



सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांक: 22.06.2024

Date: 22.06.2024

सेवा में/ To,

संलग्न सूची के अनुसार/As per list attached

विषय: दूरसंचार, स्काडा और टेलीमेटरी उपसमिति की 25 वीं बैठक।

Subject: 25th meeting of Telecommunication, SCADA & Telemetry Sub Committee

इस कार्यालय के पत्र दिनांक 07.06.2024 के क्रम करते हुए यह सूचित किया जाता है कि उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार, स्काडा और टेलीमेटरी (टेस्ट) उप-समिति की **25 वीं बैठक दिनांक 25.06.2024 को 10:30 बजे सम्मेलन कक्ष, एन.आर.पी.सी, नई दिल्ली** में आयोजित की जाएगी। बैठक की कार्यसूची आपकी सूचना एवं आवश्यक कार्यवाही हेतु संलग्न है।

In continuation to NRPC letter dated 07.06.2024, it is to be intimated that the 25th meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC will be **held at conference room in NRPC, New Delhi on 25.06.2024 at 10:30 AM**. The agenda for the meeting is enclosed herewith for your information and necessary action.

अनुलग्नक- यथोपरि।

भवदीय,

Signed by Anzum Parwej

Date: 22-06-2024 11:20:38

(अंजुम परवेज)

अधीक्षण अभियंता

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26	IPGCL		Nomination Pending	md.ipgpp@nic.in
27	HPGCL		XEN/ Switchyard, DCRTTP	xensvd.dcrbtp@hpgcl.org.in
28	RRVUNL		Nomination Pending	cmd@rrvun.com
29	UPRVUNL		Nomination Pending	director.technical@uprvunl.org
30	UJVNL		General Manager (Lakhwar-Vyasi)	qmemplv.ujvnl@gmail.com
31	HPPCL	State Generating Company & State owned Distribution	Nomination Pending	md@hppcl.in
32	PSPCL		Nomination Pending	cmd-ppsccl@ppsccl.in
33	UHBVN	State owned Distribution Company (alphabetical rotational basis/nominated by state govt.)	Nomination Pending	md@uhbvnl.org.in
34	Jodhpur Vidut Vitran Nigam Ltd.		Nomination Pending	md.jdvnl@rajasthan.gov.in
35	Paschimanchal Vidut Vitaran Nigam Ltd.		Nomination Pending	md@pvnl.org
36	UPCL		Nomination Pending	md@upcl.org
37	HPSEBL		Nomination Pending	md@hpseb.in
38	Prayagraj Power Generation Co. Ltd.		Nomination Pending	sanjay.bhargava@tatapower.com
39	Aravali Power Company Pvt. Ltd	IPP having more than 1000 MW installed capacity	Nomination Pending	bhramajig@NTPC.CO.IN
40	Apraava Energy Private Limited		Nomination Pending	rajneesh.setia@apraava.com
41	Talwandi Sabo Power Ltd.		Nomination Pending	Vibhav.Aqarwal@vedanta.co.in
42	Nabha Power Limited		Joint General Manger	chandresh.saxena@larsentoubro.com
43	Lanco Anpara Power Ltd		Nomination Pending	sudheer.kothapalli@meilanparapower.com
44	Rosa Power Supply Company Ltd		General Manager/ Electrical	Kesarinandan.Pandey@relianceada.com
45	Lalitpur Power Generation Company Ltd		Nomination Pending	vkbankoti@bajajenergy.com
46	MEJA Urja Nigam Ltd.		Nomination Pending	hopmeja@ntpc.co.in
47	Adani Power Rajasthan Limited	Nomination Pending	jayadeb.nanda@adani.com	
48	JSW Energy Ltd. (KWHEP)	Nomination Pending	jyotiprakash.panda@jsw.in	
49	Tata Power Renewable Energy Limited	IPP having less than 1000 MW installed capacity (alphabetical rotational basis)	Nomination Pending	dhmahabate@tatapower.com
50	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	Nomination Pending	cejkpcl2@gmail.com
51	UT of Ladakh		Nomination Pending	cepdladakh@gmail.com
52	UT of Chandigarh		Nomination Pending	elop2-chd@nic.in
53	NPCL	Private Distribution Company in region (alphabetical rotational basis)	Nomination Pending	ssrivastava@noidapower.com
54	Fatehgarh Bhadla Transmission Limited	Private transmission licensee (nominated by central govt.)	Nomination Pending	nitesh.ranjan@adani.com
55	NTPC Vidut Vyapar Nigam Ltd.	Electricity Trader (nominated by central govt.)	Nomination Pending	ceonvvn@ntpc.co.in
Special Invitee for TeST meeting				
Transmission Licensees			Nomination Pending	
1	Adani Energy Solutions Ltd.		Nomination Pending	narendrasinh.rajput@adani.com
2	Indigrid		Nomination Pending	Lokendra.Ranawat@indigrid.com
3	Sterlite Transmission Ltd.		Nomination Pending	mahesh.bhagat@sterlite.com
4	Tata Power Transmission Company Limited		Nomination Pending	sandeep.shukla@tatapower.com

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**25th Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC
Agenda**

I. Confirmation of Minutes

1. Confirmation of Minutes

The minutes of 24th meeting of TeST sub-committee held on 09th February, 2024 were issued on 27.05.2024. Minutes are available at NRPC website (<http://164.100.60.165>).

No comments have been received till date.

Members may kindly confirm the minutes.

II. Telecommunication and Telemetry issues

2. Optic Fiber connectivity for New Building of NLDC (Agenda by CTU)

2.1. Grid-India vide their letter dated 25.04.24 (copy attached at **Annexure-I**) has requested CTU for planning of fiber optic connectivity to their new building of National Load Dispatch Centre (NLDC) located at "Grand Rue" Ayur Vigyan Nagar, August Kranti Marg, New Delhi. Accordingly, a meeting was convened by CTU on 06.05.2024 to understand the actual requirement of Grid-India for connectivity of New building (MoM attached at **Annexure-II**).

2.2. During the meeting, Grid-India stated that they are planning to start NLDC operations from the new building at August Kranti Marg by 31st Oct' 2024. In this regard dedicated and redundant Optical Fibre connectivity from ULDC network is required for successful operation of NLDC from new Building. Further, they also mentioned that additional links of POWERTEL may also be required for redundancy of the communication network to NLDC.

2.3. In the meeting, POWERGRID informed that temporary connectivity can be provided by utilisation of POWERTEL fibres (third party leased fibres) at STM 4/16 level which are running near the new building as interim arrangement. POWERGRID further informed that for new POWERTEL links, commercial obligation shall be as per existing norms (i.e. from O&M budget).

2.4. For the permanent arrangement of NLDC fibre optic connectivity, POWERGRID proposed following paths of underground fiber for providing ample redundancy:

- i. NLDC/NRLDC Building at Katwaria Sarai - NLDC New Building, August Kranti Marg - **9 Kms**
- ii. Maharani Bagh (ULDC) - NLDC New Building, August Kranti Marg - **12 Kms**
- iii. Tughlakabad via Okhla - NLDC New Building at August Kranti Marg - **14 Kms**

In Totality: 35 kms of UGFO

2.5. POWERGRID further stated that it will be beneficial to install 48 Fibre cable instead of 24 fibre cable as cost difference in 24F and 48F cable is nominal in comparison with cost of ROW charges (of CPWD/NDMC) and installation cost. CTU suggested that in

place of 48F UGFO cable, 2 nos. of 24F UGFO cable can be installed in redundant separate cable trenches to avoid disconnection in case of frequent construction/digging work by other agencies. 2X24F UGFO cable was agreed in the meeting.

2.6. In addition to above, POWERGRID informed that 3 nos of communication equipment along with 2 nos of 48V DCPS may also be required for redundancy of equipment and input DC POWER supply.

2.7. POWERGRID informed that Cost Estimate for the above work (35 Kms UGFO, 3 nos of communication equipment and 2 nos of 48V DCPS) is Rs. 7 crores and Rs. 8 crores for 2x24F fibre arrangement respectively.

2.8. Details of proposed scheme is given below:

Sl.	Items	Details
1.	Name of Scheme	Optical Fibre Connectivity for NLDC new building, August Kranti Marg, New Delhi
2.	Scope of the scheme	Supply and installation of (2X24F) Underground Optical Fibre for 35 Kms including RoW charges, 3 no. of FOTE and 2 no. of 48V DCPS
3.	Depiction of the scheme on FO Map	N/A
4.	Objective / Justification	<p>i. Grid-India vide their letter dated 25.04.24 (copy attached at Annexure-I) has request to CTU for planning of fiber optic connectivity to their new building of National Load Dispatch Centre (NLDC) located at "Grand Rue" Ayur Vigyan Nagar, August Kranti Marg, New Delhi. Accordingly a meeting has been conveyed by CTU on 06.05.2024 to understand the actual requirement of Grid-India for connectivity of New building (MoM attached at Annexure-II).</p> <p>ii. As per meeting held on 06.05.2024 among Grid-India, POWERGRID and CTU. Scheme was prepared based on the inputs from POWERGRID regarding requirement of UGFO, FOTE, RoW charges</p>
5.	Estimated Cost & Funding	Rs. 8 Cr. (approx.)
6.	Implementation timeframe	12 months from the date of allocation
7.	Implementing Agency / Mode	POWERGRID in RTM
8.	Deliberations in different meetings	Meeting held among Grid-India, POWERGRID and CTU on 06.05.2024

Members may Deliberate.

3. Dual reporting of SCADA Channels (RTU/SAS) to NRLDC and Back up NRLDC (Agenda by CTU)

3.1. Presently SCADA data channels are reporting in main and backup mode (1+1) with 1 main channel to RLDC and 1 backup channel to Backup RLDC. As deliberated in the meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023 (Attached at **Annexure-III**), it has been finalized that to increase the redundancy in the system, 2 main and 2 backup channels should report to RLDCs as well as back up RLDCs considering the criticality of real time grid operations by the RLDCs.

3.2. It may also be mentioned that CERC has issued Guidelines on “Interface Requirements” under the CERC (Communication System for inter-State transmission of Electricity) Regulations, 2017 (Attached at **Annexure-IV**):

“The interfaces shall be designed to operate under single contingency failure condition. Equipment should support interfaces with multiple ports, cards, gateways etc. and configured in redundant mode so that failure of single hardware element, i.e. communication port, card, gateway etc. of the users shall not lead to failure of data communication.”

3.3. For new ISTS stations, CTU is already including this requirement in the RfP inputs for TBCB projects. For existing ISTS sub stations, requirement for additional ethernet ports in RTU/SAS and FOTE were deliberated in various meetings. POWERGRID has provided the region wise data of additional requirement for equipment/port etc in respective SAS Gateway/RTU along with cost estimate for the implementation of dual redundancy to RLDCs & Backup RLDCs. Scheme for requirement of additional FOTE/ cards for dual redundancy in the existing POWERGRID stations has already been reviewed in 69th, 70th, 71st NRPC meetings and approved in 19th NCT meeting.

3.4. This scheme was also deliberated in the 72nd NRPC for northern region, where forum has the view that a comprehensive scheme shall be prepared considering the Private TSPs also.

3.5. CTU has acquired inputs in this regard from POWERGRID and other Private TSPs and based on the inputs, schemes are prepared which are attached at **Annexure-V**.

3.6. Details of the POWERGRID Under Construction/Upcoming substation is also acquired. As per inputs from POWERGRID additional Ethernet ports are available/ made available in the FOTE of under-construction/ upcoming substations of POWERGRID.

3.7. Regarding additional 1 no. ethernet port in each gateway of upcoming substations POWERGRID to update the status and requirement if any.

3.8. List of POWERGRID S/s (Under Construction/Upcoming) as below:

Sr. No.	Sub-Station
1.	FATEHGARH-III PS
2.	SIKAR-II

3.	BIKANER-II PS SWITCHING STATION
4.	NARELA S/S
5.	BIKANER-III POOLING STATION
6.	POOLING STATION AT RAMGARH
7.	POOLING STATION AT BHADLA-3
8.	S/S NEAR DAUSA.
9.	POOLING POINT IN PANG (LEH)
10.	POOLING POINT IN KAITHAL (HARYANA)

3.9. Apraava Renewable Energy Pvt. Ltd. owns Fatehgarh-4 S/s (Under Construction) as per inputs received from Apraava (Input received is attached at **Annexure-VI**) spare ports are available in their SAS Gateways and FOTE.

3.10. Indigrd was also requested for the inputs for 2+2 requirements in FOTE and SAS Gateways. As per email dtd. 10.06.24 (attached at **Annexure-VII**) they seek around 15 days more time to work out the details for additional ethernet ports requirements for FOTE and SAS Gateways.

3.11. As per inputs received from Adani Power who owns 400/200 kV Fatehgarh TBCB station, spare ethernet ports are available in the FOTE and SAS Gateway (Input received from Adani is attached at **Annexure-VIII**).

Members may Deliberate.

4. Modalities for Replacement of existing Communication System ISTS Elements (Agenda by CTU)

4.1. As per CERC Tariff regulation 2024-29 useful life of OPGW is 15 years and that of FOTE is 7 years. POWERGRID had proposed replacement of OPGW on the following 4 nos. of links (Total:787km) in the 5th Communication Planning Meeting (CPM) of NR held on 20.03.2024 (MoM attached at **Annexure-IX**).

- i. 400kV Moga– Hisar (Length: 210 km)
- ii. 400kV Kanpur-Allahabad (Length: 219 km)
- iii. 400kV Agra-Kanpur (Length: 235 km)
- iv. 400kV Hamirpur II-Jalandhar (Length: 123 km)

4.2. OPGW on above mentioned lines have been installed & commissioned by POWERGRID during the period 2004- 2005 under PowerTel Projects and being used for ULDC network under sharing mode.

4.3. As per CERC provisions stipulated at para 26(ii) in order date 17.05.2023 i.r.o. Petition no. 287/MP/2022 (POWERGRID being the petitioner), POWEGRID has to maintain healthiness of all cored of fibers in OPGW, clause is reproduced here:

Quote

The ownership, control and management including operation and maintenance of the transmission system including all cores of OPGW cables, transmission towers, substations shall continue to be vested with and controlled by the Petitioner at all time.

Unquote

- 4.4. In the 5th CPM of NR, POWERGRID mentioned that above mentioned links has completed its useful life of 15 years and also attenuation for fibers are high so they are facing difficulties to maintain these links.
- 4.5. Similar type of agenda was also put up in 44th COM-SR meeting by CTU, where Forum has the view that third party audit needs to be done, further standards in regard of attenuation criteria for healthy operation of fibers also to be explored (extract of MoM is attached at **Annexure-X**)
- 4.6. To streamline approval process in respective forums, it is proposed that a methodology needs to be finalised for the following:
 - i. replacement of ISTS communication elements (OPGW, FOTE, etc.)
 - ii. replacement of OPGW, FOTE, etc. for the links where Powertel/ STU/etc. assets are shared for ULDC purpose

Members may Deliberate.

5. J&K Telemetry Issues (Agenda by NRLDC)

- 5.1. Reliability and accuracy of SCADA data and its associated communication system is essential for monitoring and coordinating operations of a large electricity grid. It helps in visualization and management of the critical grid element failure/grid incident in real time and minimizes the possibility of any untoward incidences/disturbances.
- 5.2. Real-Time data availability from Jammu and Kashmir is very poor. There is zero visibility of data in J&K stations at J&K and NRLDC. With poor monitoring of data, it is very difficult to monitor grid in efficient manner.
- 5.3. The matter has been discussed in various TCC and TeST Meetings but there is no improvement of the same.
- 5.4. Brief details are as follows:
 - i. Under SCADA upgrade project M/s Siemens at all 400KV / 220 KV and 132 KV sub-stations/ generating Stations of J&K PDD installed 66 RTUs.
 - ii. RTUs were not integrated with Control centre due to non-availability of communication network.

- iii. RTUs were tested locally and commissioned without data availability at Control Centre.
- iv. **Due to Non availability of data, JK PDD is not able to monitor its drawal from grid and its generation.** It is dependent of Central sector data for monitoring of drawal.
- v. Matter was also discussed in Special Meeting with J&K on 28.07.2020 where in Representative of J&K informed that they have given consultancy work to POWERGRID for installation of OPGW in J&K. However, due to funding issue OPGW work has been stalled by POWERGRID. According to J&K almost 95% of the work is complete and once funding issue is resolved, Non-availability of telemetry issue will be resolved.
- vi. Further, it was informed that payment issues were resolved and many communication links were commissioned and pending link would be commissioned by December 2022.
- vii. Matter was also discussed in 47th TCC-49th NRPC Meeting, J&K confirmed that they will resolve the issues mutually with POWERGRID so that data starts reporting to SLDC/ NRLDC.
- viii. During 19th TeST Meeting dated 07.03.2022, J&K representative informed that by 31st December 2022 all 70 RTUs will be integrated with SLDC.
- ix. During 20th TeST Meeting held on 09.09.2022 it was discussed that J&K informed that although some of the links have been commissioned but data reporting is yet to start due to disconnection of CT/PT cables at site / other integration issues of the RTU. Further it was informed that they are in process of rectification of RTU issues and joint visit is planned with M/s Siemens.
- x. During 64th NRPC Meeting held on 24th March 2023 it was informed that joint visit could not be conducted and after discussions it was decided that a joint meeting shall be conducted comprising members from Siemens, POWERGRID, J&K and NRLDC to resolve the RTU integration issues.
- xi. During 68th NRPC Meeting held on 18th Aug 2023 Representative from J&K informed that there is no improvement in regard to telemetry and they are taking up with POWERGRID and Siemens.
- xii. Issue was also discussed in 23rd TeST Meeting on 21st Sep 2023 and Special Meeting with J&K on 12th Oct 2023 where in J&K confirmed they will start the process of RTU integration with the support of Vendor. However, till date there is no improvement in data reporting from J&K Sub-stations.
- xiii. Issue was also discussed in 24th TeST Meeting on 09th Feb 2024.

J&K/POWERGRID to update the status.

6. Communication plan for channel redundancy to NRLDC (*Agenda by NRLDC*)

- 6.1. The provision of redundant & reliable communication was discussed in various TeST Meetings. Redundant communication is to ensure that two ports at RTU end are configured for RLDC. Also, data is configured with two different communication channels for bringing redundancy into the system and increase reliability of data to NRLDC/ RLDC.
- 6.2. The reliability of communication channel to NRLDC has been discussed in various TeST Meeting since November 2016 (8th TeST Meeting). It is informed that 7 nos. of RTUs are still reporting to NRLDC on single channel.
- 6.3. It is requested to expedite the process of providing redundant channel for the remaining locations at the earliest. It is to note that stations where second link is down since long is considered as single channel only.
- 6.4. Thus, it is requested that reliability of redundant channel may also be ensured.
- 6.5. List of RTUs with single channel is given below:

S.NO.	Name of RTU	Utility	Comments
1	KISHANGANGA	NHPC	
2	PARBATI-2	NHPC	
4	KARCHAM WANGTOO	IPP	
5	PARBATI-3	NHPC	
6	AD Hydro	AD Hydro	
7	Bhiwadi HVDC	POWERGRID	Second gateway Faulty

- 6.6. Issue regarding Parbati-2, 3 and Kishanganga was discussed in detail in 23rd TeST Meeting held on 21.09.2023; still there is no improvement in this regarding. Data from existing links from these stations is highly unreliable. NHPC /POWERGRID to take urgent action in this regard.

POWERGRID/Utilities are requested to please update the status.

7. Redundant RTU Communication for Main/ Backup RLDC (*Agenda by NRLDC*)

- 7.1. Requirement of redundant communication channel / links from Sub-stations to NRLDC and Backup NRLDC was discussed in meeting held among CEA, CTUIL, POWERGRID and Grid-India on 28.06.2023 where it was discussed that as per communication channel redundant communication channels for RTUs shall be made available to NRLDC and Backup NRLDC.
- 7.2. In this regard it is inform that at present for most of the Sub-Stations 2 number of RTU ports are configured, one (1) for Main NRLDC and one (1) for backup-NRLDC. For some of the Sub-stations 3 number of RTU ports are configured two(2) for Main NRLDC and one(1) for Back-up NRLDC. Based on the final requirement all concerned

are requested to make arrangements for RTU data transfer as per approved philosophy.

7.3. This is for information and necessary action by all concerned.

8. PMU integration of RRVPNL stations supplied under STNAMS (Agenda by NRLDC)

- 8.1. NRLDC representative stated that in reference to the discussion in 62nd NRPC Meeting held on 31.01.2023 & 63rd NRPC held on 24.02.2023, where representative of RRVPNL informed that around 8 PMU out total 25 PMUs under STNAMS project has been commissioned and data of same is updating at RRVPNL STNAMS control centre. Further, STNAMS PDC will be integrated with Rajasthan SLDC PDC upon completion of Cyber Security compliances at STNAMS system. It was also informed that there is a provision to integrate new Phasor data concentrator (PDC) with existing PDC installed at Rajasthan SLDC.
- 8.2. During the meetings RRVPNL representative was requested to expedite the PMU data for better visibility of Rajasthan area as it is very important from grid operation point of view considering recent events in Renewable pocket.
- 8.3. In this regard NRLDC has also requested RRVPNL and SLDC to expedite the integration process vide letter NRLDC/SCADA/2023 dated 14.02.2023.
- 8.4. In view of the above it was requested that RRVPNL shall advise the concern to take necessary actions so that integration of PMU data reporting at STNAMS control centre with Rajasthan SLDC PDC for onward transmission of data to NRLDC.
- 8.5. During 64th RPC Meeting RRVPNL representative stated that PMUs has started reporting at their control centres. However, prior to integration with Rajasthan PDC cybersecurity audit was to be completed. He further informed us that Cyber security audit has been completed and they are in the process of closure of Cyber Security points. On closure of points Cyber Security points, they will start the process of integration of PDC. He confirmed that integration work would be completed by 30th April 2023.
- 8.6. During 68th NRPC Meeting held on 18th Aug 2023 Representative from RRVPNL informed that they are in process of integration of PMUs at SLDC.
- 8.7. During, 73rd NRPC Meeting held on 21st May 2024 , Representative from RRVPNL informed that they are in process of integration of PMUs at SLDC and activity is likely to be completed by 2nd July 2024.

RRVPNL/Rajasthan SLDC to please update the status.

