s…….....…… address ……...…...……...…

…….……...……do hereby solemnly undertake that —

(1) M/s……... shall be responsible for round the clock maintenance of all equipment for voice and data communication from the substation of M/s ……..…… to the nearest SCADA interface point of M/s Odisha Power Transmission Corporation Ltd., a State designated STU for its operating period with effect from the date of commissioning for uninterrupted data/voice communication to the SLDC, Bhubaneswar.

(2) M/s …….. shall keep sufficient spares/cards/modules and other required materials as may be required for smooth maintenance of equipment for its operating period.

(3) M/s ……... shall maintain all RTU and communication channel in such a manner so that SLDC will not face any difficulty due to non-availability of data & voice communication.

(4) In the event of failure of Data/Voice communication continuously, SLDC shall take action in accordance with Section 33 of the Electricity Act, 2003.

(5) Any dispute arising out of this undertaking during its validity period, the decision of SLDC shall be final and binding on M/s ……subject to appeal before the Hon'ble Commission vide Clause No.16 of the procedure.

This undertaking is made on…… day of ……..20… in presence of the witness.

Witness

1. (a) Signature…….....

(b) Full name…….....…

(c) Address…….....

2. (a) Signature…….....

(b) Full name…….....

(c) Address…….....

For M/s …….....

(a) Signature…….....

(b) Designation…….....

(c) Full name…….....……

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