9. Redundant Communication from Sub-stations/Generating Stations (Agenda by NRLDC)

- 9.1. As per CERC communication Regulations, 2017 redundant communication shall be provided from Sub-stations/Generating Stations to concerned Load Dispatch Centre. Issue of redundant communication paths from different Generating Stations/Sub-

Stations was discussed in 22nd , 23rd and 24th Test Meeting were discussed. Details of various links is as given below:

S.No	Link	Discussion in 24 th TeST Meeting
1.	Redundant communication for Alusteng, Drass, Kargil, Khalasti, Leh	<p>CTU informed that they redundant link can be commissioned through JK link of Alusteng – Ziankote-Wagoora and requested JK to share 3 pair for ULDC purpose. They further informed that two FOTE will be required at Alusteng and Ziankote.</p> <p>J&K informed that OPGW is available . However they will confirm availability after confirmation from higher management.</p> <p>CTU was requested to put up the agenda in forthcoming NRPC meeting after receiving consent from J&K.</p>
2.	Redundant communication for Narora (NAPP) (NPCIL)	<p>CTU informed that they redundant link can be commissioned after commissioning OPGW link on NAPPS – Simbhauri and further utilising UP links till Modipuram.</p> <p>UP informed that OPGW is available . However they will confirm availability after confirmation from higher management.</p> <p>CTU was requested to put up the agenda in forthcoming NRPC meeting after receiving consent from UP.</p>
3.	Redundant Communication for Pithoragarh (PG) Sitarganj (PG) stations	<p>CTU informed that they redundant link can be commissioned through PTCUL and requested HPPTCL to share 3 pair for ULDC purpose.</p> <p>HPPTCL informed that tender for OPGW is going to be floated and technical approval is in process . However they will confirm availability after confirmation from higher management and requested to give request letter to PTCUL higher management.</p> <p>CTU agreed to give request letter and after consent for PTCUL higher management they will put the agenda in NRPC for approval.</p>
4.	Redundant communication for Saharanpur (PG) S/s	<p>CTU informed that they redundant link can be commissioned through UPPTCL link of Saharanpur (PG)- Devband (UP)- Saharanpur (UP)-Nanauta (UP)-Shamli (UP) -Muradnagar (UP) and requested UPPTCL to share 3 pair for ULDC purpose. They further informed that two FOTE will be required at Shamli and Muradnagar.</p> <p>UPPTCL informed that one pair of OPGW is</p>

S.No	Link	Discussion in 24 th TeST Meeting
		<p>available and can be utilized . However they will confirm availability for 3 pairs after confirmation from higher management.</p> <p>Further , UPPTCL was requested to integrate Deoband , Sharanpur(UP) and Nanuta equipment's for integration in NMS and better maintenance etc.</p> <p>CTU was requested to put up the agenda in forthcoming NRPC meeting .</p>

9.2. Redundant Communication from Salal:

- 9.2.1. Presently Salal Generating Station is connected in radial path from Salal-Kishenpur and any issues in the path leads to outage of Salal data. Since redundant path is not available it leads to outage of longer duration.
- 9.2.2. Non-availability of data leads to non-visibility of Salal Generation and difficulty in computation of drawl of J&K.
- 9.2.3. In this regard it is requested that CTUIL may also plan redundant communication for Salal Generating Station also.

CTU may update the status.

10. Upgradation of Hot Line Speech Communication System implemented by M/s ORANGE (Agenda by NRLDC)

- 10.1. Hot Line Speech Communication System was implemented by POWERGRID in 2016 for PAN India basis wherein NLDC, RLDCs and all SLDCs are inter-connected through Alcatel Lucent make EPABX system, VOIP/Analog phones are also installed at power plants/sub-station/IPPs, etc over dedicated OPGW network of ULDC. This scheme was executed by M/s ORANGE with provision of AMC of 7 years as part of the contract and the same is expiring in July' 2023.
- 10.2. Based on the discussions held in previous TeST meeting, offer was requested from M/s Alcatel Lucent (OEM), however, they mentioned that EPABX system which was installed in 2016, has older version i.e. 11.0, however, at present 100.1 version is running and all new hardware which is available in market, are compatible to new version only. Therefore, to continue with comprehensive AMC, we need to first upgrade/migrate the system with the latest software version then Alcatel through their authorized channel partners, can further support for minimum 5 years of AMC.
- 10.3. The issue was deliberated in 3rd meeting of CTU-ISTS communication system planning for Northern Region held on 17.02.2023, then the issue was further discussed in CTU communication planning meeting for Pan India held on 05.04.2023.
- 10.4. Further the issue was also deliberated in 22nd TeST sub-committee meeting of NRPC held on 24.05.2023 and following points were deliberated and agreed upon –

- i. Extension of AMC support by M/s. Orange for at least 2 years through POWERGRID.
 - ii. Meantime, CTU shall plan upgradation and implementation of existing Hot line speech communication or new EPABX system.
- 10.5. Matter was also discussed in 23rd TeST Meeting held on 21.09.2023 where CTU stated that they are already working for the planning of Hot Line Speech communication as advised by NRPC. However, it is understood that during the execution of the said project, RPCs approval was sought from all regions and cost of the project was booked in the ongoing Communication System packages of the respective regions. As per CERC tariff regulation, the useful life of the communication system is up to 15 years. In this regard, CTU requested POWERGRID to provide the revised depreciation order for the Hot Line Speech communication system, so that they can go for the planning and approval for new VOIP communication system.
- 10.6. During the meeting it was finalised that CTU to take up the planning and approval process in parallel as POWERGRID shall file petition to CERC in 2024. It was deliberated that as the AMC extension has been approved by POWERGRID for 2 years, meanwhile CERC order will be pursued during this time.
- 10.7. Process of replacement / upgradation may be initiated considering timelines for procurement and implementation. As OEM has clearly stated that further AMC extension is not possible. Forum may please decide replacement / upgradation by July 2025.
- 10.8. During 24th Meeting on 09th February 2024. It was agreed that Hot Line exchange should be considered as part of communication system and in order to reduce time, POWERGRID shall file revised petition and CTU, simultaneously, shall start the finalizing scheme for upgradation/ replacement of Hotline Exchange. Subsequently, CTU shall take up scheme in all RPCs for approval and then in NCT.
- 10.9. A joint meeting with RLDC/SLDC / CEA was convened by CTU on 12th June 2024 for finalisation of requirements for VOIP/Hotline Exchange.

POWERGRID/CTU to please update the status

11. Non-availability of Real-Time data from PTCUL

- 11.1. As per details submitted by PTCUL out of 58 Sub-Station/Generating Stations data from only 26 Sub-stations are integrated at SLDC.
- 11.2. The same issue was also informed to PTCUL vide letter (Ref: - NRLDC/SLII/2019-20) dated: - 05.03.2020 38.3. Issue was discussed in Special Meeting with PTCUL held in July 2020 and December 2020. Subsequently issue was also discussed in 17th, 18th & 19th Test Meeting and 45th TCC-48th NRPC and 47th TCC-49th NRPC, 64th NRPC.

- 11.3. During 47th TCC -49th NRPC dated 27.12.2021, representative from PTCUL informed that they are in the process of tendering of RTU and OPGW Installation work and informed that they would expedite the installation works, and is expected to be completed in 6 months.
- 11.4. During 52nd NRPC Meeting dated 31.12.2022 NRPC Meeting PTCUL informed that PTCUL representative informed that they are on the verge of finalizing the OPGW project and order will be placed in one-month duration. Tender has been floated for RTU.
- 11.5. During 22nd TeST Meeting representative from PTCUL informed that last tender was cancelled due to higher rates than estimate; there was approximate 39% more than estimate. Further, it was informed that they have prepared fresh DPR for RTU & OPGW installation and they would submit the proposal within next 7-10 days. After approval, PTCUL will initiate tendering process and try to expedite the work.
- 11.6. It may be noted that SCADA upgradation project is also in progress, PTCUL is requested to please match the timelines with SCADA project, so that RTU can be integrated along with new SCADA commissioned.
- 11.7. PTCUL to please update the status

Members may Deliberate.

12. OPGW connectivity of 220/33 KV GIS Phojal (HPPTCL) with AD-Hydro Nalagarh (PGCIL) Transmission line (Agenda by HPPTCL).

- 12.1. HPPTCL is planning to establish telemetry of 100 MVA, 220/33 KV GIS Phozal via OPGW on 104-protocol. The Power system planning of Northern region held on 30th May, 2016.
- 12.2. HPPTCL has already laid down 12 pairs of OPGW upto the LILO point of 220 KV AD Hydro- Nalagarh line from requested to provide connection with 12 pairs of OPGW from Phojal Sub-Station on LILO basis with 6 pairs to 2 Nos. STM-1/4 optical ports in SDH equipment installed at AD Hydro and Nalagarh Sub-Station (PGCIL).

Members may Deliberate.

III. Issues related to Unified Load Dispatch & Communication scheme of NR

13. Replacement of End-of-Life internal firewall of SCADA system and renewal of subscription of external firewall & Antivirus (Agenda by UP-SLDC).

13.1. It is requested to PGCIL, jointly procuring these items for NR constituents to expedite the process, so that the cyber security of the SCADA system can be enhanced.

14. Extension of ULDC Phase-II AMC with M/S Siemens (Agenda by UP-SLDC)

14.1. As the SCADA upgradation ULDC Phase-III tender is yet to be awarded by PGCIL. It is requested to M/S PGCIL that ongoing AMC with M/S Siemens to be extended further for sufficient duration, considering the ULDC Phase -III project implementation schedule and mandatory parallel operation of both Phase-II & Phase - III systems.

Members may Deliberate.

15. Replacement of End-of-Life firewall of URTDSM system (Agenda by UP-SLDC)

15.1. Replacement of Internal firewall supplied under URTDSM project has reached End of Life/End of support since 23 oct 2023. The matter was discussed in 22nd,23rd &24th TeST meeting. It was informed by PGCIL that firewall procurement is under progress. It is requested to PGCIL to expedite the replacement process, so that Cyber Security of URTDSM system can be enhanced.

Members may Deliberate.

16. Regarding end of life of Internal Firewall and antivirus (Agenda by BBMB)

16.1. The existing Fortigate Make Internal Firewalls installed for SCADA system of SLDC BBMB has reached its end of life and required to be replaced as already clarified by POWERGRID. In this regard, it is requested to expedite the procurement process and install the internal firewall and antivirus at the earliest in order to maintain the cyber security posture of the existing SCADA System.

17. Existing SCADA/EMS System under ULDC Phase-II scheme and the upcoming ULDC Phase-III Scheme (Agenda by BBMB)

17.1. As per the DPR of upcoming ULDC Phase-III scheme circulated by POWERGRID, the ULDC Phase-III scheme is likely to be commissioned by November, 2025 and the existing SCADA system equipment AMC is valid till 08.06.2025. As such, the AMC Contract may be got extended from M/s Siemens till the implementation/commissioning of ULDC Phase-III Scheme at the same rates, terms and conditions at the earliest please.

18. Regarding EOL of Firewalls for URTDSM Project (Agenda by BBMB)

18.1. As discussed in the 23rd and 24th TeST meeting regarding the end of life of firewalls under URTDSM. In this regard, it is again requested to take necessary action at the earliest so that the existing system may be secured from the cyber security threats please.

19. Regarding SOC and NOC of Protected System (Agenda by BBMB)

19.1. As discussed in the 24th TeST meeting, this office requested to take up the implementation of SOC and NOC in centralized way for all northern region constituents. To which Powergrid informed that the decision of the same will be taken by their higher management. In this regard, BBMB has requested vide reminder letter to Powergrid to provide the status of the same. As such, it is again kindly requested to take up the matter with the higher management of Powergrid and update at the earliest please.

20. Replacement of S-900 RTU's of ULDC-Phase-I Scheme and Integration of 61850 compliant Numerical Relays with HMI Servers for providing functionality of Event logger (Agenda by BBMB)

20.1. Contract Agreement No. N1/C&M/18-19/ULDC/CA-II/162-Service Portion dated 01.04.2019 for Replacement of S-900 RTU's of ULDC-Phase-1 was signed between M/s Synergy Systems and Solutions and Powergrid for NR constituents having additional work of integration of 61850 compliant Numerical Relays with HMI Servers to extract dedicated GPS time stamped station events to analyse multiple element tripping. This additional work requires to be completed by the firm as reconciliation of advance payment to Powergrid paid by BBMB could be finalized only after completion of this work by the firm.

20.2. Accordingly, it is requested that M/s Synergy Systems and Solutions be asked to complete the long pending work of integration at all the stations/ PH's at the earliest please.

Members may Deliberate.

21. Regarding multiple HDD failure of SAN storage of SCADA system installed at SLDC Complex, BBMB, Chandigarh (Agenda by BBMB)

21.1. It is to state that initially 2 Nos. HDDs of SAN storage of SCADA system installed at SLDC Complex, BBMB, Chandigarh had failed for which Purchase Order has been placed to M/S Siemens (OEM) on dated 07.06.2024. Meanwhile, 4 Nos. more HDDs have also failed which have resulted in hampering of smooth operation of SCADA system. Therefore, it was requested to the Manager of M/S Siemens to expedite the process for replacement of faulty HDDs but considerable amount of time is being taken by them for the same which is putting the SCADA system of SLDC, BBMB at risk of outage. Further, the reason for such successive failure of these HDDs is not certain to SLDC, BBMB where the temperature of server room is maintained in permissible limit. Therefore, it is requested to PGCIL to take up the matter with M/S Siemens on priority basis so that the faulty HDDs at SLDC, BBMB can be replaced at the earliest and to ascertain the reason of failure of multiple HDDs of SAN.

Members may Deliberate.

22. Regarding implementation of ULDC Phase-III scheme (Agenda by BBMB)

- 22.1. As per the present scenario of SCADA system installed under ULDC Phase-II scheme, multiple equipment failure are being faced by various SLDCs. Therefore, PGCIL is requested to update the present status of tender of ULDC Phase-III scheme and expedite the process of implementation of ULDC Phase-III scheme at the earliest. Inclusion of FOTE devices in AMC with M/s Powergrid (Agenda by DTL).
- 22.2. The AMC of 41 nos. of FOTE (SDH and PDH) in DTL is being carried out through M/s PGCIL. DTL has therefore, M/s PGCIL may kindly be requested the rest of 23 nos. of FOTE in AMC.

Members may Deliberate.

23. EOL/EOS for firewalls supplied under URTDSM Project (Agenda by NRLDC)

- 23.1. Unified Real Time Dynamic State Measurement (URTDSM) project was implemented by POWERGRID through 70% PSDF grant and 30 % equity. Defect liability Period was completed in Dec 2019 and thereafter AMC for six years started from January 2020.
- 23.2. As per information received from M/s GE, System Integrator through which AMC of URTDSM is being executed; OEM of Internal & External Firewall & Firewall Management devices has declared End of Life/ end of Support of firewall versions supplied under URTDSM project and same needs to be replaced with newer version to continue subscriptions/ patches etc.
- 23.3. POWERGRID is requested to please take-up with vendor for replacement of firewalls prior to EOL/EOS of the product.
- 23.4. Issue was also discussed in 22nd TeST Meeting held on 24.05.2023 where POWERGRID informed that they will take-up with vendor for replacement of firewalls within desired schedule. Licenses of the firewall are expiring in Oct'23.
- 23.5. During 23rd TeST Meeting POWERGRID it was informed that all the licenses shall be updated by Oct'23. However till date license renewal is pending from M/s GEE. NRLDC vide letter ref:NRLDC/SCADA/2023 dated 06.11.2023 has requested POWERGRID to please take-up with vendor for replacement and renewal of firewall licenses.
- 23.6. During 24th TeST Meeting POWERGRID informed that they are taking up with vendor for replacement and renewal of firewall licenses as issue shall be resolved within one month. However, issue is still persisting.
- 23.7. It is requested to please update the status and expedite the necessary work considering Cyber Security Compliance.

POWERGRID to update the status.

24. Display of DC/Schedule of Generating Stations in SCADA Display (Agenda by NRLDC)

- 24.1. In high-demand period there is requirement of monitoring Declared Capacity & Schedule of all Generating Stations so that reserves can be monitored for real-time grid operation. Schedule & DC of Central sector is being integrated with NRLDC SCADA system and same is being monitored by Control Room.
- 24.2. However, DC & Schedule of Rajasthan, Uttarakhand and J&K State generator is not integrated with their SCADA system. It was requested that all states take up for integration of state generator in their SCADA system for further integration with NRLDC.
- 24.3. Issue was discussed in 23rd TeST Meeting held on 21.09.2023 & 24th Test Meeting held on 09.02.2024. Present Integration from J&K, Uttarakhand and Rajasthan is still pending. Considering high-demand crunch period, it is very critical to monitor all the generators and corresponding reserves. In this regard, it is requested to please take for integration of Schedule / DC of generators in SCADA.
- 24.4. Issue was also discussed in 73rd NRPC Meeting held on 21.05.2024 where Rajasthan SLDC representative stated that the work is being carried out in association with L&T and would be completed within next one-two week. Uttarakhand SLDC representative stated that DC declaration portal is under M/S Secure and SCADA system under M/S GE compatibility issues are being noticed. The work would possibly be completed after SCADA upgradation system. NRLDC requested Uttarakhand SLDC to take up the matter with Secure and GE and resolve the issue.

Rajasthan, Uttarakhand and J&K to update the status please.

25. Upgradation of DC Power Supply supplied under ULDC (Agenda by NRLDC)

- 25.1. Presently 60A DCPS is installed at NRLDC. DCPS was installed under ULDC Phase-I and is working at full load. Being obsolete, spare parts of DCPS are difficult to arrange. Any issue in DCPS may lead to failure of DC Supply to communication equipments. Issue was discussed in 19th/20th/21st & 22nd TeST Meeting and POWERGRID informed that DCPS at NRLDC was missed under reliable scheme and confirmed they will procure/replace DCPS at NRLDC under upcoming project.
- 25.2. During 22nd TeST Meeting POWERGRID confirmed that due to some issues in Type test which has led to delay in supply of DCPS, and ensured that supply & commissioning of DCPS at NRLDC will be completed by December 2023.
- 25.3. However, till date installation / commissioning of DCPS is pending.

POWERGRID/CTU to please update the status

IV. Other Agenda

26. Implementation of U-NMS Project (Agenda by NRLDC)

- 26.1. U-NMS project is being implemented by POWERGRID in Northern Region through M/s Sterlite. As per information given by POWERGRID that FAT/SAT of the system is complete and System Availability test is going to start and final commissioning is expected in November 2023.
- 26.2. As discussed in 22nd TeST Meeting for commissioning of U-NMS Project, database is required of existing NMS of centre sector / state sector/ IPPs / Solar developer/ other transmission licensee and independent nodes which are reporting data for grid operation. Technical details/ information pertain to integration has been obtained for POWERGRID installed NMS system(s) which were part of ULDC schemes, whereas details from state sector/ IPPs / other transmission licensee are still not been available in full shape to UNMS vendor, which may further delay the works for database development and integration.
- 26.3. As it is essential that all NMS and Network Equipments are required to be integrated in the U-NMS for monitoring and configuration of elements in Northern Region.
- 26.4. However, till date many Network Equipment are yet to be integrated in U-NMS.
- 26.5. During 23rd TeST Meeting held on 21.09.2023 it was informed that out of 1300 equipments around 900 Equipments has been integrated in U-NMS and details of pending integration was shared as given below:
 - i. Integration of ABB equipments from UPPTCL: POWERGRID informed due to limitation in ABB NMS they require separate link from individual ABB Equipments for its integration in U-NMS and requested UPPTCL provide the same. UPPTCL informed that they will check and provide within next 15 days.
 - ii. Regarding integration of Network Equipments from IPPs and TBCB , it was requested that CTU shall convene special meeting with IPPs and other transmission licensee for integration of the same.
 - iii. Integration of Tejas and Fibcom Equipment from UPPTCL: Representative from UPPTCL informed that Tejas project is under implementation and upon implementation of all Equipments NMS will be commissioned which in turn can be integrated with U-NMS. POWERGRID requested UPPTCL to expedite the commissioning of NMS first so that it can be integrated with U-NMS and as and when new equipments is commissioned it will be integrated with U-NMS automatically. UPPTCL agreed for the same.
 - iv. Regarding Fibcom equipments, representative from UPPTCL informed that they resolve the issue within one month.
 - v. Regarding integration of GE make equipments from HPPTCL POWERGRID requested HPPTCL to provide links for integration of the same. HPPTCL confirmed that they will provide the same in next 15 days.

- vi. Regarding integration of Keymile equipment , POWERGRID informed that HVPNL has given test equipment to POWERGRID for development of adapter for integration of Keymile equipment with U-NMS . Upon development of adapter they will takeup for integration of equipments with Keymile.

26.6. During 24th TeST Meeting held on 09th Feb 2024 it was agreed and POWERGRID shall share with CTU the list of NEs which are yet to be integrated with UNMS in next 7 days. Upon receipt of list, CTUIL shall take with all concerned for integration of NEs in UNMS and try to resolve all the issues at the earliest.

CTU/POWERGRID is requested to please update the status

27. Ticketing/Complain portal provided under UNMS (Agenda by NRLDC)

27.1. As per CERC procedure of “Centralized supervision for quick fault detection and restoration” issued on 19th Jan 2024 , NMT of CTU shall monitor the communication network and logs of fault/ event reporting as raised by the Communication System Owner/ Users and Nodal Agencies in the following manner:

- i. Through raised trouble tickets in Centralized Network Management System
- ii. Lodged complaint through web portal.
- iii. System generated alarms (including standalone NEs)
- iv. Through any other communication media (mail,phone etc)

27.2. In this regard it is to inform that U-NMS in Northern Region has been commissioned by POWERGRID. CTUIL/POWERGRID is requested to please deploy NMT as per CERC approved procedure. Further, it is requested that necessary details along with detailed procedure for accessing Ticketing/Complain portal may be shared by CTUIL.

POWERGRID/CTU to please update the status

28. Data Collection Point (DCP) in the connection agreement in view of STUs element connectivity with ISTS stations/ lines (Agenda by CTU)

28.1. CTU is in continue receipt of various connectivity applications, where STU transmission elements are being connected with ISTS S/s or lines.

28.2. Some examples of such cases are given below:

- i. 220kV Dandari Kalan (PSTCL) – 400/220kV Ludhiana (PG)
- ii. 220kV Substation, Rai, Sonipat (HVPNL) – 400kV Jajji (PGCIL)
- iii. LILO of 132kV Sahupuri(220kV) – Karmnasha (Bihar) ckt-II at 132kV Chandauli S/s of UPPTCL

28.3. Deliberation is required w.r.t. Data Collection Point (DCP) in such types of Con-4 applications as data and voice of STU stations to be routed to their respective SLDCs.

28.4. Further following issues are faced at the time of review of such applications to decide DCP:

- i. Non-availability of fiber connectivity of STU node with ISTS S/s.
- ii. Non-availability of FOTE at STU side.

28.5. In view of above it is requested that STU shall plan communication system in coordination with their transmission planning wing.

Members may Deliberate.



ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)



[formerly Power System Operation Corporation Limited (POSOCO)]
राष्ट्रीय भार प्रेषण केन्द्र / National Load Despatch Centre

कार्यालय : बी-9, प्रथम एवं द्वितीय तल, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016
Office : 1st and 2nd Floor, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016
CIN : U40105DL2009GOI188682, Website : www.grid-india.in, E-mail : gridindiacc@grid-india.in, Tel.: 011- 42785855

Ref: NLDC/New_Building/OPGW_CTU/April'24/1

Dated:25th April'2024

To,

Chief Operating Officer,
CTUIL,
Sector- 29, Gurgaon – 122001
Haryana

Subject: Optical Fibre Connectivity at New Building of NLDC located at "Grand Rue" - Ayur Vigyan Nagar, August Kranti Marg, New Delhi

Dear Ma'am/Sir,

Presently, National Load Despatch Centre (NLDC) is being operated from 1st Floor of B-9, Katwaria Sarai, New Delhi. All the Operation Technology (OT) systems viz. NLDC SCADA, REMC, URTDSM & ERLDC Back-up SCADA system are installed and operational from Data Centre situated at B-9, Katwaria Sarai. All the dedicated LAN connectivity of OT system at NLDC with other RLDCs (for SCADA -ICCP and PDC connectivity, NTAMC, Power Plants (RTUs for AGC) etc, Voice Communication & Video conferencing facility, MPLS connectivity for WBES is being provided by POWERTEL and ULDC. ULDC Communication is also used for cross border Voice and Data communication with Nepal, Bhutan and Bangladesh.

Present OPGW Connectivity at NLDC are described below:

Sr. No.	Link Description	Remarks
1	POWERTEL	Being Used for NLDC SCADA , URTDSM & for OT
2	ULDC	Being Used for NLDC SCADA, REMC , URTDSM , VoIP & Video Conferencing

Details of links being used is given in Annex-I.

GRID-INDIA recently acquired premises located at "Grand Rue" - Ayur Vigyan Nagar, August Kranti Marg, New Delhi, and intends to shift Control centre functions to the new building. It is expected that NLDC operation shall start from December 2024 at its new building.

In view of this, it is requested to plan and provide following at "Grand Rue" - Ayur Vigyan Nagar, August Kranti Marg, New Delhi at the earliest.

1. POWERTEL links (with redundancy) being used for ULDC purpose
2. Redundant ULDC communication
3. Installation of Communication Equipment as per requirement
4. Supply and Installation of redundant DC Power Supply (DCPS) for Orange Exchange and Communication Equipments.

Since it is expected that that control room functions shall shift to new building by December 2024. It is requested to please advise the concerned to plan and implement redundant communication for NLDC control room operation at the new location at the earliest.

Yours Faithfully



(S C Saxena)

Executive Director, NLDC

CC:

1. Executive Director, GA & C, POWERGRID

Sr.No.	Connectivity Purpose	Link Description	Bandwidth	Remarks
1	NLDC SCADA	POWERTEL Link 1	50 Mbps for All RLDCS	Used for NLDC SCADA. Each RLDC Link has 10 Mbps bandwidth.
2		POWERTEL Link 2	50 Mbps for All RLDCS	
3		ULDC Link 1	50 Mbps for All RLDCS	
4		ULDC Link 2	50 Mbps for All RLDCS	
5		ULDC Link for NR	10 Mbps	
6		ULDC Link for WR	10 Mbps	
7		POWERTEL Link for CERC	10 Mbps	
8		POWERTEL Link for NPMC	10 Mbps	
9		POWERTEL Link 1	100 Mbps Link	Used for Intersite Link Between Main NLDC and Backup NLDC
10		POWERTEL Link 2	100 Mbps Link	
11		ULDC Link 1	100 Mbps Link	
12		ULDC Link 2	100 Mbps Link	
13		ULDC Link Backup SR	10 Mbps Link	Used for Main NLDC to Backup RLDCs ICCP connectivity
14		ULDC Link Backup NR	10 Mbps Link	
15		ULDC Link Backup WR	10 Mbps Link	
16		ULDC Link Backup NER	10 Mbps Link	
17		ULDC Link for BHUTAN	10 Mbps Link	International ICCP Connectivity
18		ULDC Link for NEPAL	10 Mbps Link	
19		AGC ULDC Link 1	1000 Mbps	Being used for AGC. Each Plant has two link with 10 Mbps Bandwidth. Total Plant presently 80 Plants. For future, link may be planned for 100 Plants.
20		AGC ULDC Link 2	1000 Mbps	
21	REMC	REMC ULDC Link 1	30 Mbps for All RLDCS	Used for REMC ICCP Connectivity
22		REMC ULDC Link 2	30 Mbps for All RLDCS	
23	Backup ERLDC	ULDC Link	150 Mbps	Used for Intersite Link Between Main ERLDC and Backup ERLDC. 100 Mbps Link ; Each ER States 10 Mbps Link
24	URTDISM	ULDC Link NR	100 Mbps	Used for URTDISM
25		ULDC Link NTAMC	100 Mbps	
26		ULDC Link SR	100 Mbps	
27		ULDC Link ER	100 Mbps	
28		ULDC Main URTDISM to Backup URTDISM at Kolkata	100 Mbps	
29		POWERTEL LINK WR	100 Mbps	
30		POWERTEL Link NER	20 Mbps	
31		POWERTEL Link CEA	30 Mbps	
32	VoIP	ULDC NR Link	10 Mbps	Orange EPABX is being used for IP Phones and Intercoms.
33		All RLDCs Link with POWERTEL	40 Mbps	
34		ULDC Bhutan Link	10 Mbps	
35		ULDC Bangladesh Link	10 Mbps	
36		ULDC Nepal Link	10 Mbps	

Minutes of Meeting Regarding Optical fibre connectivity at New Building of NLDC located at “Grand Rue” New Delhi on 06th May 2024 in Virtual Mode

A meeting was convened on 06.05.2024 by CTU through virtual mode (MS-Teams Platform) in view of the letter dated 25.04.24 received from Grid-India (copy attached at *Annexure-I*) regarding provision of fiber optic connectivity to the new building of NLDC located at “Grand Rue” New Delhi.

The list of participants is attached at *Annexure-II*.

DGM (CTU) welcomed all the participants at the meeting and proceeded with the agenda.

Agenda of the Meeting

Planning for Optical Fibre Connectivity at the New Building of NLDC located at "Grand Rue" - Ayur Vigyan Nagar, August Kranti Marg, New Delhi from ULDC fiber network.

Deliberation:

CTU requested Grid-India to explain the requirement in view of fiber optic connectivity for New Building of NLDC located at "Grand Rue".

Grid-India Explained that they have purchased new building located at "Grand Rue" - Ayur Vigyan Nagar, August Kranti Marg, New Delhi and are planning to start NLDC operation by 31st Oct 2024. All IT and Operation Technology (OT) systems need to be shifted by 31st Oct' 2024.

In this regard there will be requirement of dedicated and redundant Optical Fibre connectivity to successfully start the NLDC control room for power system operations from the said Building. Further, additional links of POWERTEL may be required for the same.

CTU enquired that the Power system operation shall be performed only from the new building control centre or both control centres located at existing and new building. Grid-India stated that the existing communication system at NLDC building at Katwaria Sarai will be in service as ERLDC Backup will remain in existing Building at Katwaria Sarai. Further for smooth transition from old building to new building parallel operation will be done for NLDC for few months.

CTU requested POWERGRID to provide the interim connectivity, suitable fiber paths(main and redundant), requirement of Fiber Cables, FOTE etc. to provide connectivity to new building. POWERGRID informed that temporary connectivity can be provided by using connectivity of POWERTEL as POWERTEL fibre is running near the building and Optical Connectivity can be taken from POWERTEL at STM-16 level to provide the said connectivity. POWERGRID further informed that existing POWERTEL links shall be extended and their commercial treatment shall be done as per existing norms (from O&M budget).

POWERGRID stated that permanent connectivity of New Building needs to be done from ULDC network. POWERGRID suggested the following paths considering redundancy for fiber optic connectivity:

- (a) NLDC/NRLDC at Katwaria Sarai → NLDC New Building, August Kranti Marg.
- (b) Maharani Bagh (ULDC) → NLDC New Building, August Kranti Marg
- (c) Tughlaqabad → Okhla → NLDC New Building, August Kranti Marg

POWERGRID stated that it will be beneficial to install 48 Fibre cable as cost difference in 24F and 48F cable is nominal in comparison with cost of ROW to avoid future RoW requirement. CTU suggested that in place of 48F UGFO cable, 2 nos. of 24F UGFO cable can be installed in redundant cable trenches to avoid disconnection in case of frequent construction/digging work by other agencies. The participants agreed for 2X24F UGFO cable option.

CTU requested POWERGRID to provide the BoQ and Cost estimate including RoW charges , FOTE , 2x24F UGFO Fibre cable, DCPS and other required hardware for the above paths to take up this agenda for RPC review on urgency bases as requested by Grid-India.

CTU requested POWERGRID to submit the detailed requirement and plan for connectivity of NLDC new building with tentative cost estimate by 14.05.24 so that agenda can be put up by CTU in upcoming NRPC for their views.

Detailed proposal shall consist of BoQ and cost estimate for all three paths as mentioned above

- Fibre Optic Terminal Equipment
- DC Power Supply System
- Fiber Optic Cable (2x24F)
- RoW charges involved
- Supply, Installation, Testing & Commissioning of FOTE, DCPS & OFC

Meeting ends with vote of thanks.

Annexure-II**List of Participants**

S. No.	Name	Designation	E mail	Phone
CTUIL				
1.	Sh H S Kaushal	Sr. General Manage	hsk@powergrid.in	
2.	Sh. T P Verma	Dy. General Manage	tejprakash@powergrid.in	9650598191
3.	Sh. Prakhar Pathak	Engineer	Prakharpathak321@powergrid.in	8953109167
Grid-India				
3.	Shri Alok Kumar	Sr. General Manage		9999039321
4.	Shri Ankur Gulati	Dy. General Manage		9869080336
5.	Shri Deepak Kumar	Manager		
POWERGRID				
6.	Smt. Shyama Kumari	Sr. Dy. General Manager		9873918459
7.	Sh. Narendra Kumar Meena	Dy. General Manager		9810082410
8.	Sh. Sandeep Kumar Gupta	Chief Manager		8826094855

Minutes of the Meeting(Virtual mode) held on 09.05.2023 (Tuesday)regarding dual reporting of RTU, PMU, VOIP, AGC etc. applications

A meeting on the subject was held on 09.05.23 at 11:00 AM with participants from CEA, RLDCs, CTUIL, Grid-India, and POWERGRID. List of the participants is enclosed at Annexure-I. 2. At the outset Sr. .DGM (CTU) welcomed the participants and explained the agenda to all the participants. He requested all the participants to contribute their valuable suggestion for agenda to reach at some conclusion.

Agenda: Dual reporting of RTU, PMU, VOIP, AGC etc. applications on 2+2 channel to main RLDC and Backup RLDC

Presently, one data channel and one voice channel are routed for reporting to main RLDC and similarly one data & one Voice channel is reporting at backup RLDC.

It is proposed by GRID INDIA that to increase of the redundancy in the system at least two data channels and two voice channels shall be routed for reporting to main RLDC and another two data & two Voice channels shall report at backup RLDC.

A detailed deliberation in meeting dated 05/04/23 was done among RLDCs, POWERGRID, CEA for evolving a common planning philosophy for all regions.

In the meeting GRID INDIA stated that as per communication regulation 2017/IEGC dual channel reporting for all communication applications from each ISTS station is required for both main and back up RLDCs. This requirement has also been conveyed by ED, NLDC to ED, GA & C vide letter dtd.16.03.2020

It was stated in the meeting that present channel configuration operational at different RLDCs for main and back up CC respectively is as follows:

- a) NRLDC:1+1 & 2+1(for few stations)
- b) SRLDC:1+1
- c) WRLDC:2+1
- d) ERLDC:1+1
- e) NERLDC:1+1

POWERGRID stated that they are designing the ISTS Communication system with 1+1 channel configuration i.e. one channel for main RLDC and one channel for back up RLDC.

However, CEA recommended as follows: Manual of Communication Planning in Power System Operation clause 4.1.2 states:- “To ensure redundancy with route diversity, each communication channel (working path) planned for the Users shall be provided with alternate channel (protection path) in different routes, i.e., the working path and protection path should be resource disjoint. For last mile connectivity to load dispatch center(s), additional redundancy in different route may be considered. In case of failure of the working path, the protection path shall be available for the required communication services.”

Therefore, dual redundancy may be planned for both main and back-up load dispatch centers.

At present following services are working on ISTS communication network:

- i.** SCADA
- ii.** PMU
- iii.** Tele protection
- iv.** Telecontrol
- v.** AGC
- vi.** Voice
- vii.** Automated Metering Application
- viii.** Telemetry
- ix.** Video conferencing
- x.** ICCP (between control centers)
- xi.** PDC
- xii.** PDC to PDC
- xiii.** Supervision of communications System
- xiv.** Video Surveillance
- xv.** Data Sync between MCC & BCC

The above applications need to be deliberated for dual redundancy requirement.

POWERGRID shall implement this redundancy for both main and backup Regional load dispatch center(s) in all the regions wherever possible with the existing resources in coordination with GRID INDIA.

In case of any additional requirement for implementation of redundancy POWERGRID may update the details region wise i.e. availability of SAS gateway ports, spare ethernet ports in existing FOTE, new FOTE if any etc. . POWERGRID shall quantify these requirements along with tentative costs on Regional basis.

The action to be taken up by TSPs, IPPs, ISTS, ISGS besides POWERGRID also needs to be discussed.

Deliberations: CGM(SRLDC) explained that Main and Backup control centre is old terminology and now Main-I & Main-II control centre terminology is being used and at each control centre one main & one backup channel is required. Grid India(NRLDC) explained that at present data is being transmitted to respective main & Backup RLDCs using 101 protocol through terminal server/DCPC for old RTUs and by using 104 protocol for SAS. Grid India agreed to share this detail in a week time. Further, POWERGRID informed that RTUs are being replaced with SAS (104 PROTOCOL) as soon as their life is completed. POWERGRID shall share the plan for replacement of RTUs communicating on 101 Protocol.

POWERGRID queried that in CEA planning manual, only route redundancy is mentioned and no where port redundancy is stated. Hence it needs to be clarified whether port level redundancy is also required. CEA clarified that path should be resource disjoint and so both path and ports should be resource disjoint. POWERGRID (NR-ULDC), stated that there is constraint of ports for dual redundancy of SCADA data in the RTUs procured under sub-station package and agreed for upgradation of same subject to approval. POWERGRID further clarified that RTUs with sufficient ports for dual redundancy are being planned recently as requested by ED(NLDC) -GRID INDIA vide letter dated 16.03.2020.

At present PMU data is reporting to single location i.e. Main RLDC as per current planning under URTDSM project. Grid India further stated that PMU data is transmitted on dual channel through switch to main RLDC. Grid India require multi ports at PMU for dual redundancy. Further redundant communication between SLDC PDC to RLDC PDC, RLDC PDC to Main/backup NLDC PDC shall also be required.

Tele protection & Telecontrol are operated by TSPs and should be in dual redundancy.

For AGC services dual redundancy is already considered & being implemented by TSPs . Dual channels to Main and Backup NLDC are required for AGC.

For Voice dual redundancy is also required. For the same, exchange to exchange dual redundancy shall be planned. Exchanges are placed at all SLDCs & RLDCs. At present Substation to Exchange link level protection is already available.

For AMR dual redundancy is also required. At present single channel is reporting to RLDC. For video conferencing Grid India is requested to justify the requirement of dual redundancy as per industry practice as mentioned in 'Manual For Communication Planning' as suggested by CEA.

For ICCP dual redundancy is required for main RLDC to Backup RLDC, Main RLDC to main SLDC, Main RLDC to backup SLDC, Backup RLDC to Main SLDC, Backup RLDC to backup SLDC as planned under new SCADA system.

For PDC to PDC dual redundancy is also required. CTU requested Grid India to share the architecture of new SCADA, PDC communication, ICCP.

Supervision of communication channels & Video Surveillance are not used by Grid India. However, TSPs/ CTU may plan as per their requirement.

For data sync dual redundancy between MCC and BCC is also required.

ERLDC, Grid India suggested that planning for terminal equipment(SDH/PDH)at dual redundancy is also required. However, it is suggested that dual redundancy of terminal equipment may be planned for critical locations such as AGC, SPOFs(Single point of failures).

As per discussion, following applications are summarised below for dual redundancy up to existing and upcoming control centres of Grid India.

- i. SCADA
- ii. PMU
- iii. AGC
- iv. Voice
- v. Automated Metering Application
- vi. ICCP (between control canterers)
- vii. PDC to PDC
- viii. Data Sync between MCC & BCC

Conclusion

1. Grid India shall share the data for all the RTUs/SAS , their connectivity type(single or dual redundancy) & all other relevant data for all the TSPs(IPPs, ISGS, TBCB,RTM etc.) within a week time.
2. POWERGRID shall analyse the existing system for dual redundancy and implement the dual redundancy with existing resources wherever possible.
3. POWERGRID shall further state the additional requirements of ports/cards/equipment etc. along with cost for implementation of dual redundancy to above mentioned services on priority where dual redundancy cannot be implemented because of resource constraints. Same shall be discussed at respective RPC forum and shall be finally approved in NCT.

Annexure-I

List of participants of the meeting

- **CEA**

1. Sh. Prateek Srivastava, Assistant Director, PCD
2. Sh. Akshay Dubey,
3. Ms. Priyam, Dy. Director, PSPA-I

- **CTUIL**

1. Sh. Shiv Kumar Gupta, Sr.DGM, CTUIL
2. Sh. Tej Prakash Verma, Ch.Mgr., CTUIL
3. Kalpana Shukla,DGM, CTUIL
4. Kaushal Suman, Manager, CTUIL

- **Powergrid**

1. Sh. Ajaya Kumar P, Sr.GM, ULDC
2. Sh. Satish Kr Sahare, GM, ULDC
3. Smt. Shyama Kumari, DGM, GA&C
4. Sh. Kapil Gupta, DGM, GA&C
5. Sh. Mahesh M, Ch. Mgr, ULDC
6. Sh. Narendra Kumar Meena, Ch. Mgr. ULDC
7. Sh. Santanu Rudrapal, Ch. Mgr, ULDC
8. Sh. Vishal Badlas, Mgr, GA&C
9. Sh. Kashif Bakht Muhammad Nabi, Dy. Mgr, ULDC
10. Sh. Ashish Kumar Das, Asst Mgr, ULDC

- **GRID- India**

1. Sh. MK Ramesh, CGM, SRLDC
2. Sh. Harish Kumar Rathour, GM, NLDC
3. Sh. Sanjeev, GM, WRLDC
4. Sh. L. Murlikrishna, Sr. DGM
5. Sh. Ankur Gulati, DGM, NRLDC
6. Sh. Sakal Deep, Engineer, NERLDC
7. Sh. Koti Naveen
8. Sh. Ananthakrishnan
9. Sh. Rakesh
10. Sh. Sudeep M
11. Bijender Singh Chhoer
12. P Dounel

RNOD (Recoded Notes of the discussion) of the virtual meeting held on 27.06.2023 (Tuesday) regarding dual redundancy of RTU, PMU, VOIP, AGC etc.

A meeting on cited subject was held on 27.06.2023 at 10:30 A.M. with the participants from CEA, RLDCs, CTUIL, GRID-India and POWERGRID. The list of the participants is enclosed at Annexure-I. At the outset Sr. GM (CTUIL) welcomed the participants and stated the requirement of two channels each at main and backup control centres, already discussed in the meeting held on 09.05.2023 and confirmed by PCD(CEA) subsequently. In view of this CTU requested the participants to provide their valuable views/suggestions for each application for the said redundancy.

Deliberation:

CTU stated that at present one data channel and one voice channel are routed for reporting to main RLDC and similarly one data & one voice channel is reporting at backup RLDC. However, during the meeting held on 09.05.2023, GRID-India requested for at least two data channels and two voice channels for reporting to each RLDC i.e. main RLDC and backup RLDC, to increase the redundancy in the system.

Further CTU stated to deliberate on all the data and voice applications being used from stations to control centres (CC) and among CCs viz SCADA, PMU, AGC, VOIP etc.. CEA suggested that the redundancy shall be developed in a phased manner and the constraints on the existing communication network shall be explicitly reviewed and taken up accordingly.

Detailed deliberations were held among GRID-INDIA-RLDCs, POWERGRID, CEA, CTU for the same and ISTS communication system was proposed for different services with redundancy:

1. SCADA
2. PMU
3. AGC
4. VOIP
5. Automated Metering Application(AMR)
6. ICCP (Between control centers)

7. PDC to PDC

8. Data sync between MCC & BCC

GRID-INDIA has submitted the data regarding present status of redundancy of these services which is enclosed as Annexure-I. POWERGRID has also submitted the data of utilization of optical fiber network for some links of Eastern region which is enclosed as Annexure-II. CTU again requested POWERGRID to provide requisite data for the implementation of said redundancy scheme.

It was also felt to analyze the enhancement required for the above mentioned 8 services on 2+2 redundancy as discussed below:

1. **SCADA** :- Currently SCADA is reporting through 1+1/2+1/2+2/1+0 (radial) channel in different regions. For 2+2 redundancy of SCADA data, it requires extra ethernet ports at RTU, SAS Gateway & FOTE along with suitable bandwidth in optical fiber network. CTU stated that POWERGRID shall provide data of utilized and spare ethernet ports for existing RTUs, SAS Gateways and FOTE and shall also assess the data for additional requirement of the said redundancy. POWERGRID agreed the same.
2. **PMU** :- POWERGRID stated that presently one port of central sector PMUs is split into two channels at MUX (SDH) level from where onwards one channel reports to NTAMC (PG) and other reports to PDC (RLDC). GRID-India stated that as at present there is no plan of backup PDC, hence PMU data may be sent to PDC at RLDC in 1+1 mode only. Accordingly, one additional channel is required from PMUs to RLDCs. POWERGRID is requested to check availability of additional port on PMU and FOTE along with bandwidth requirement for configuration of additional backup channel to RLDC. POWERGRID agreed the same.
3. **AGC** :- GRID-India-NLDC stated that currently 2 channels are reporting from generators up to HMI of the station and there after through fibre optic network to NLDC Main Control Centre (MCC). GRID-India explained that a separate RTU is provided to integrate the generator data and route it further through the existing FOTE. This is in addition to existing RTU/SAS Gateway reporting to RLDCs.. As per redundancy requirements of control centre, 2 additional channels for AGC from generator station (in addition to the SCADA data) are required for data reporting to Backup Control Centre (BCC). GRID-INDIA also

stated that AGC signal to generator is being planned from RLDC in future. POWERGRID is requested to check availability of ports on RTU (both SCADA and Generation), SAS Gateway of AGC system and FOTE for implementation of same. POWERGRID agreed the same.

4. **VOIP** :- POWERGRID stated that currently VOIP is communicating through single channel only. GRID-India stated that they require redundancy on Port level and additional port shall be required at VOIP phone, exchange & FOTE. As present VOIP exchange has completed its life, it is suggested that requisite features for VOIP phones & exchange shall be included during system upgradation/ replacement. POWERGRID agreed to provide relevant data for the same.
5. **AMR** :- GRID-India stated that new AMR architecture is in planning phase and they will provide required inputs after looking in architecture.
6. **ICCP** :- GRID-India stated that currently ICCP (Between NLDC, RLDC and SLDC) is working on 2 communication channels for main-to-main control center and 2 communication channels for backup to backup control center only. For redundancy, GRID-India requires 4 extra channels, 2 channels for main RLDC to backup SLDC communication and 2 channels for backup RLDC to main SLDC communication. POWERGRID is requested to provide additional requirements (if any) for implementation of same. POWERGRID agreed the same.
7. **PDC to PDC** :- GRID-India stated that at present '1' channel is provided between PDC(SLDCs) to PDC (RLDC), for redundancy in PDC(SLDCs) to PDC(RLDC) communication additional 1 channel is required as discussed in PMU above.
8. **Data Sync between MCC & BCC** :- GRID-India stated that presently 1 channel is working for data sync between Main Control Center and Backup Control Center i.e. main SLDC to backup SLDC, main RLDC to backup RLDC, main NLDC to backup NLDC, further it is required to provide 1 additional channel for redundancy.

As per above discussion POWERGRID is requested to provide the requisite data for implementation of redundancy of services as discussed above within 21 days. POWERGRID agreed for the same. Meeting ended after vote of thanks by SR.GM(CTU).

List of participants of the meeting

- **CEA**

1. Sh. Prateek Srivastava, Assistant Director, PCD
2. Ms. Priyam, Dy. Director, PSPA-I

- **CTUIL**

1. Sh. H.S. Kaushal, CGM, CTUIL
2. Sh. Shiv Kumar Gupta, Sr.DGM, CTUIL
3. Sh. Tej Prakash Verma, Ch.Mgr., CTUIL
4. Sh. Divesh Kamdar, AET, CTUIL

- **POWERGRID**

1. Sh. Satish Kr Sahare, GM, ULDC
2. Smt. Shyama Kumari, DGM, GA&C
3. Sh. Kapil Gupta, DGM, GA&C
4. Sh. Mangesh Shriram Bansod, DGM, IT
5. Sh. Sundeep Kumar Gupta, Ch. Mgr, GA&C
6. Sh. Narendra Kumar Meena, Ch. Mgr. ULDC
7. Sh. Santanu Rudrapal, Ch. Mgr, ULDC
8. Sh. Vishal Badlas, Mgr, GA&C
9. Sh. Hemanth Kumar, Asst. Mgr, ULDC

- **GRID- India**

1. Sh. Harish Kumar Rathour, GM, NLDC
2. Sh. Aukur Gulati, Ch. Mgr, NRLDC
3. Sh. Sakal Deep, Engineer, NERLDC
4. Sh. Akhil Singhal, NERLDC
5. Sh. P. Dounge, NERLDC
6. Sh. Amba Prasad Tiwari, NERLDC
7. Sh. Mohneesh Rastogi, NLDC
8. Sh. Ganesh, SRLDC
9. Sh. Rakesh, SRLDC
10. Sh. Ashutosh Pagare
11. Sh. Koti Naveen, WRLDC

**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 “Interface Requirements” under the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations,

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 7.4, read with Regulation 14.2 of the Communication Regulations requires NLDC to prepare Guidelines on “Interfacing Requirements” in consultation with the stakeholders and submit the same for approval of the Commission.

3. Accordingly, NLDC has submitted the Guidelines on “Interfacing Requirements” after stakeholder consultation for approval of the Commission.

4. The Commission has examined the Guidelines submitted by NLDC, and after incorporating suitable changes, the Commission hereby approves the Guidelines on “Interfacing Requirements”, 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 “INTERFACING REQUIREMENTS”

1. Introduction

- 1.1.** These Guidelines have been prepared in accordance with the Regulation 7.4 (i) of the CERC (Communication System for inter-State transmission of electricity) Regulation, 2017. The relevant extract of the same is as follows:

“The National Load Despatch Centre (NLDC) shall be responsible for preparation and issuance guidelines with the approval of the Commission on the “Interfacing Requirements” in respect of terminal equipment, RTUs, SCADA, PMUs, Automatic Generation Control (AGC), Automatic Meter Reading (AMR) Advanced Metering Infrastructure (AMI), etc. and for data communication from the User's point to the respective control centre(s) based on technical standards issued by CEA within 60 days of issuance of technical standards.”

- 1.2.** The Central Electricity Authority (Technical standards for Communication System in Power Systems Operations) Regulations, 2020 was issued by CEA on 27th February, 2020.
- 1.3.** The Guidelines on “Interfacing Requirements” focus on the general data acquisition systems for RTUs, SAS Gateway computers, communications and AMI metering systems required for reliable, secure and economic operations of the control centre(s).
- 1.4.** All Users, SLDCs (State Load Despatch Centres), RLDCs (Regional Load Despatch Centres), NLDC (National Load Despatch Centre), CTU (Central Transmission Utility), STUs (State Transmission Utilities), NHPTL (National High Power Test Laboratory), REMC (Renewable Energy Management Centre), FSP (Forecasting Service Provider), Power Exchanges and ISTS (inter State Transmission System) licensees etc. shall abide by these guidelines as applicable to them.
- 1.5.** Requirement mentioned herein under this document shall be applicable to Main and Backup Control Centre (wherever applicable) irrespective it is mentioned or not mentioned separately in subsequent sections.

2. Definitions

- 2.1. The words and expressions used in these guidelines shall have the same meaning assigned in the Electricity Act, CERC (Communication System for inter-State transmission of Electricity) Regulations, 2017, Indian Electricity Grid Code Regulations, 2023 and CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020, and amendments thereof.
- 2.2. "Remote Station" means transmission substations/ generating stations operated by the users from which data/real-time data is collected.

3. Real time data Telemetry

- 3.1. All entities as specified in Para 1.4 of these Guidelines, as applicable, shall provide Systems to telemeter power system parameter such as flow, voltage and status of switches/ transformer taps, Sequence of Events (SOE) etc. in line with interface requirements and other guideline made available by NLDC. While many of design details related to control systems are not included in these guidelines, the Users, who are getting connected to the ISTS, shall require to include functionalities and the interfaces compatible with the respective Control Centre data collection systems available and being maintained at NLDC / RLDCs and SLDC/Sub-LDC and other LDC level. Control Centre may request or transmit data periodically or "by exception" (periodically, as the need for information arises) on demand, or interactively.
- 3.2. A list showing the parameters to be telemetered from various sub-stations and generating stations with respect to various equipment is enclosed for reference as **Annexure-I**. This list shows minimum required parameters, however, some other parameters shall be provided as per Control Centre requirement. The analog signal sign convention shall be as per IEEE power flow convention and digital status shall be as per IEC standard. Digital status for circuit breaker must be double point while Isolator status can be either single point or double point as per end device. All users shall comply with interface requirements as specified and shall share interface details with respective control centre.
- 3.3. The typical layout diagram showing point of interface for real time telemetry is attached as **Annexure- II**.

- 3.4. The communication media being used for data transfer and data rate shall be in accordance with the Central Electricity Authority(Technical Standards for Communication System in Power System Operations) Regulations, 2020.

4. Communication Interface

The Users shall support at least the following facilities and plan for communication interfaces accordingly at the time of implementation:

1. Real time data exchange including AGC/Control signal with Control Centre (Main & Backup).
2. Phasor data exchange
3. Meter data exchange
4. Protection signal transmission (SPS, Direct Tripping and Permissive Tripping Carrier Signal etc.)
5. Voice communication
6. Video Communication

Other requirements, if any, users may include while designing the local communication interface requirement.

The required communication interfaces shall be provided for both sending and receiving ends based upon jurisdiction/ownership. All the interfaces shall be provided with audio-visual status indication to indicate its normal operation as per relevant standards.

Users shall have functionality to support any of the interfaces given below based on requirement of data flow as per CEA/CERC guidelines from their respective end to control centres.

Interfaces are classified as following: -

1. Remote Station Interfaces
2. Control Centre Interfaces
3. Terminal Equipment Interfaces

4.1. Remote Station

“Interfacing Requirements” in respect of terminal equipment, Remote Terminal Unit (RTUs)/ Substation Automation System (SAS), Supervisory Control and Data Acquisition System (SCADA), Phasor Measurement Unit (PMU) /Phasor Data Concentrators (PDC), Automatic Generation Control

(AGC), Station Protection / System Protection Schemes (SPS), Automatic Meter Reading (AMR), Advanced Metering Infrastructure (AMI), etc. and for data communication is decided based on communication protocol used for transfer of data between user and respective control centres through dedicated and redundant communication channel with route diversity.

Remote end equipment like RTUs, PMUs, SAS, Metering Gateways, Meter Data Collection Unit, PLCs for AGC etc. shall report through communication protocol which is supported at the reporting Control Centre.

While designing the interface requirement of the remote locations, all the interfaces required for data (power system parameter, meter data, AGC/Control Signal), voice, video, protection signal shall be considered and shall be compatible with respective control centre as well as intervening Communication System equipment.

A typical General Arrangement drawing for a Remote Station is enclosed as ***Annexure-III***.

The interfaces shall be designed to operate under single contingency failure condition. Equipment should support interfaces with multiple ports, cards, gateways etc. and configured in redundant mode so that failure of single hardware element, i.e. communication port, card, gateway etc. of the users shall not lead to failure of data communication. Communication system shall be designed as per planning criterion to be notified by CEA.

Availability of communication links shall be maintained as per the CERC Communication Regulations, 2017. Further, the communication channel provided/configured for the real time data communication shall be made error free and shall not lead to intermittency in real time data at respective Control Centre.

4.1.1. Remote Terminal Unit (RTU)/Substation Automation System (SAS)/PLCs

“Remote Terminal Units” (RTU) / Substation Automation System (SAS) is the 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.

The RTU/SAS System /device should communicate with Control Centre front end system in either

IEC-60870-5-101 or IEC-60870-5-104 protocol.

- i) IEC - 101 works on serial communication between site and control centre and it requires serial interface. Different Physical interface that can be used for 101 communications which are:
 - a) RS-232 / RS 422 / RS 485.
- ii) IEC 104 works on TCP/IP based communication and it can use following Physical interface:
 - a) Ethernet (IEEE 802.3 / IEEE 802.3u)
 - b) Optical communication Port
 - c) 10/100 BaseT(Electrical) or 100BaseFX(Optical) Ethernet Link

The communication interface equipment at the remote (RTU/SAS) location shall support the interfaces as mentioned above and the communication provider shall ensure the proposed data sharing protocol by the stations so that the compatible interface is provided.

4.1.2. Phasor Measurement Unit

PMU (Phasor Measurement Unit) provides phasor information (both magnitude and phase angle) for one or more phases of AC voltage or current waveforms including positive sequence phasors-and analog quantities like MW, MVAR, frequency, Rate of Change of Frequency (ROCOF) in real time.

Control Centre shall exchange phasor information between their respective Synchrophasor systems via high-speed real-time data acquisition networks, using the protocol specified in latest IEEE C37.118 communication standard preferably.

PMU shall report on C37.118 2011 or higher protocol with configuration Frame 3 or better for data communications. Different Physical Interface for PMU includes:

1. Ethernet (IEEE 802.3 / IEEE 802.3u)
2. Optical Interface (100 BASE-FX Multimode 850 nm/1300nm nm)
3. 10/100/1000 BaseT(Electrical) or 100/1000 BaseFX(Optical) Ethernet Link

All data items, regardless of type, are generally collected and disseminated at a frequency of 25 samples per second (can be higher rate of samples per second in future) and should be sent to Control Centre with the associated data quality codes in compliance with latest IEEE C37.118 communication standards.

4.1.3. Metering gateway

Automatic Meter Reading system uses its front end for transferring meter data from interface meters' gateway / Meter Data Collection Unit to control centre. It uses DLMS protocol for data communication. Different types of interface required are:

1. Ethernet (IEEE 802.3 / IEEE 802.3u) or Ethernet VLAN IEEE 802.1 P/Q).
2. 10/100/1000 BaseT(Electrical) or 100/1000 BaseFX(Optical) Ethernet Link.
3. For Meters-Three ports accessible only through optically isolating modules
4. RS 485/LAN port for communication with Local PC

The internal communication with the main meter data gateway and other meters in a particular location may use available communication and interface may be decided based on local available communication protocol.

4.1.4. Tele-protection/Control

Equipment protection, Tele-protection /control interface shall be used for transmitting control signal from one end to other, it can be from one sub-station to other sub-station or control centre to sub-station/generating station. Interface requirement for tele-protection devices are given below:

1. E1 G.703 Interface Option for transmission over E1 Link
2. 10/1000BaseT (Electrical) or 100/1000BaseFX (Optical) Ethernet Link
3. Optical interface
4. IEEE C37.94, ITU-T G.703 interface.
5. 4W Analog / Digital PLCC
6. IEC 61850 GOOSE Interface

4.1.5. Voice communication

Voice communication interface shall have following network interface for voice communication between user location to Control Centre:

- a. 2-wire FXO/2-wire FXS

- b. 4- wire E&M.
- c. VOIP system uses TCP/IP communication and it can use Ethernet (IEEE 802.3 / IEEE 802.3u) or Ethernet VLAN IEEE 802.1 P/Q).
- d. 10/100BaseT (Electrical) or 100BaseFX (Optical) Ethernet Link
- e. EPABX exchange to be interfaced with Wide-band network

There shall be provision for establishing voice communication to main and backup control Centre. The user end communication equipment shall be compatible with respective Control Centres.

4.1.6. Video Communication

Video communication interface shall be provided on TCP/IP communication and it can use Ethernet (IEEE 802.3 / IEEE 802.3u) or 10/100/1000BaseT (Electrical) or 100/1000BaseFX (Optical) Ethernet Link.

4.2. Control Centre

The communication interfaces to be provided at the control centre end shall support all the interfaces that is required at the remote end. Apart from interface requirements of the remote stations, high bandwidth links are required for inter control centre protocol (ICCP) communication and proprietary protocol like ISD / Multisite for Main & Backup operation. Configurable Ethernet ports supporting up to 1 Gbps may be provided at the control centre end.

The communication equipment shall also support internal VLAN configuration to optimise the communication with the remote end.

Different types of interface required at Control Centre are:

- a) E1/ G.703 Interface Option for transmission over E1 Link
- b) 10/100/1000BaseT(Electrical) or 100/1000BaseFX(Optical) Ethernet Link
- c) Optical interface
- d) IEEE C37.94, ITU-T G.703 interface.
- e) Gigabit Ethernet or Gigabit optical interface

4.3. Communication Equipments

The various types of Interfaces required in communication equipment at Remote Station and Control Centre shall be governed in accordance with Schedule II of CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020, as applicable.

5. Cross-Border Power System Connections

The Regulation 18 (Data and Communication Facilities) of the CERC (Cross Border Trade of Electricity) Regulations 2019 stipulates as follows:

“Reliable and efficient voice and data communication systems shall be provided to facilitate necessary communication and data exchange, and supervision or control of the grid by the NLDC or RLDC, under normal and extraordinary conditions. Such communication system must be established from generating station or concerned grid substation(s) to control room of System Operator of a neighbouring country and from there to control room of System Operator of India. Provided that the Cross Border Transmission Link shall necessarily have reliable and efficient voice and data communication systems with the System Operators on both the sides.”

Accordingly, at each point of interconnection on Indian side; respective transmission licensee should ensure facilitating interface requirement for cross border interconnections and shall take necessary measures to comply with the aforesaid regulation and the interface guidelines issued by NLDC in this regard.

From Network Security point of view, at Landing Locations (in India Side) a layer of isolation shall be made between interfacing point/node & ISTS (Inter State Transmission System) Communication Network node. Further complete separation shall also be maintained for configuring End-to-End connectivity of Identified Data & Voice Channels.

The provisions mentioned under this Clause 5 shall comply with the cyber security requirements outlined in Clause 6 of this document.

6. Cyber Security Requirements

The communication service provider while providing the interfaces for the data exchange between the control centres, between the user station and the Control Centre must comply with CERT-In, NCIIPC (National Critical Information Infrastructure Protection Centre) guidelines for the interface

being provided to the end user in accordance with CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020.

Necessary firewall/router as per requirement shall be provided by the respective users while connecting the remote equipment with the control centre network. Direct connectivity with the operational network be avoided while connecting the remote station and shall be through firewall with necessary VLAN configuration.

A typical diagram related to the cyber security requirements is attached at ***Annexure – IV***.

7. Maintenance, Validation and Testing

Users shall facilitate for periodic maintenance and testing of interface equipment owned by them in accordance with procedure for maintenance and testing to be prepared by CTU in accordance with CERC Communication Regulations, 2017.

8. Document Revision

The interface requirement is based on current protocols implemented at different control centres and remote end equipment and the available protocols and communication interfaces available based on the available communication technology. The documents shall be revised as and when there is change in technology, and as and when any deficiency is noticed with approval of CERC.

ANNEXURE-I

A list of parameters to be telemetered from various sub-stations and generating stations with respect to various equipment

A. SCADA System

Sl. No	Description	Analog Points	Digital Points	Protection Signal
1	Line	-MW -MVAR	- line Isolator Status SOE with Time Stamping	Main1/Main2 protection, Over Voltage protection, LBB
2	Bays		- Breaker -Isolator/ Disconnecter (Line Selection in DMT scheme) SOE with Time Stamping	
3	Main Buses, Transfer Bus, Bus Coupler, Bus Sectionalizer	-Voltage -Frequency -MW & MVAR flow in case of bus sectionalizer -MW& MVAR flow across Bus Couplers	- Breaker, Isolator, - SOE with Time Stamping	Main1/Main2 protection
4	Transformer	-MW/MVAR for HV/LV Side -Tap Position	-Breaker -Isolator Status SOE with Time Stamping	Main1/Main2 protection
5	(Hot standby) Transformer	-MW/MVAR for HV/LV Side	-Breaker -Isolator Status	
6	Reactor	MVAR	-Breaker -Isolator Status --Bypass isolator status of NGR -SOE with Time Stamping	Main 1 and 2 Protection
	(Hot standby) Spare Reactor	MVAR	-Breaker -Isolator Status	
7	FSC/TCSC	-% compensation	-Bypass Breaker -Bypass Isolator -FSC ON/OFF Status	Oscillation Damping Controller

Sl. No	Description	Analog Points	Digital Points	Protection Signal
			SOE with Time Stamping	(Operated or not) status
8	SVC	-Slope -Gain -Q-Ref -V-Ref -V min -Vmax -Current for each branch -total MVAR compensation	-Isolator Status for each branch with SOE -SVC Mode (Automatic/Manual) -Q Control Mode (Enable/Disable) SOE with Time Stamping	Oscillation Damping Controller (Operated or not) status
9	HVDC (Both Type: Line Commutate Converter & Voltage Source Converter)	-DC Voltage -DC Power Flow -DC Current -Individual Filter MVAR -Firing Angle-Alpha -Extinction angle- Gamma, etc. -Power order, set point Compensation settings if applicable	-Individual Filter Status -HVDC Mode (Metallic return / Ground return) -Isolator/CB Status of DC Switchyard -RPC Status -Run back Status -POD Status -SSDC Status - SOE with Time Stamping -DMR -1 status -DMR-2 status -MRTB status -GRTB status -SoE for HVDC auto-restart	DC line Fault Protection, ESOF (emergency Switch Off) and HVDC Pole Block protection, POD Status (operated or not)
10	Converter Transformer	-MW/MVAR for HV/LV Side -Tap Position	-Breaker -Isolator Status	
11	Spare Converter transformer	-MW/MVAR for HV/LV Side	-Breaker -Isolator Status	
12	Generator	-MW (HV/LV) -MVAR (HV/LV) -LV Voltage / Frequency Unit Set point -Unit DeltaP for AGC,	- RGMO/FGMO ON/OFF Status - LV Breaker Status - AGC Local / Remote status - PSS ON/OFF status	Class A, B, C protection status

Sl. No	Description	Analog Points	Digital Points	Protection Signal
		-Droop settings Value, -AVR Reference Voltage	- AVR ON/OFF Status - SOE with Time Stamping	
13	Generator Transformer	-MW/MVAR for HV/LV Side -Tap Position	-Breaker -Isolator Status	Main1/Main2 protection
14	Synchronous Condenser	-MW (HV/LV) -MVAR (HV/LV) -LV Voltage / Frequency	-Breaker -Isolator Status	
15	STATCOM	Qstat, QMSC, QMSR, VHV, VMV, Q _{tra} , P _{aux} , Q _{aux} , Tap Position of Coupling transformer Power Oscillation damping setting Inductive slope Capacitive slope Up set reference/ Down set reference Feedback signal voltage MSC/MSR switching in and out setting (voltage, time)	- CB - Isolator STATCOM modes status (Voltage/Reactive/NSC etc) POD status - SOE with Time Stamping	
16	Phase Shifter	MW / MVAR Angle of shift	- CB - Isolator - SoE with time stamping	
17	Wind	- Wind speed at hub height - Wind direction - Blade Angle - Ambient air temperature - Relative Humidity (%) - Air Density -Atmospheric Pressure - Total MW/MVAR - Individual Turbine MW, - MVAR, wind speed - Total number of turbines online - Total Power Capacity.	WTG CB Status CB and Isolator status of pooling station Turbine Availability PPC modes status (Voltage/PF/Reactive Power) Frequency control (FGMO/RGMO) status	

Sl. No	Description	Analog Points	Digital Points	Protection Signal
		<ul style="list-style-type: none"> - Available Power Capacity -Available Power (Active and Reactive) at Plant level. -Active Power set point -Reactive Power set point -PPC modes signals: Reference and actual values of Voltage Control mode, Power Factor Control mode and Reactive Power Control mode) -Droop setting of Voltage Control mode -Active power ramp rate UP and down setting 	<p>LVRT/HVRT status</p>	
18	Solar	<ul style="list-style-type: none"> -Global horizontal irradiance -Global plane of array irradiance - Diffusion Irradiance- Watt per meter square - Direct Irradiance- Watt per meter square - Sunrise and Sunset timings -Tilt angle - Dust fall -Ambient temperature (deg C) -Back of PV module temperature -Battery charge -MW/MVAR -Relative Humidity - Performance Ratio - Cloud Cover (Okta) 	<ul style="list-style-type: none"> - Inverter Status (ON/OFF) -Module Availability -CB/Isolator Status -Rectifier Availability -PPC modes status Voltage/PF/Reactive Power) Frequency control (FGMO/RGMO) status AGC status LVRT/HVRT status 	

Sl. No	Description	Analog Points	Digital Points	Protection Signal
		-Temperature, Wind Speed, Rainfall, Wind Speed, Wind Direction - Inverter MW/MVAR (AC Side & DC Side) -Available Power (Active and Reactive) at Plant level. -Active Power set point -Reactive Power set point -PPC modes signals Reference and actual values of Voltage Control mode, Power Factor Control mode and Reactive Power Control mode) -Droop setting of Voltage Control mode -Active power ramp rate UP and down setting		
19	Energy Storage Resource	State of Charge MW/MVAR (AC Side & DC Side) Modes (Energy storage, Frequency regulation, etc.)	CB/Isolator Status Controller status, RGMO/FGMO	
20	SPS Signal		DIGITAL STATUS: Enable/Disable, Operated/No Operated. (Condition/Logic Wise)	
21	Weather Parameter	-Temperature - Wind Speed -Humidity -Rainfall		
22	AGC	-Unit Load Set Point (ULSP) -Actual Generation MW -Unit Capability	-Circuit Breaker Status on/off -Governor status on/off	

Sl. No	Description	Analog Points	Digital Points	Protection Signal
		<ul style="list-style-type: none"> -RGMO/FGMO/Governor input to governor -DeltaP -Reactive Power -AVR Voltage Set Point -Low Voltage (LV) side Actual Voltage -Generator Transformer (GT) Tap Position -Distribution Factor Additional Analog inputs from Hydro power plants -Minimum load at which unit can stably run after synchronization – Unit wise (P1) (in MW) - Forbidden zones or high cavitation zones - Unit-wise (From MW to MW) - P2 to P3 - Maximum loading possible on unit (continuous) (P4) - Declared Energy for the day - Schedule Energy (Cumulative) - Water gross head (m) Additional Analog inputs from Gas power plants - Reference exhaust gas temperature - Actual exhaust gas temperature 	<ul style="list-style-type: none"> - AGC Local/Remote Additional Digital inputs from Hydro power plants - Pumping Status on/off 	
23	Loads (Lift Irrigation etc.)	- MW/MVAR	<ul style="list-style-type: none"> -Breaker -Isolator Status 	

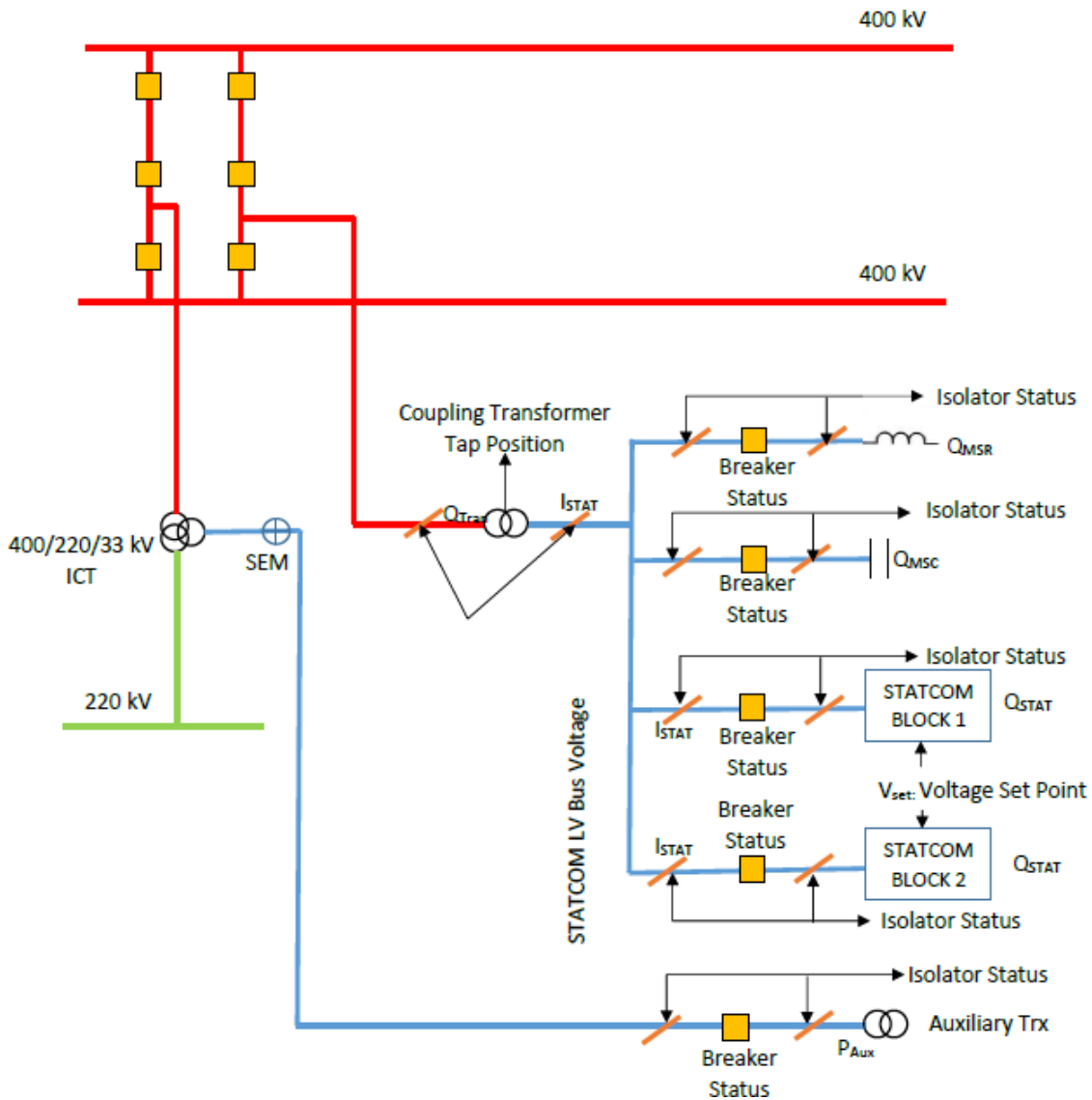
B. PMU Signal List

Sl. No	Description	Analog Points	Digital Points	Protection Signal
1	Line	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MW, MVAR, F , DF/DT	-Main Breaker status -Tie Breaker status -Isolators	Main1/Main2 protection,
2	Bays		- Breaker -Isolators	
3	Main Buses, Transfer Buses	- VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} F, DF/DT	Bus Sectionalizer, Bus Coupler Breaker	
4	Transformer/Coupling Transformer/Converter Transformer	- VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MW/MVAR for HV& LV Side	-Breaker -Isolators	Main1/Main2 protection
5	Reactor	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MVAR	-Breaker -Isolators	
6	FSC/TCSC	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MVAR	-Bypass Breaker - -FSC ON/OFF Status	

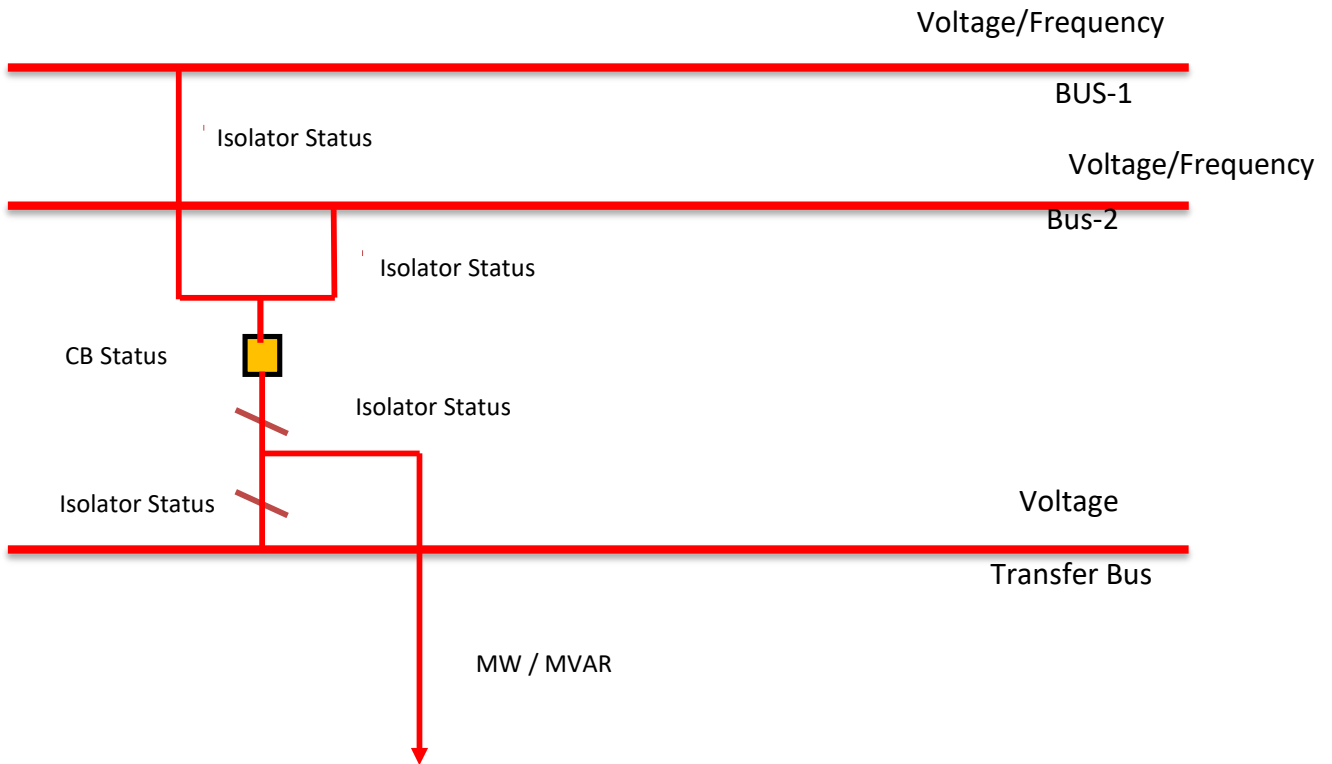
7	SVC	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MVAR	Breaker	
8	Generator	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MW, MVAR, F, DF/DT for HV& LV Side	-RGMO/FGMO ON/OFF Status Breaker Status -Isolators	V
9	STATCOM	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} MW, MVAR, F, DF/DT	- CB OF EACH MODULE MSR, MSC	
10	Phase Shifter	VOLTAGE {VRM, VYM, VBM, VPM, VRA, VYA, VBA, VPA} CURRENT {IRM, IYM, IBM, IPM, IRA, IYA, IBA, IPA} HV & LV MW / MVAR F, DF/DT	- CB	

The layout diagrams showing point of interface for real time telemetry

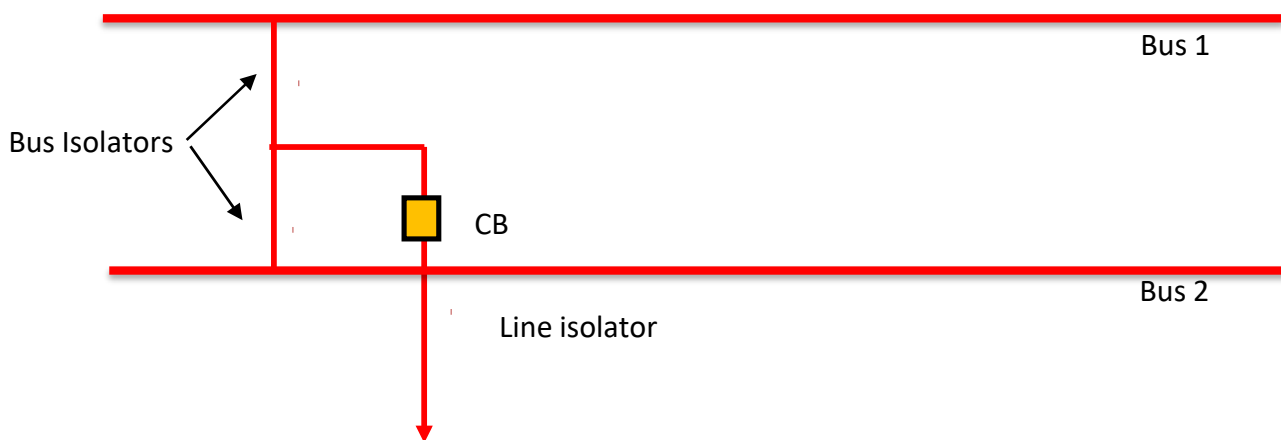
A. TYPICAL BAYS DIAGRAM: STATCOM



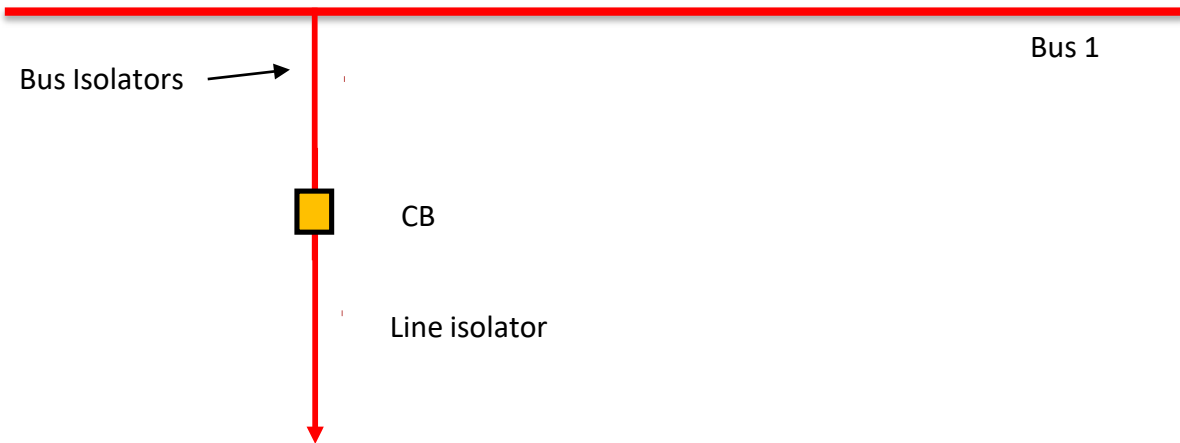
C. TYPICAL BAYS: Double Bus and Transfer Scheme



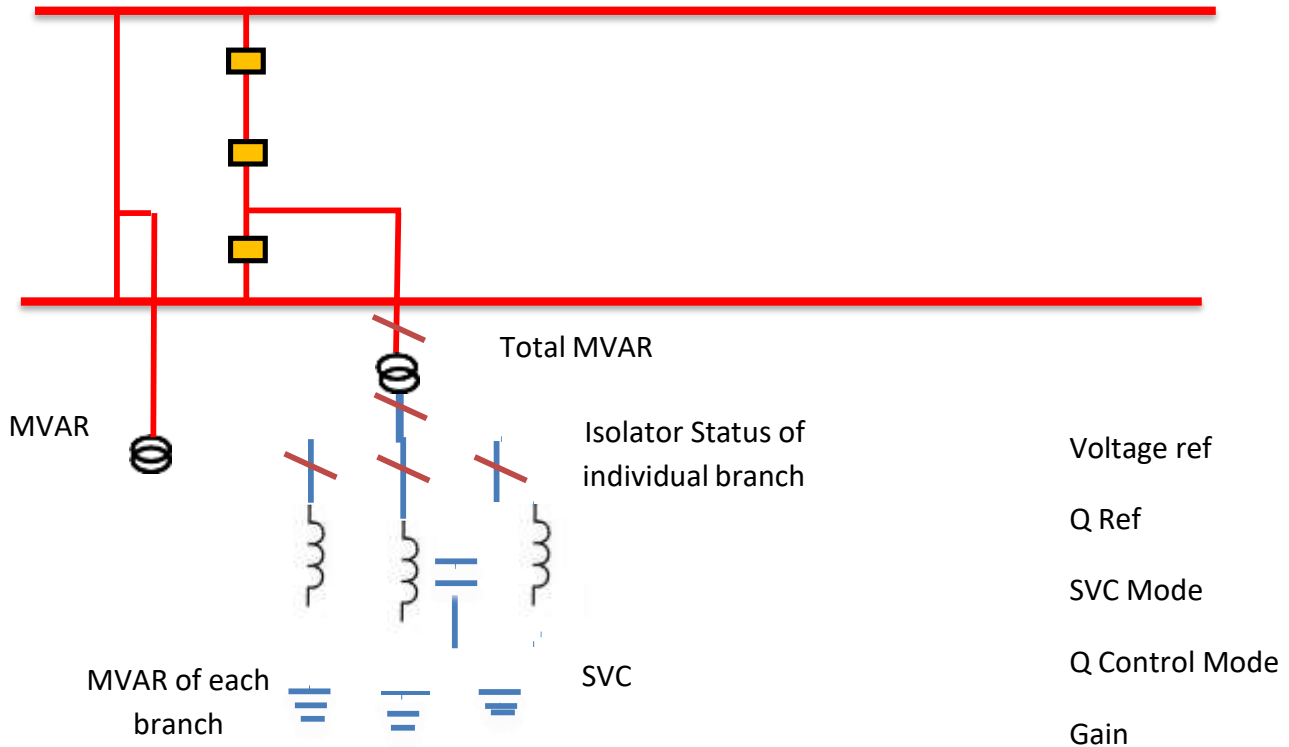
D. TYPICAL BAYS: DOUBLE BUS SCHEME



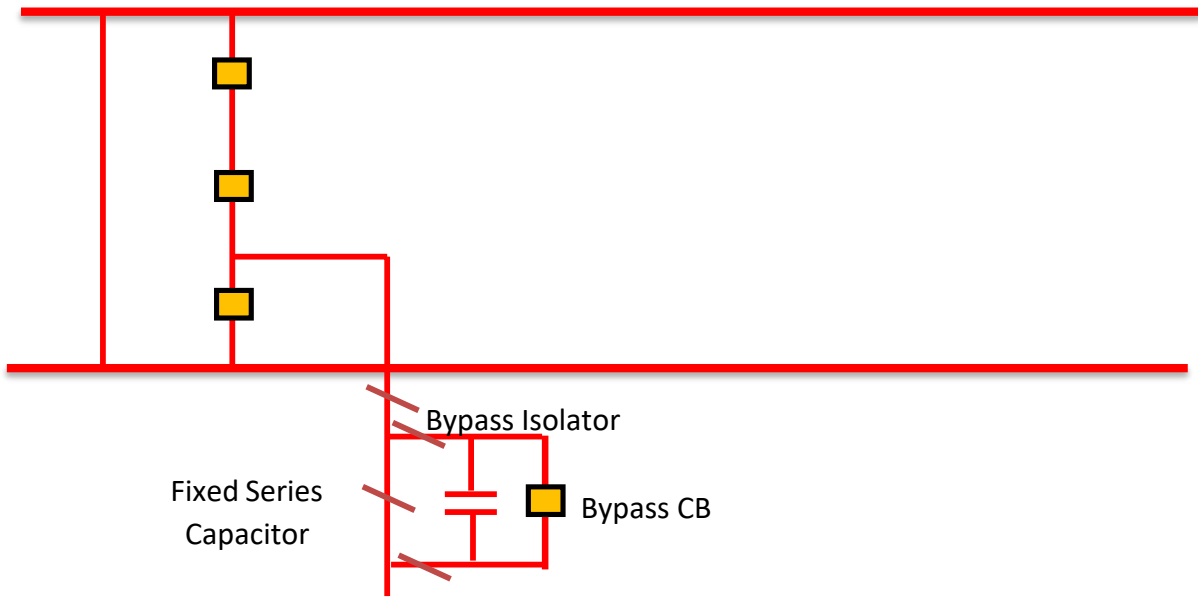
E. TYPICAL BAYS: SINGLE BUS SCHEME



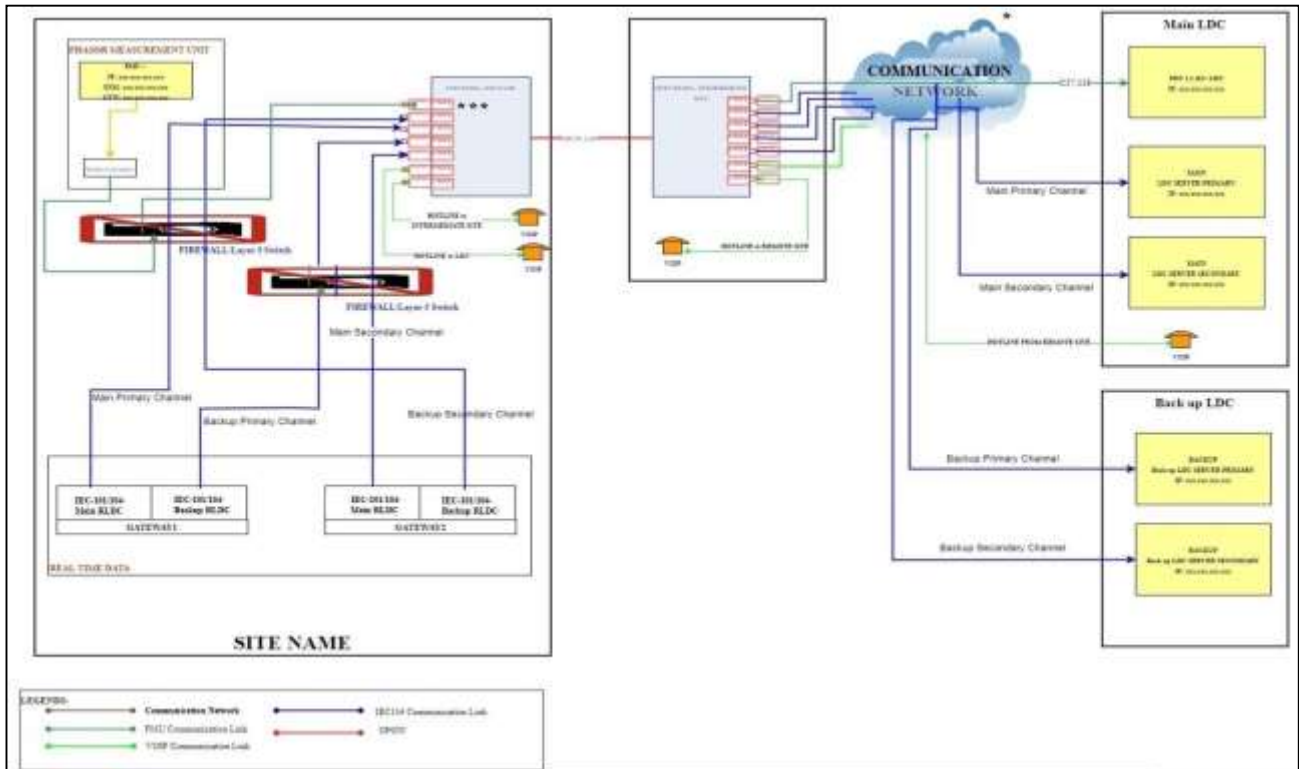
F. STATIC VAR COMPENSATOR/BUS REACTORS



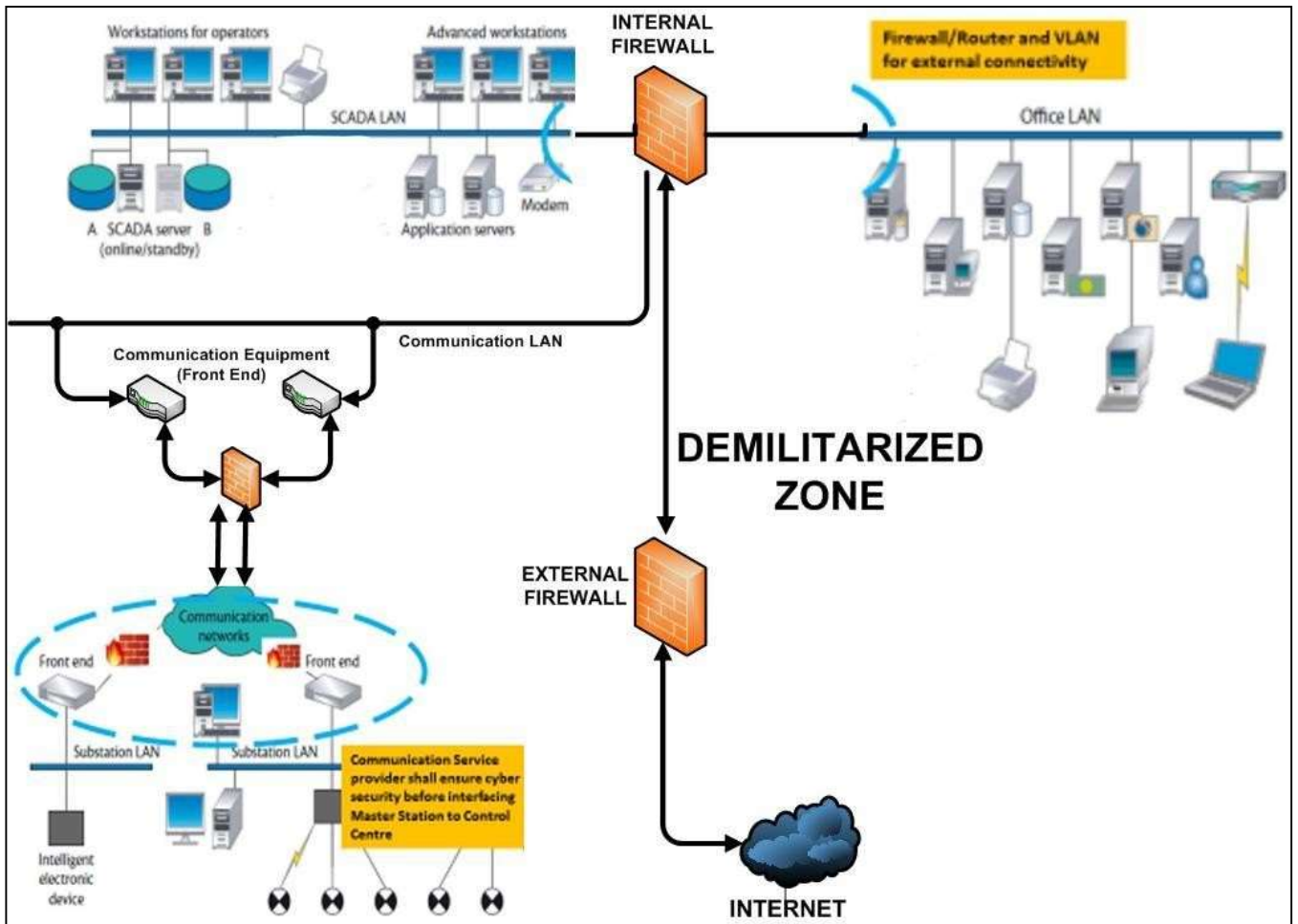
G. Fixed Series Capacitor



Typical Remote Station General Arrangement Diagram having IEC-101/104 RTU



Typical Diagram showing Cyber Security Measures in Data Transfer



Scheme-A: Replacement of SAS Gateway/RTU for dual reporting of SCADA Channels for POWERGRID RTM stations.

S. No.	Items	Details
1.	Name of Scheme	Replacement of SAS Gateway/RTU for dual reporting of SCADA Channels for POWERGRID RTM stations.
2.	Scope of the scheme	Replacement of SAS gateways at 55 no. and RTUs at 7 no of POWERGRID RTM substations in Northern Region. List of the substations are given at Annexure-Va .
3.	Depiction of the scheme on FO Map	N/A
4.	Objective / Justification	<p>i. As per meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023 (Attached at Annexure-III), it has been finalized that to increase the redundancy in the system 2 main and 2 backup channels should report to RLDCs as well as back up RLDCs considering the criticality of real time grid operations by the RLDCs.</p> <p>ii. As Interface Requirements Guidelines under the CERC (Communication System for inter-State transmission of Electricity) Regulations, 2017 (Attached at Annexure-IV), <i>“The interfaces shall be designed to operate under single contingency failure condition. Equipment should support interfaces with multiple ports, cards, gateways etc. and configured in redundant mode so that failure of single hardware element, i.e. communication port, card, gateway etc. of the users shall not lead to failure of data communication.”</i></p> <p>iii. CTU has collected inputs from the POWERGRID for RTM stations. Based on Input, the scheme is prepared for RTM stations for replacement of SAS gateways at 55 no. and RTUs at 7 no of POWERGRID RTM substations in Northern Region.</p>
5.	Estimated Cost & Funding	Rs. 84.6 Cr. (approx.)
6.	Implementation timeframe	12 months from the date of allocation
7.	Implementing Agency / Mode	POWERGRID Mode- Add Cap or new scheme in RTM. Implementation mode to be deliberated in view of CERC Tariff regulation 2024-2029 where useful life of IT & SCADA system has been taken as 7 years.
8.	Deliberations in different meetings	72 nd NRPC, Meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023

Summary cost for Northern Region **POWERGRID** substations under RTM is given below:

Summary of SAS/ RTU upgradation				
Sr. No.	Description	Nos.	Rate per station (Cr.)	Amount in Crores
1	Total SAS based stations	55	1.5	82.5
2	Total RTU based stations	7	0.3	2.1
Grand Total				84.6

Scheme-B: Upgradation of SAS Gateway for dual reporting of SCADA Channels for POWERGRID TBCB stations

S. No.	Items	Details
1.	Name of Scheme	Upgradation of SAS Gateway for dual reporting of SCADA Channels for 2 no. POWERGRID TBCB stations.
2.	Scope of the scheme	Replacement of SAS gateways at 2 no. of TBCB substations of POWERGRID in Northern Region. List of the substations and SPVs are given at Annexure-Vb .
3.	Depiction of the scheme on FO Map	N/A
4.	Objective / Justification	<p>i. As per meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023 (Attached at Annexure-III), it has been finalized that to increase the redundancy in the system 2 main and 2 backup channels should report to RLDCs as well as back up RLDCs considering the criticality of real time grid operations by the RLDCs.</p> <p>ii. As Interface Requirements Guidelines under the CERC (Communication System for inter-State transmission of Electricity) Regulations, 2017 (Attached at Annexure-IV), <i>“The interfaces shall be designed to operate under single contingency failure condition. Equipment should support interfaces with multiple ports, cards, gateways etc. and configured in redundant mode so that failure of single hardware element, i.e. communication port, card, gateway etc. of the users shall not lead to failure of data communication.”</i></p> <p>iii. CTU has collected inputs from the POWERGRID for TBCB stations. Based on Input, the scheme is prepared for 2 no. TBCB stations for replacement of SAS gateways in Northern Region.</p> <p>Implementation modalities shall be as per change in law of TSA as per CERC petition order 94/MP/2021 dtd. 27.12.23 (attached at Annexure-Vd) in case of TBCB project.</p>
5.	Estimated Cost	Rs. 3.0 Cr. (approx.) (excluding taxes)
6.	Implementation timeframe	12 months from the date of allocation
7.	Implementing Agency / Mode	Respective SPVs as per Annexure-Vb in Change in law of TSA
8.	Deliberations in different meetings	72 nd NRPC, Meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023

List of Substations where SAS Upgradation Required in POWERGRID SPVs

Sl. No.	Name of Substation	Name of the TSP/SPV	Requirement of SAS/RTU gateway	Cost Estimate in crore
1	KHETRI	POWERGRID KHETRI TRANSMISSION SYSTEM LIMITED	SAS	1.5
2	KALA AMB	POWERGRID KALA AMB TRANSMISSION	SAS	1.5
Total Cost				3.0

Scheme-C: Upgradation of SAS Gateway for dual reporting of SCADA Channels for Sterlite TBCB stations

S. No.	Items	Details
1.	Name of Scheme	Upgradation of SAS Gateway for dual reporting of SCADA Channels for 3 no. Sterlite TBCB stations.
2.	Scope of the scheme	Upgradation of SAS Gateway at 3 no. of TBCB substations of Sterlite in Northern Region. List of the substations and SPVs are given at Annexure-IIIc
3.	Depiction of the scheme on FO Map	N/A
4.	Objective / Justification	<p>iv. As per meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023 (Attached at Annexure-III), it has been finalized that to increase the redundancy in the system 2 main and 2 backup channels should report to RLDCs as well as back up RLDCs considering the criticality of real time grid operations by the RLDCs.</p> <p>v. As Interface Requirements Guidelines under the CERC (Communication System for inter-State transmission of Electricity) Regulations, 2017 (Attached at Annexure-IV), <i>“The interfaces shall be designed to operate under single contingency failure condition. Equipment should support interfaces with multiple ports, cards, gateways etc. and configured in redundant mode so that failure of single hardware element, i.e. communication port, card, gateway etc. of the users shall not lead to failure of data communication.”</i></p> <p>vi. CTU has collected inputs from the Various TSPs for TBCB stations. Based on Input received from Sterlite (Attached at Annexure-XI), the scheme is prepared for 3 no. TBCB stations of Sterlite for upgradation of SAS gateways in Northern Region.</p> <p>Implementation modalities shall be as per change in law of TSA as per CERC petition order 94/MP/2021 dtd. 27.12.23 (attached at Annexure-Vd) in case of TBCB project.</p>
5.	Estimated Cost	Rs. 0.9 Cr. (approx.) (excluding taxes)
6.	Implementation timeframe	12 months from the date of allocation
7.	Implementing Agency / Mode	Respective SPVs as per Annexure-IIIc in Change in law of TSA
8.	Deliberations in different meetings	72 nd NRPC Meetings held among POWERGRID, Grid-India, CTU and CEA dated 09.05.2023 and 27.06.2023

List of Substations where SAS Upgradation Required in Sterlite SPVs

Sl. No.	Name of Substation	Name of the TSP/SPV	Requirement of SAS/RTU gateway	Cost Estimate in crore
1.	BEAWAR	BEAWAR TRANSMISSION LTD.	SAS	0.3
2.	KISHTWAR	KISHTWAR TRANSMISSION LTD.	SAS	0.3
3.	NEEMRANA-II	NEEMRANA-II KOTPUTLI TRANSMISSION LTD.	SAS	0.3
Total Cost				0.9



भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

सं. उक्षेविस/वाणिज्यिक/ 209/ आर पी सी (72)/ 2024

दिनांक:19 अप्रैल, 2024

सेवा में/To,

एनआरपीसी एवं टीसीसी के सभी सदस्य एवं विशेष आमंत्रित (संलग्न सूचीनुसार)
Members of NRPC & TCC & Special Invitees (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति (एनआरपीसी) की 72 वीं और तकनीकी समन्वय समिति (टीसीसी) की 49 वीं बैठक का कार्यवृत्त।

Subject: MoM of 72th Northern Regional Power Committee (NRPC) & 49th Technical Co-ordination Committee (TCC)-reg

महोदय/महोदया,

तकनीकी समन्वयन समिति (टीसीसी) की 49 वीं बैठक दिनांक 29.03.2024 (सुबह 09:30 बजे) एवं उत्तर क्षेत्रीय विद्युत समिति की 72 वीं बैठक दिनांक 30.03.2024 (सुबह 09:30 बजे) को लखनऊ, उत्तर प्रदेश में आयोजित की गयी थी। बैठक का कार्यवृत्त संलग्न है। यह उ.क्षे.वि.स. की वेबसाइट (<http://164.100.60.165/>) पर भी उपलब्ध है।

49th meeting of Technical Co-ordination Committee (TCC) was held on 29.03.2024 (09:30 AM) and 72th meeting of Northern Regional Power Committee (NRPC) was held on 30.03.2024 (09:30 AM) at Lucknow, Uttar Pradesh. MoM of the same is attached herewith. The same is also available on NRPC Sectt. Website (<http://164.100.60.165/>).

भवदीय

Yours faithfully

(वी.के. सिंह)

(V.K. Singh)

सदस्य सचिव

Member Secretary

प्रतिनिधि: एमडी, एचवीपीएनएल एवं अध्यक्ष, एनआरपीसी (md@hvnpn.org.in)

49th TCC & 72th NRPC Meeting (29-30 March 2024)-MoM

- ii. PGCIL's request to club this scheme with another major scheme for smoother implementation was agreed by forum.
- iii. Schedule of work agreed for 18 months.

A.12 Dual reporting of SCADA Channels (RTU/SAS) to NRLDC and Back up NRLDC (Agenda by CTU)

TCC Deliberation

- A.12.1 CM, CTUIL representative apprised that presently SCADA data channels are reporting in main and backup mode with main channel to RLDC and backup channel to Backup RLDC. Meeting for Planning of Communication system for Inter-State Transmission system (ISTS) among RLDCs, POWERGRID, CTUIL and CEA was held in Virtual Mode on 05.04.2023. During the meeting, it was discussed and approved by CEA to increase the redundancy in the system both main and backup channels should report to RLDCs as well as back up RLDCs in dual mode considering the criticality of real time grid operations by the RLDCs. Minutes of meeting is attached as **Annexure-XVIIa**.
- A.12.2 For new ISTS stations CTU has started mentioning this requirement in the RFP inputs to TBCB projects based on the CEA's recommendation vide mail dtd. 11.08.2023. For existing ISTS sub stations requirement for additional ethernet ports in RTU/SAS and FOTE were deliberated in the meetings held among POWERGRID, Grid-India, CTU and CEA on dated 09/05/23 and 27/06/23 (Attached at **Annexure-XVIIb**). As per deliberations of the meetings, POWERGRID has to provide the region wise data of additional requirement for equipment/card/port etc in respective FOTE/Gateway/RTU for the implementation of dual redundancy to RLDCs & Backup RLDCs.
- A.12.3 The requirement of additional FOTE/ Ethernet cards was finalised and approved in the 69th, 70th & 71st NRPC and scheme was prepared and sent to NCT for approval by CTU.
- A.12.4 Regarding the expansion SAS gateways/ RTUs ports, POWERGRID has provided additional cost implication as existing SAS gateways ports are not expandable or upgradable. Similarly, new procurement of RTUs shall be required where expansion of ethernet ports is not possible. This cost includes supply, installation and services for installation of new SAS gateways and RTUs. POWERGRID has provided this cost based on inputs received from SAS/RTU OEMs e.g. ABB, GE, Siemens,

49th TCC & 72th NRPC Meeting (29-30 March 2024)-MoM

Synergiee etc. List of substations sub-region wise i.e. NR-I, NR-II & NR-III are attached at **Annexure-XVIII**.

A.12.5 Summary cost for Northern Region is given below:

Summary of SAS/ RTU upgradation				
Sr. No.			Rate per station (Cr.)	Amount in Crores
1	Total SAS based stations	56	1.5	84.0
2	Total RTU based stations	8	0.3	2.4
Grand Total				86.40

A.12.6 In view of above, he proposed the scheme as below:

Scheme Name: Dual reporting of SCADA Channels (RTU/SAS) to NRLDC and Back up NRLDC

Scope: Upgradation/ Replacement of SAS gateways at 56 no. and RTUs at 8 nos ISTS sub-stations in Northern Region

Estimated Cost: **Rs. 86.40 crore (approx.) (excluding taxes and duties)**

Implementation Mode: **RTM**

Implementation Agency – **POWERGRID**

Schedule of installation – **12 months from the date of allocation**

A.12.7 Further, He added that scheme to be put up in NCT for approval after RPC views.

A.12.8 CGM, NRLDC mentioned that to provide more redundancy of data for grid operation purpose, this arrangement is required.

A.12.9 Director, UPSLDC suggested that main channel may report to both main and backup RLDCs and backup channel may be used only for backup RLDC.

A.12.10 MS, NPC stated that there is need to check the guidelines/Regulations of communication.

A.12.11 EE (C), NRPC raised the concern of less participation of STUs in the TeST meeting.

49th TCC & 72th NRPC Meeting (29-30 March 2024)-MoM

A.12.12 MS, NRPC recommended that detailed deliberation is needed to be done in the upcoming TeST meeting after viewing the status of each RPC along with a comprehensive approach to planning.

NRPC Deliberation

Forum was in consonance of deliberation held in the TCC meeting and directed to discuss the matter first in TeST meeting.

Decision of Forum

Due to concerns over list of substations, requirement of dual reporting of SCADA channels to backup RLDC and status of implementation of the same in other regions, the matter was referred to TeST sub-committee of NRPC for deliberation with a comprehensive approach to planning.

A.13 Fibre Sharing on STU links for redundant communication to ISTS Nodes (Agenda by CTU)

TCC Deliberation

A.13.1 CTU/IL representative apprised that as per MOM of 23rd NRPC TeST Meeting CTU/IL was advised to write letters to PTCUL, HPPTCL, JKPTCL & UPPTCL to get consent on 3 pairs of fiber sharing on STUs fiber network to provide redundant communication to following ISTS nodes:

“Narora (NPCIL), Saharanpur (PG), Pithoragarh (PG), Sitarganj (PG), Chamera-III (NHPC), Budhil (GreenCo), Alusteng(PG), Drass(PG), Kargil(PG), Khalasti(PG), Leh(PG)”

A.13.2 HPPTCL has provided their consent to CTU vide letter dtd. 01.02.24, however we have not received consent from PTCUL, JKPTCL & UPPTCL.

A.13.3 This issue was also deliberated in the 24th TeST meeting wherein JKPTCL was not present. PTCUL & UPPTCL were requested to provide their confirmation in line with the HPPTCL letter. It is pertinent to mention that earlier PTCUL has agreed only for bandwidth sharing and not fiber sharing. PTCUL was asked to review their consent for fibre sharing as it would be better for ULDC data communication. PTCUL agreed to confirm the same after discussing with their management. However, we have not received any confirmation in this regard.

Annexure-III

List of Substaions where SAS/RTU Upgradation Required in POWERGRID RTM Substaions

A. SAS UPGRADATION S/s			
Sr.No	Region	SubStation	Data reporting RLDC through RTU/SAS GW
1	NR-I	Ajmer 765/400kV	SAS GW
2	NR-I	Baghpat 400/220kV GIS	SAS GW
3	NR-I	Bhadla-II 765/400/220kV	SAS GW
4	NR-I	Bhinmal 400/220kV	SAS GW
5	NR-I	Bhiwadi 400/220kV	SAS GW
6	NR-I	Bhiwadi HVDC	SAS GW
7	NR-I	Bhiwani 765/400/220kV	SAS GW
8	NR-I	Bikaner 765/400/220kV	SAS GW
9	NR-I	Dehradun 400/220kV	SAS GW
10	NR-I	Fatehgarh-II 765/400/220kV	SAS GW
11	NR-I	Jaipur(S) 400/220kV	SAS GW
12	NR-I	Jhatikara 765/400kV	SAS GW
13	NR-I	Jind 400/220kV	SAS GW
14	NR-I	Kankroli 400/220kV	SAS GW
15	NR-I	Koteshwar 765/400kV GIS	SAS GW
16	NR-I	Kurukshetra 400/220kV GIS	SAS GW
17	NR-I	Kurukshetra HVDC	SAS GW
18	NR-I	Manesar 400/220kV GIS	SAS GW
19	NR-I	Meerut 765/400/220kV	SAS GW
20	NR-I	Neemrana 400/220kV	SAS GW
21	NR-I	Sikar 400/220kV	SAS GW
22	NR-I	Sonipat 400/220kV	SAS GW
23	NR-I	Bikaner-II 400/220kV	SAS GW
24	NR-II	Chamba	ABB SAS
25	NR-II	New Wanpoh	ABB SAS
26	NR-II	Panchkulla	ABB SAS
27	NR-II	Fatehabad	ABB SAS
28	NR-II	Nalagarh	GE SAS
29	NR-II	LEH	GE SAS
30	NR-II	Kargil	GE SAS
31	NR-II	Drass	GE SAS
32	NR-II	Khalsti	GE SAS
33	NR-II	Samba	GE SAS
34	NR-II	Amritsar	GE SAS
35	NR-II	Patiala	GE SAS

36	NR-II	Ludhiana	GE SAS
37	NR-II	Moga 765	GE SAS
38	NR-II	Malerkotla	Siemens
39	NR-II	Banala	Siemens SAS
40	NR-II	Hamirpur	Siemens SAS
41	NR-III	BALLIA HVAC	SAS GW
42	NR-III	BALLIA HVDC	SAS GW
43	NR-III	BAREILLY 765KV	SAS GW
44	NR-III	FATEHPUR	SAS GW
45	NR-III	FEROZABAD	SAS GW
46	NR-III	KANPUR GIS	SAS GW
47	NR-III	LUCKNOW 765KV	SAS GW
48	NR-III	ORAI	SAS GW
49	NR-III	SHAHJAHANPUR	SAS GW
50	NR-III	SITARGANJ	SAS GW
51	NR-III	SOHAWAL	SAS GW
52	NR-III	VARANASI	SAS GW
53	NR-III	VINDHYACHAL	SAS GW
54	NR-III	JAULJIBI	SAS GW
55	NR-III	RAMPUR	SAS GW

TOTAL

55

B. RTU Replacement S/s			
Sr.No	Region	SubStation	Data reporting RLDC through RTU/SAS GW
1	NR-I	Bahadurgarh 400/220kV	RTU
2	NR-I	Bassi 400/220kV	RTU
3	NR-I	Bhadla 765/400/220kV	RTU
4	NR-I	Kotputli 400/220kV	RTU
5	NR2	Jalandhar	Synergiee RTU
6	NR-III	LUCKNOW 400KV	RTU
7	NR-III	RAEBARELI	RTU

TOTAL

7

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 94/MP/2021

Coram:

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

Date of Order: 27.12.2023

In the matter of:

Petition under Section 79(1)(f) of the Electricity Act, 2003 read with Regulation 111 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 seeking directions for installation of optical ground wire for the 400kV Kurukshetra – Malerkotla transmission line established under the Northern Region System Strengthening Scheme XXXI(B).

And

In the matter of:

Central Transmission Utility,
(Power Grid Corporation of India Ltd).
B-9, Qutab Industrial Area,
Katwaria Sarai, New Delhi-110016

.....Petitioner

Versus

1. Sekura NRSS XXXI(B) Transmission Ltd.,
503, Windsor, off CST Road, Kalina, Santacruz (E), Mumbai-400098 (Maharashtra)
2. Northern Regional Power Committee
18-A, Shaheed Jeet Singh Marg, Qutab Institutional Area, New Delhi-110016
3. Central Electricity Authority,
Sewa Bhawan, Rama Krishna Puram, Sector -1, New Delhi-110066
4. National Load Despatch Centre,
B-9, First Floor, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016
5. Northern Regional Load Despatch Centre,
18-A, Shaheed JEET Singh, Sansanwal Marg, Katwaria Sarai, New Delhi-110016
6. Khargone Transmission Ltd.,
F1, The Mira Corporate Suite, Plot No.1 &2, C-Block, 2nd Floor, Ishwar Nagar,



Mathura Road, New Delhi-110065

7. NER-II Transmission Ltd.
F1, The Mira Corporate Suite, Plot No.1 &2, C-Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
8. East North Interconnection Company Ltd.,
The Mira Corporate Suite, Plot No.1 &2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
9. Bhopal Dhule Transmission Company Ltd.,
The Mira Corporate Suite, Plot No.1 &2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
10. Jabalpur Transmission Company Ltd.,
The Mira Corporate Suite, Plot No.1 &2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
11. NRSS XXIV Transmission Ltd.,
The Mira Corporate Suite, Plot No.1 &2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
12. Purulia & Kharagpur Transmission Co. Ltd.,
The Mira Corporate Suite, Plot No.1 &2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
13. RAPP Transmission Company Ltd.,
The Mira Corporate Suite, Plot No. 1&2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
14. Maheshwaram Transmission Ltd.,
The Mira Corporate Suite, Plot No. 1&2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
15. Gurgaon Palwal Transmission Ltd.,
The Mira Corporate Suite, Plot No. 1&2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
16. Odisha Generation Phase-II Transmission Ltd.,
The Mira Corporate Suite, Plot No. 1&2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
17. Patran Transmission Company Ltd.,
The Mira Corporate Suite, Plot No. 1&2, C Block, 2nd Floor, Ishwar Nagar,
Mathura Road, New Delhi-110065
18. Western Transco Power Ltd.(WTPL)
Achalraj, Opp.Mayor Bunglow, Law Garden, Ahmedabad-380006
19. Western Transmission (Gujarat) Ltd., (WTGL)
Achalraj, Opp. Mayor Bunglow, Law Garden, Ahmedabad-380006
20. Chhattisgarh WR Transmission Ltd.,
Achalraj, Opp. Mayor Bunglow, Law Garden, Ahmedabad-380006
21. Raipur Rajnandgaon Warora Transmission Ltd.,
Achalraj, Opp. Mayor Bunglow, Law Garden, Ahmedabad-380006
22. Sipat Transmission Limited
Achalraj, Opp. Mayor Bunglow, Law Garden, Ahmedabad-380006



23. Raichur Sholapur Transmission Co. Ltd.,
Patel Estate, S. V. Road, Jogeshwari (West), Mumbai-400102
24. POWERGRID Vizag Transmission Ltd.,
POWERGRID, SR HQ, 6th Floor, D. No. 6-6-8/32 &39/E, Kavadiguda,
Secunderabad-500080, Telangana
25. POWERGRID Unchahar Transmission Ltd.,
765/400/220 KV POWERGRID S/S, Fatehpur-Lalganj-Lucknow Road,
Village- Chauferva, Post & Distt-Fatehpur-212601(Uttar Pradesh)
26. Kudgi Transmission Ltd.,
Mount Poonamallee Road, Manapakkam, P.B. No.979, Chennai-600089
27. Darbhanga Motihari Transmission Co. Ltd.,
503, Windsor, Off CST Road, Kalina, Santacruz (E), Mumbai -40009 (Maharashtra)
28. NRSS XXXVI Transmission Ltd.,
Plot No. 19, Film City, Sec-16 A, Gautam Buddha Nagar, Noida, UP-201301
29. Warora Kurnool Transmission Ltd.,
Achalraj, Opp. Mayor Bungalow, Law Garden Ahmedabad-380006
30. POWERGRID Southern Inter Connector Transmission System Ltd (PSITSL),
POWERGRID, SR1 HQ, D.No.6-6-8/32&395/E, Kavadiguda,
Secunderabad-500080, Telangana
31. POWERGRID Parli Transmission Ltd (PPTL),
Sampriti Nagar, Nari Ring Road, Uppalwadi, Nagpur-440026
32. POWERGRID Kala Amb Transmission Ltd.
(PKATL) 400/220KV Barwala Sub-station, Vill-Naggal, NH-73,
Barwala Panchkula, Haryana-134118
33. POWERGRID Warora Transmission Ltd, (PWTL)
WR-1 RHQ, Sampriti Nagar, Nari Ring Road,
PO: Uppalwadi, Nagpur-440026(Maharashtra)
34. Powergrid NM Transmission Limited Southern
Region Transmission system –II, RHQ, Near Driving Test Track,
Singanayakanhalli, Yelahanka Hobli, Bangalore-560064
35. Powergrid Jabalpur Transmission Limited, POWERGRID,
Plot No. 54, Jay Ambe School, Sama-Savli Road, Vadodara-390018, Gujarat
36. Alipurduar Transmission Ltd.(ATL)
Achalraj, Opp. Mayor Bungalow, Law Garden Ahmedabad-380006
37. KOHIMA-MARIANI Transmission Ltd.,
B-5, Tower-3, 3rd Floor, Okaya Business Centre,
Sector-62, Noida, (Uttar Pradesh) 201306, India
38. POWERGRID Medinipur Jeerat Transmission Ltd.
POWERGRID, Eastern Region II Headquarters, CF-17,
Action Area 1C, New Town, Rajarhat, Kolkata-700156
39. POWERGRID Mithilanchal Transmission Ltd.
POWERGRID, ERTS-I Regional Haed Quarter, Near Transformer Repair Works,
Board Colony, Shastri Nagar, Patna-800023 (Bihar)
40. POWERGRID Ajmer Phagi Transmission Ltd. SCO bay 5 to 10,



SECTOR-16A, FARIDABAD, HARYANA- 121002

41. Power Grid Corporation of India Ltd.
Load Dispatch & Communication (LD&C), B-9,
Qutab Institutional Area, Katwaria Sarai, New Delhi-110016Respondents

Parties Present:

Shri Samar Chandra De, NERLDC
Shri M. G. Ramachandran, Senior Advocate, STL
Ms. Suparana Srivastava, Advocate, CTUIL
Shri Tushar Mathur, Advocate, CTUIL
Ms. Astha Jain, Advocate, CTUIL
Shri Shubham Arya, Advocate, STL
Ms. Shikha Sood Advocate, STL
Ms. Reeha Singh, Advocate, STL
Ms. Pallavi Maitra, Advocate R-7 to 12
Shri Venkatesh, Advocate, NRSS XXXVI
Shri Anand Singh Ubeja, Advocate, NRSS XXXVI
Shri Mohit Mansharamani, Advocate, NRXX XXXVI
Shri Hemant Singh, Advocate, WTPL
Shri Chetan Garg, Advocate, WTPL
Shri Swapnil Verma, CTUIL
Shri Ranjeet S. Rajput, CTUIL
Shri Priyansi Jadya, CTUIL

ORDER

Central Transmission Utility (CTU) has filed the present Petition under Section 79(1)(f) of the Electricity Act, 2003, read with Regulation 111 of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, seeking directions for installation of optical ground wire for the 400kV Kurukshetra – Malerkotla transmission line established under the Northern Region System Strengthening Scheme XXXI(B).

2. The Petitioner has made the following prayers:
- i. *Issue appropriate directions to Respondent No.1 for allowing OPGW installation on the 400kV Kurukshetra-Malerkotla D/c line under the Reliable Communication Project approved for the Northern Region by Northern Region Power Committee to ensure early completion of the link.*
 - ii. *Issue further appropriate directions to Respondent No.1 for facilitating and allowing OPGW installation in the transmission elements implemented by transmission licensees in line with the mandate of Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020; any other applicable Regulations/Procedure in this regard, orders and directions of this Hon'ble Commission and*



the decision of coordinated meetings between entities such as Regional Power Committees (RPC), Central Electricity Authority (CEA), Central Transmission Utility (CTU), National/Regional Load Despatch Centres (NLDC/RLDC) and other statutory/regulatory stakeholders.

- iii. *Pass such further and other order(s) as this Hon'ble Commission may deem fit and proper in the facts and circumstances of the present case.*

Submission of Petitioner

3. Petitioner has made the following submissions:
- (a) Communication systems are essential to facilitate the secure, reliable and economic operation of the grid and are an important pre-requisite for the efficient monitoring, operation and control of the power system. The provisions relating to communication systems for the power sector have been initially spelt out in the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (hereinafter "Grid Code, 2010") and the Central Electricity Authority (Technical Standard for Connectivity to the Grid) Regulation, 2013 (hereinafter "Grid Standard for Connectivity") whereunder, all requesters, users, Central/State Transmission Utilities are obligated to provide systems to telemeter power system parameters. Thereafter, on 15.5.2016, this Commission notified the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 (hereinafter "Communication System Regulations, 2017"), which lay down the rules, guidelines, and standards to be followed by various persons and participants in the system for the continuous availability of data for system operation and control including market operations.
- (b) Petitioner has been entrusted with the responsibility for the development of an efficient and coordinated communication system on a regional basis, which is to be connected to provide a backbone communication system spread across India as per the Manual of Communication Planning Criteria of the Central Electricity Authority, 2019. CEA has further notified the Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020 (hereinafter "Communication Standards Regulations, 2020"), laying down the requirements for planning, implementation, operation and maintenance and up-gradation of a reliable communication system for all communication requirements including exchange of data for power system at the national level, regional level,



inter-State level and intra-State level. The Regulations envisage planning of backbone regional and national communication network using ISTS transmission lines by the Petitioner as per requirement.

- (c) The Communication Standards Regulations, 2020, envisage planning of backbone regional and national communication network using ISTS transmission lines by the Petitioner as per requirement. Regulation 26 of the said Regulations necessitates the construction of wideband communications using fibre optic communication.
- (d) Optical Ground Wire (OPGW) is an optical fibre embedded in the earth wire, which is used in overhead power lines. In furtherance of the regulatory mandate, the Petitioner has established the backbone communication network in the Northern Region as part of various projects such as the Unified Load Despatch & Communication (ULDC) Project, Microwave Replacement Project and Fiber Optic Expansion Projects, apart from other transmission projects.

The Reliable Communication Scheme under the Central Sector for Northern Region was proposed by the Petitioner in the 35th Technical Coordination Committee (TCC) Meeting held on 1.5.2017, which was approved in the 39th Meeting of the Northern Regional Power Committee held on 2.5.2017.

In this manner, the scheme for the installation of OPGW based reliable communication system with a network size of 7248kms (including OPGW replacement of ULDC Phase –I) by the Petitioner in the Northern Region was approved for its implementation. In accordance with the above approval, which was reiterated in the 40th Meeting, the Petitioner proceeded with the installation of around 7248 km of OPGW along with the communication equipment under the central sector in the Northern Region.

- (e) The implementation of an additional network with the Reliable Communication Scheme under the Central Sector for the Northern Region was approved in the 47th Meeting of the Northern Regional Power Committee held on 11.12.2019 and in the 44th Meeting of the Technical Coordination Committee held on 10.12.2019. Accordingly, the revised network size of the Reliable Communication Project will become 7398 Km. As a part of the above scheme, OPGW was also agreed to be installed on the 400kV Kurukshetra-Malerkotla line (180km) by replacing the existing earth wire.



- (f) The Petitioner has taken up implementation of the project wherein OPGW is to be installed on ISTS transmission lines by replacing existing earth wire. For that purpose, the Petitioner has entered into a contract dated 31.1.2019 with M/s Apar Industries Ltd. (APAR) after the selection of the same based on an open tender.
- (g) The 400kV ISTS transmission line connecting Kurukshetra-Malerkotla had been implemented by Respondent No.1 as part of the transmission scheme in the name of “Northern Region System Strengthening Scheme XXXI (B)” through the TBCB route as follows:
- i. 400 kV Kurukshetra-Malerkotla D/c line
 - ii. 400 kV Malerkotla-Amritsar D/c line
- (h) In view of the regulatory mandate for implementing the national backbone communication system, including for the Northern Region, the Petitioner approached Respondent No.1 for the installation of OPGW on the 400kV D/c Kurukshetra- Malerkotla line built by the Respondent. Further, vide email dated 15.9.2020, the Petitioner clarified certain queries raised by Respondent No.1
- (i) Respondent No.1 vide letter dated 5.10.2020 raised issues with respect to the installation of OPGW on the 400kV Kurukshetra-Malerkotla transmission line and stated that it was unable to understand the regulatory provision which allowed that part of TBCB asset could be removed/dismantled and adjusted against the capital cost of other cost-plus assets in order to achieve tariff optimization in cost plus project. As such, Respondent No.1 declined to grant its consent “to take away NTL earth wire including hardware & fittings by M/s. APAR Industries Ltd. after dismantling for executing OPGW Work”. Respondent No.1 also sought clarifications from the Petitioner with respect to the following:
- i. The available regulatory provisions and contractual provisions under the TSA under which implementation of OPGW ULDC scheme through its asset would not entail any impact on the revenue of the asset.
 - ii. Petitioner to hand over the verified quantity of earth wire, including accessories to Respondent No.1 after proper re-rolling on drums at its Patiala store.



- iii. Whether any damage to the assets of Respondent No.1 during the installation of OPGW by the Petitioner would be rectified by the Petitioner at its own to the level of satisfaction of Respondent No.1.
 - iv. Petitioner to provide schedule of work execution, planning, details of executing agency etc., to Respondent No.1 prior to mobilizing the work at the site for joint discussion purposes.
 - v. Whether the Petitioner would indemnify Respondent No.1 towards:
 - a. Outage/tripping of line implemented by Respondent No.1, which might reduce transmission line service availability.
 - b. Any perspective dispute, litigation or (RoW/crop) compensation claims raised by any of the landowners.
 - vi. From the lifetime operation and maintenance perspective after the completion, commissioning and capitalization of the OPGW work, clarification with respect to:
 - a. Ownership of the transmission line, particularly in view of the substitution of earth wire by the Petitioner and if the asset was to be handed over to Respondent No.1 for ease of its operation and maintenance in future.
 - b. Whether the Petitioner intended to utilize the transmission line commercially in any manner.
- (j) Petitioner vide letter dated 12.10.2020 informed Respondent No.1 that live-line installation of OPGW was field proven and more than 70,000 kms of installation had been completed by the Petitioner. As regards the return of earth-wire and other issues raised by Respondent No.1, the Petitioner stated that the same could be dealt with in line with the decision taken during the Meeting chaired by the Member Secretary, Northern Region Power Committee on 5.3.2019 on similar issues raised by M/s Parbati Koldam Transmission Company Limited (PKTCL) for OPGW installation on their lines. Petitioner's prayers are liable to be seen in the context and perspective of the obligations of Respondent No.1 in terms of the Transmission Service Agreement dated 02.01.2014.
- (k) Respondent No.1 is also obligated in terms of the provisions of the CERC (Procedure, Terms and Conditions for grant of Transmission License and other



related matters) Regulations, 2009, to maintain the project in accordance with the prudent utility practices and applicable directions passed by competent authorities.

- (l) The OPGW requirement on the said line under the Reliable Communication Project is vital for providing reliable and redundant communication of Malerkotla 400kV ISTS sub-station to the Northern Region Load Despatch Center and the Malerkotla 400 kV ISTS sub-station is important for evacuation of bulk power to Punjab through the downstream of 800 kV Champa-Kurukshetra HVDC line.
- (m) Respondent No.1 or any similarly placed transmission licensee may have inter alia the following concerns or issues, on which the Commission may be pleased to issue appropriate guidance and directions:
- i. Change in value (if any) of their assets upon replacement of existing earth-wire with OPGW (optical ground-wire) when such installation is being carried out at the behest of CTU/POWERGRID.
 - ii. Impact of this change in assets on the tariff (if any).
 - iii. Impact of tripping and shutdowns on their system availability (if any)
 - iv. Ownership of OPGW.
 - v. Permission for the licensee to use OPGW for any commercial purpose.
- (n) The Commission may issue directions and guidance in general governing the installation of OPGW wherever so required in accordance with the mandate of Communication Standards Regulations, 2020, Communication System Regulations, 2017 or any other applicable Regulations/Procedure in this regard; orders and directions of this Commission and the decision of coordinated meetings between entities such as Regional Power Committees (RPC), Central Electricity Authority (CEA), Central Transmission Utility (CTU), National/Regional Load Despatch Centres (NLDC/RLDC) and other statutory/regulatory stakeholders.

Hearing on 25.06.2021

4. Petition was admitted on 25.06.2021, and the Commission observed that the issues raised by CTUIL in the instant matter may arise in the case of other TBCB projects. Therefore, the Commission directed CTUIL to implead all the transmission



licensees implementing transmission projects under the TBCB route as respondents so that all of them may be heard and suitable directions could be issued in one order instead of deciding the issues in multiple petitions. The Commission further directed the Petitioner to implead PGCIL as a party to the proceedings. The Commission also directed STL to discuss with CTUIL and firm up the issues that may arise in the installation of OPGW in place of earth wire in various TBCB projects for smooth and proper adjudication of the issues involved.

Submission of Petitioner

5. Petitioner vide affidavit dated 30.11.2021 and dated 08.03.2022 has filed an “Amended Memo of parties” impleading other transmission licensees.
6. Petitioner vide affidavit dated 08.03.2022 submitted the Minutes of Meeting dated 14.07.2021 between CTU, NRSS XXXI(B) Transmission Ltd (NTL) & Powergrid and Minutes of the Meeting held on 13.08.2021 with ISTS licensees to discuss issues related to OPGW installation on Malerkotla - Kurukshetra line & LILO of Fatehgarh – Bhadla line at Fatehgarh-II. There were divergent opinions with respect to the implementation, ownership, maintenance and operation of OPGW and no consensus was arrived at in these meetings.

Hearing on 10.03.2022

7. The Commission directed CTUIL to hold a further meeting(s) with the transmission licensees and come out with a suitable proposal for smooth and proper adjudication of the issues involved.
8. The Commission directed the Petitioner to submit the list of transmission assets along with the transmission licensee’s name wherein this replacement of earth wire/ old OPGW is planned and any other issues being faced by CTUIL related to modifications required to be carried out in TBCB assets keeping in view the integrated nature of ISTS.



Submission of Petitioner

9. Petitioner vide affidavit dated 29.03.2022 has submitted as follows:

- (a) The list of the transmission assets along with the transmission licensee's name wherein the replacement of earthwire/old OPGW is planned (as on 29/03/2022) has been submitted comprising of majority assets of Powergrid and one line Western Transmission Power Ltd (Adani).
- (b) In case the replacement of earth wire/old OPGW is planned in additional transmission assets in future, the same would be informed to the Commission by the Petitioner.
- (c) The issues (including issues other than replacement of earth wire/old OPGW) being faced by the Petitioner related to modifications required to be carried out in TBCB assets is tabulated as below:

Sr. No.	Name of Owner Utility (TBCB/JV/ IPTC)	Name of lines	Issues raised by owner Utilities/likely to arise	Comments
1.	M/s. NTL (NRSS XXXI(B) Transmission Limited) M/s Sekura Ltd.	400kV Kurukshetra – Malerkotla TL (139Km)	<ul style="list-style-type: none"> a. Impact on tariff and revenue after replacement of Earthwire with OPGW (POWERGRID ownership). b. Handing over the Earthwire. c. Rectification of any damaged asset in the process of OPGW installation. d. Prior intimation of any work and responsible contractor. e. Indemnification of any outage or claimed compensation by any landowner. f. Ownership of OPGW and its O&M. g. Any commercial use of OPGW. 	POWERGRID has communicated that it has no objection if the implementation of the laying of OPGW is undertaken by M/s Sekura NRSS XXXI(B) Transmission Ltd (STL)
2.	M/s. PKTCL (M/s. IndiGrid) (JV with POWERGRID)	<ul style="list-style-type: none"> i. 400kV S/C Parbati III(HEP) – Parbati Pooling (7Km) ii. 400kV S/C Parbati II(HEP) – Parbati III (12Km) iii. 400kV Parbati Pooling – Koldam (65Km) 	<ul style="list-style-type: none"> a. Rectification of any damaged asset in the process of OPGW installation. b. Return of earthwire c. Any commercial use of OPGW. 	POWERGRID has communicated that M/s PKTCL may do the installation of OPGW on their own, as discussed during the meeting with Licensees on 13.08.21.
3.	Torrent Power Limited	(i) LILO of Pirana (PG) – Pirana (T) 400kV D/c line at Ahmedabad S/s with twin HTLS along	a. Long shutdown is required for the execution of reconductoring and bay upgradation work. This may	As such no issue has been raised by owner/implementer. However, the implementation work through TBCB for bay



	(TBCB)	with reconductoring of Pirana (PG) – Pirana(T) line with twin HTLS conductor (ii) Bay upgradation work at Pirana (PG) & Pirana (T)	affect the availability of other bays intermittently. b. Commercial issues may be raised by the owner for the modification.	upgradation works and reconductoring in the existing line of Torrent Power will require dismantling, breakage, and removal of existing infrastructure in the premises of Torrent Power by the new TSP.
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(d) The Ministry of Power vide its Order No. 15/3/2017-Trans-Pt(1) dated 09.03.2022 has issued the “Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)”. The Guidelines define the categories of Communication System Schemes for ISTS as Category (A) and Category (B) and provide their corresponding approval procedure. The categories A and B have been defined under the Guidelines as follows: -

- **Category (A):** Communication system directly associated with new ISTS as well as incidental due to implementation of new ISTS elements (e.g. LILO of existing line on new/existing S/s where OPGW/terminal equipment are not available on the existing mainline/substations etc.)
- **Category (B):** Upgradation/modification of existing ISTS Communication system pertaining to the following:
 - Missing Links Redundancy/ System Strengthening
 - Capacity upgradation (Terminal equipment)
 - Completion of life of existing communication system elements
 - Other standalone project e.g. Cyber Security, Unified Network Management System (UNMS)
 - Adoption of New Communication Technologies

(e) Under the Guidelines, the requirement for a communication system linked with the new ISTS, shall be included in the new ISTS package and the combined proposal shall be approved as per the directions contained in MoP’s Office Order dated 28.10.2021 regarding the Re-constitution of the “National Committee on Transmission” (NCT). In the case of Category (B), Communication Schemes/Packages proposed by CTUIL for the upgradation/modification of the existing ISTS Communication System, standalone projects, and adoption of new technologies shall be put up to RPC for their views, and RPC has to provide their views on the Schemes/Packages proposed by CTUIL within 45 days of receipt of



the proposal from CTUIL. The Schemes/Packages, along with the views of RPC shall be approved by NCT. Subsequent to communication received from POWERGRID that it has no objection if the implementation of laying of OPGW is undertaken by M/s Sekura NRSS XXXI(B) Transmission Ltd (STL), the installation of OPGW on 400kV Kurukshetra-Malerkotla Transmission Line in the instant petition may be undertaken as per the procedure prescribed for category (B) communication systems under the Guidelines.

- (f) The Guidelines formulated by the Ministry of Power settle the divergent opinions with respect to implementation, ownership, maintenance and operation of OPGW between the transmission licensee and CTUIL and therefore, difficulty/disputes which are under consideration in the present Petition are not likely to recur in near future.

Submission of Respondent Western Transco Power Limited (WTPL)

10. Respondent No.18 **Western Transco Power Limited (WTPL)** vide affidavit dated 29.04.2022 has mainly submitted as under:
- (a) Respondent No. 18, Western Transco Power Limited, is a Transmission Licensee and the 765/400kV Pune (PG) (GIS) – 400kV Parli (PG) was constructed by Respondent No. 18, which was commissioned on 01.12.2013.
- (b) If the Commission allows some other party to lay OPGW on the transmission asset owned and operated by another licensee, the same would necessarily entail the following issues, which need to be considered by this Commission:
- i. The ownership of the OPGW shall remain uncertain as the transmission asset will belong to one entity, and the OPGW shall be owned by another entity.
 - ii. The OPGW which shall be installed may be utilized for commercial purposes such as communication etc., which cannot be allowed to an entity which is not the owner of the transmission asset, and the said entity cannot be permitted to make undue monetary gains by using the said asset.
 - iii. During installation of the OPGW, there may be damage to the existing asset of the Applicant.



- iv. The suitability of OPGW to the existing transmission asset is an important factor, which also requires consideration by this Commission.
 - v. Issues as regards the Right of Way (“RoW”) during the extraction of the existing wire.
 - vi. The Applicant will be liable to be compensated in case of any damage caused by the licensee during the installation of OPGW.
 - vii. Deemed availability/ compensation of financial loss in case of tripping, breakdown, maintenance etc., due to the reason not attributable to the transmission licensee which owns the transmission line in question.
 - viii. Whether O&M will be carried out by the transmission licensee which owns the transmission line in question.
11. The Commission is precluded from granting a license or permission to any other party qua a transmission asset which is owned by t Respondent No. 18.

Submission of other Respondents

12. The other Respondents NER-II Transmission LTD. (NERII), Parbati Koldam Transmission Co. LTD. (PKTCL), Gurgaon Palwal Transmission Co. LTD. (GPTL), Jabalpur Transmission Co. LTD. (JTCL), Maheshwar Transmission Co. LTD. (MTL), RAPP Transmission Co. LTD. (RTCL), Bhopal Dhule Transmission Co. LTD. (BDTCL), Odisha Generator Phase-II Transmission Co. LTD. (OGPTL), East North Interconnection Transmission Co. LTD. (ENICL), Patran Transmission Co. LTD (PTCL) and Purulia & Kharagpur Transmission Co. LTD (PKTCL), vide their individual affidavit dated 29.05.2022 have submitted the similar submission, which are as under:
- (a) The present Petitioner is obligated to comply with the provisions of Communication System Regulations, 2017, which requires the Petitioner to undertake only the planning of the communication system and not undertake installation of OPGW and communication system on the assets of the other transmission licensees.
 - (b) Section 17 of the 2003 Act has a bar on the Petitioner to acquire the transmission assets of any other licensee by any arrangement. The prayers made by the Petitioner are tantamount to the Petitioner acquiring the transmission assets of the



Respondent Licensee for installing OPGW. This is clearly stated in negative language in clause 1(a) of section 17 of the 2003 Act.

(c) The “Guidelines on Planning and Communication System for Inter State Transmission System” do not mandate the CTUIL or PGCIL to install OPGW on the transmission lines/transmission projects owned by other transmission licensees. The said Guidelines state that the proposal made by the Petitioner for the upgradation/modification of the existing ISTS communication system, etc., shall be put up to RPCs for their views.

(d) The following substantial issues arise in the present matter:

(A) Proposal may entail modification of license conditions:

- i. In the event that the Petitioner is to replace the earth wires of other transmission licensees, there may be an issue attracting license amendment, which *inter alia* requires prior permission of the Lenders. Moreover, if the ownership of OPGW is to remain with the Petitioner, then two different transmission licensees will have ownership over one TBCB asset, which will lead to complexities in terms of operation and maintenance of the asset, leveraging of the assets for another business, RoW/crop compensation, outage and availability related claims, etc.

(B) The issue of Deemed Availability.

(C) The issue of CTUIL engaging in “Other Business” under section 41 of the 2003 Act:

- i. The proposal of the Petitioner to install OPGW on the transmission assets of another Transmission Licensee entails the Petitioner to recover capital expenditure and other expenditure on installing the OPGW from the point of connection, transmission charges from the base of customers of the Petitioner.
- ii. Section 41 only allows the transmission licensee to engage in any business for “Optimum Utilization of its assets.” Therefore, under section 41 of the 2003 Act, one transmission licensee cannot engage in another business for utilization of another transmission licensee’s assets.
- iii. There is no basis in fact or in law based on which the Respondent No.1 transmission licensee or any other transmission licensee would permit the



- Petitioner or PGCIL to utilize their own transmission assets for CTUIL/PGCIL to derive revenue from installing the OPGW.
- iv. Under section 41, the Second Proviso thereto prohibits the Respondent No.1 licensee or other transmission licensees from providing their own transmission assets to CTUIL/PGCIL because that would be tantamount to encumbering its transmission assets for the loans/financial assistance that CTUIL/PGCIL would incur for the expenditure on OPGW installation.
 - v. Respondent No.1 licensee/other transmission licensees cannot be deprived of return on investment on their own transmission assets by depriving them of installing the OPGW on their own assets.

(D) The issue of Indemnification: The transmission licensees will be exposed to disputes on account of right-of-way issues with locals, outages, decrease in availability of transmission system, loss of revenue, etc., if the OPGW is installed by CTUIL/PGCIL and hence transmission licensees should be indemnified by CTUIL and/or PGCIL, as the case may be.

- (e) The dismantled earth wires will have to earn scrap value which will be amenable to treatment under the sharing of non-tariff income between the beneficiaries and LTTCs and transmission licensees. Can CTUIL nor PGCIL be permitted to replace the existing earth wires of the transmission assets of the Answering Respondent/other transmission licensees?

Submission of Petitioner

- 13. Petitioner vide affidavit dated 12.05.2023 has submitted that in compliance with the directions of the Commission, a meeting was held between CTUIL & ISTS Transmission Licensees on 08.05.2023, and the minutes of the same have been submitted.

Hearing on 15.05.2023

- 14. During the hearing on 15.05.2023, following has been recorded:

"3. Learned counsel for CTUIL informed that pursuant to the direction of the Commission given in the instant petition vide Record of Proceedings dated 10.3.2022, a meeting was held between CTUIL and ISTS transmission licensees on 8.5.2023, wherein it was recorded that in the earlier meeting held on 13.8.2021, between CTUIL and the transmission licensees, it was agreed by general consensus that unless otherwise requested, the work



regarding installation of OPGW shall be awarded to the asset owner. She further informed that a meeting was also held on 13.3.2023, amongst CTUIL, Powergrid and Sekura pursuant to the directions of the Commission vide RoP dated 10.3.2022 to discuss OPGW installation on 400 kV D/C Malerkotla- Kurukshetra line owned and operated by Sekura wherein Sekura suggested that OPGW work should be awarded to them as additional work being change in the original transmission line scope and cost of the same shall be recovered by revision in their existing TBCB tariff. Learned counsel for the CTUIL submitted that the work shall be awarded in RTM mode and tariff of the same shall be determined by the Commission as per the applicable regulations.

4. Learned counsel for Respondent No.18/WTPL submitted that while passing order in present petition, the Commission may bear in mind that the matter in issue is of Communication System and to what extent the powers under the Electricity Act, 2003 can be used in allowing revenue or in approving or determining tariff of Communication System which is not part of the transmission. In response, learned counsel for the CTUIL submitted that the Communication System is part of the transmission system CTUIL submitted that the work should be awarded in RTM mode and tariff of the same shall be determined by the Commission as per the applicable regulations.”

15. After hearing the Petitioner and Respondents, the Commission reserved the order in the matter on 15.05.2023.

Written Submission of Respondent No. 1, SEKURA NRSS XXXI(B) Transmission Ltd

16. Respondent No.1, **SEKURA NRSS XXXI(B) Transmission Ltd** has made written submissions dated 05.06.2023 as under:
- (a) CTUIL has proposed the following in view of MoP “Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)” dated 09.03.2022 and recent approvals of OPGW on existing lines:
- (i) OPGW installation work under ISTS Communication requirement shall be awarded to the transmission line asset owner.
 - (ii) Terminal equipment associated with OPGW cable shall be awarded to bay owner/s of the transmission line on which OPGW is proposed for installation.
- (b) A consensus has emerged that Respondent No. 1 can undertake the implementation of OPGW in the transmission assets owned by it and further that such OPGW cables will form part of its transmission assets, which ownership would also lie with Respondent No 1.
- (c) The NRSS project has been developed and operated by Respondent No. 1 as a Tariff based Competitive Bidding licensee. All transmission assets forming part of the NRSS XXXI B Project are subject to the tariff that has been arrived at pursuant to competitive bidding in accordance with the guidelines issued by the Ministry of



Power (“MOP”). Accordingly, the regime that governs the tariff of the NRSS XXXI B project falls under Section 63 of the EA 2003.

- (d) OPGW cables do not constitute a standalone asset. It is only a part of the transmission assets of a transmission licensee. The NRSS XXXI B Project is regulated under Section 63 of the EA 2003, it may not be appropriate to apply a separate regulated tariff mechanism for the upcoming OPGW cables of the NRSS XXXI B Project.
- (e) In view of the above, the OPGW cables forming part of the communication system would form an integral part of the transmission lines owned and operated by Respondent No. 1.
- (f) In the context of factoring in the implementation of the Reliable Communications Scheme in the tariff of the TBCB licensee, implementation of the Communication System as part of the NRSS XXXI B project by replacing the earth-wire with OPGW cables is an additional requirement under the mandate of law. Considering that the said requirement has cropped up after the bid deadline, the implications of the above should be considered under the Change in Law provision of the Transmission Service Agreement (TSA).
- (g) The consequences of the Change in Law and, in particular, the computation of the impact thereof upon the tariff have been set out in detail under the TSA. Considering that the TSA governs the tariff for the entire transmission assets in the NRSS project, any change in such tariff would fall within the purview of the TSA.
- (h) There is precedent for allowing additional expenditure incurred on account of a Change in Law to be passed through in the tariff. Reliance is placed on *Talwandi Sabo Power Limited vs Punjab State Electricity Regulatory Commission* [MANU/ET/0054/2020], wherein the Tribunal held that the MoEF and CC Notification constituted a Change in Law event and any additional expenditure incurred on account of the installation of flue-gas desulphurisation system was to be included as Additional Capital Cost. Reliance is also placed on the judgment of the Tribunal in *NRSS XXXI (B) Transmission Limited vs Central Electricity Regulatory Commission* [MANU/ET/0071/2021]. In this case, the Appellant has claimed compensation on account of the increase in the length of the transmission lines due to a change in the Gantry Coordinates from the one indicated in the Survey Report.



- (i) Further, vide its Final Order dated 13.05.2022 in remand proceedings in Petition no. 195MP2017, it was decided as follows:

“16. Accordingly, NTL shall recover from LTTCs the IDC and IEDC incurred for the extended period of SCOD and compensation for the actual change in the length of the Transmission lines as against the length of the Transmission lines in case the Gantry Coordinates would have been same as indicated in the Survey Report in accordance with Article 12.2.1 of the TSA i.e. increase in non-escalable transmission charges at the rate of 0.313% for a cumulative increase of capital cost of Rs. 1.158 crore incurred up to the extended SCOD of the project.”

- (j) Procedurally and administratively, it would be quite difficult and challenging for the TSP, CTUIL & other stakeholders involved actively in the ISTS transmission charges billing, collection & disbursement (BCD) process from a viewpoint that parts of the same transmission asset owned & operated by same Transmission Licensee would be treated under two different tariff regimes i.e. part asset under TBCB Tariff and part asset under RTM mode. The commission may please consider the single tariff regime under the available provision of the TSA for all such similar cases of OPGW laying in the existing transmission TBCB assets.

Analysis and Decision

17. We have considered the submissions of the Petitioner, and Respondents and perused all relevant documents on record. The following issues arise for our consideration:

Issue No. 1: Who shall be responsible for implementing the installation of optical ground wire (OPGW) to strengthen the communication network by replacing the earth wire on the existing transmission line owned by a transmission licensee?

Issue No. 2: What other factors need to be considered while such replacement is carried out, such as the impact on discovered tariff, availability, loss due to damage, etc. for the transmission licensee?

The above issues have been dealt with in succeeding paragraphs.



Issue No. 1: Who shall be responsible for implementing the installation of optical ground wire (OPGW), to strengthen the communication network by replacing the earth wire on the existing Transmission Line owned by a transmission licensee?

18. Petitioner has submitted that the Reliable Communication Scheme under Central Sector for Northern Region for installation of OPGW based reliable communication system with a network size of 7248 kms (including OPGW replacement of ULDC Phase-I), by the Petitioner, was approved in the 39th Meeting of the Northern Regional Power Committee held on 2.5.2017, which was revised to 7398 Km in the 47th Meeting of the Northern Regional Power Committee held on 11.12.2019.
19. Petitioner has taken up the implementation of the project wherein OPGW is to be installed on ISTS transmission lines by replacing existing earth wire for which it has entered into a contract dated 31.1.2019 with M/s Apar Industries Ltd. (APAR) as per which dismantled earth wire shall be taken away by the contractor.
20. Petitioner has approached Respondent No.1 for installation of OPGW on the 400kV D/c Kurukshetra-Malerkotla line, which was opposed by Respondent No. 1 seeking clarifications on the regulations under which Petitioner has proposed to take away part of its asset and the ownership of new OPGW among other queries.
21. Respondent Western Transco Power Limited (WTPL) has submitted that the OPGW which shall be installed may be utilized for commercial purposes such as communication etc., which cannot be allowed to an entity which is not the owner of the transmission asset, and that the said entity cannot be permitted to make undue monetary gains by using the said asset. Further, during the installation of the OPGW, there may be damage to the existing assets of the Applicant. WTPL. Further, the concerns on Deemed availability/ compensation of financial loss in case of tripping, breakdown, maintenance, etc., due to the reason not attributable to the transmission licensee which owns the transmission line in question need to be handled besides who will carry out O&M of such OPGW.
22. The Respondents NER-II Transmission LTD. (NERII), Parbati Koldam Transmission Co. LTD. (PKTCL), Gurgaon Palwal Transmission Co. LTD. (GPTL), Jabalpur Transmission Co. LTD. (JTCL), Maheshwar Transmission Co. LTD. (MTL), RAPP Transmission Co. LTD. (RTCL), Bhopal Dhule Transmission Co. LTD. (BDTCL), Odisha Generator Phase-II Transmission Co. LTD. (OGPTL), East North



Interconnection Transmission Co. LTD. (ENICL), Patran Transmission Co. LTD (PTCL) and Purulia & Kharagpur Transmission Co. LTD (PKTCL) have opposed the replacement of earth wire by any other licensee such as Petitioner.

23. Subsequent to the filing of the instant Petition, several rounds of meetings were undertaken by CTUIL with transmission licensees wherein consensus emerged during the meetings held on 13.3.2023 and 8.5.2023 regarding modalities for implementation of OPGW raised in the instant Petition.
24. We have considered the submissions of the Petitioner and Respondents and have also perused the facts on record.
25. The relevant extracts of the 39th Meeting of the NRPC held on 2.5.2017, and 47th Meeting of the NRPC held on 11.12.2019 are as under:

39th Meeting of the NRPC held on 2.5.2017

"NRPC Deliberations

B.6 Reliable Communication Scheme under Central Sector for Northern Region

B.6.7 NRPC approved the proposal by POWERGRID for installation of 5474 kms. of OPGW based communication scheme, at an estimated cost of Rs.137 Crs."

"B.17 Replacement of OPGW installed under ULDC Phase-I

B.17.6 POWERGRID informed that 24-F OPGW would be considered as per the existing philosophy and along with communication equipment for which the estimated cost would be Rs.59 Crs. The scheme would become part of existing Commercial Agreement signed for ULDC Project and would be implemented as part of Reliable Communication Scheme under Central Sector for Northern Region.

B.17.7 After detailed deliberations NRPC approved the proposal of replacement of old OPGW installed under ULDC phase-I..."

47th Meeting of the NRPC held on 11.12.2019

"B.6.4 After detailed deliberations, the following links were agreed upon:

<i>Sl. No.</i>	<i>Name of Link</i>	<i>Route Length (km)</i>	<i>Purpose</i>
<i>1</i>	<i>400kV Panchkula-Patiala</i>	<i>65.494</i>	<i>Physical Path Redundancy & route diversity for Panchkula S/s</i>
<i>2</i>	<i>400kV Jalandhar Moga</i>	<i>85.15</i>	<i>Physical Path Redundancy & route diversity for Jalandhar (PG) through Central Sector links.</i>
<i>3</i>	<i>400kV Parbati PS - Amritsar</i>	<i>250.53</i>	<i>Path Redundancy & route diversity of Parbati PS (Banala) & Hamirpur 4 through Central sector network.</i>
<i>4</i>	<i>LILO of Parbati - Amritsar at Hamirpur</i>	<i>6.7</i>	



5	400kV Kurukshetra-Malerkotla PG	180	Path Redundancy of Malerkotla (PG) through central sector network.
6	765kV Meerut - Moga	337.15	Route diversity of Moga S/S & creation of reliable ICCP link between Punjab, Rajasthan (through upcoming 765kV Bikaner Moga under GEC Part D & NRLDC).
7	400kV Dehradun-Bagpat	165	Physical path Redundancy & for route diversity of Bagpat S/S
8	400kV RAPP B -Jaipur South with LILO at Kota	226	Redundancy of Kota & RAPP through Central Sector network
9	400kV Allahabad-Singrauli	200	Redundancy of Singrauli
10	400kV Allahabad-Fatehpur 765	130	Strengthening of Inter Regional Connectivity (WR-NR). (400kV Fatehpur – Mainpuri is under implementation under Reliable Communication scheme)
11	400kV Kanpur - Ballabgarh	370	Redundancy of old Agra-Kanpur link which has reached the end of its useful life of 15 years.
12	Chittorgarh 400kV RVPN to Chittorgarh 220kV RVPN	07	Redundancy of Chittorgarh 220/132 through Central Sector network
13	400kV Lucknow – Kanpur	156	Redundancy of Network and avoiding multiple sub-stations
	TOTAL	2179.024	

B.6.5 POWERGRID further informed that in accordance with 39th & 40th NRPC meeting, implementation of 7248 Km OPGW is under execution. POWERGRID also informed that around 2031 km OPGW network is not coming up in the original reliable scheme (as approved in 39th NRPC) as some of the IPPs are not coming up and also connectivity for some were covered in different schemes. Considering the same and additional requirement of 2180 km as proposed for taking care of contingencies as per Communication Planning Criteria, the overall network size approved in 39th & 40th NRPC will increase by only 150 km considering new requirement of 2180 km in lieu of 2031km network not coming up as brought out above.

B.6.6 Accordingly, TeST sub-committee members have agreed for the implementation of 2180 Km of OPGW network under on-going Reliable Communication Project (7248 km) so that the same can be implemented within the same time period. The revised network size of Reliable Communication Project will become 7398 Km.

B.6.7 TCC recommended for the approval of the modified scheme as agreed by TeST subcommittee.

NRPC Deliberations

B.6.8 NRPC concurred with TCC deliberations.”

As per the above, the proposal of the petitioner for the installation of OPGW based communication network for Reliable Communication Scheme under the Central Sector for Northern Region was approved in 39th Meeting of NRPC held on 02.05.2017 and 47th Meeting of NRPC held on 11.12.2019, wherein the installation of OPGW on 400kV Kurukshetra - Malerkotla line (180km) by replacing the earth wire was agreed in 47th meeting of the NRPC.



26. Clauses 7.1.1 and 7.1.2 of the Transmission Service Agreement dated 02.01.2014 of Respondent No.1, as submitted by the Petitioner, provide as under:

“7. OPERATION AND MAINTENANCE OF THE PROJECT

7.1.1 The TSP shall be responsible for ensuring that the Project is operated and maintained in accordance with the Indian Electricity Grid Code (IEGC)/State Grid Code (as applicable), Transmission License, directions of National Load Despatch Centre/RLDC/SLDC (as applicable), Prudent Utility Practices, other legal requirements including the terms of Consents, Clearances and Permits and is made available for use by the Transmission Customers as per the provisions of applicable regulations including but not limited to the Central Electricity Regulatory Commission (Open Access in Inter-state Transmission) Regulations, 2004, Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006, and the Central Electricity Authority Grid Standards of Operation and Maintenance of Transmission Lines (as and when it comes into force) as amended from time to time and provisions of this Agreement.

7.1.2 The TSP shall operate and maintain the Project in an efficient, coordinated and economical manner and comply with the directions issued by the National Load Despatch Centre, RLDC or the SLDC, as the case may be, in line with the provisions of the Electricity Act 2003 and Rule 5 of the Electricity Rules, 2005, and as amended from time to time.”

As per the above, the TSP (i.e. Transmission licensee) is responsible for ensuring the operation and maintenance of the project in an efficient, coordinated and economical manner and in compliance with the Indian Electricity Grid Code (IEGC)/State Grid Code (as applicable), Transmission License, directions of National Load Despatch Centre/RLDC/SLDC (as applicable), Prudent Utility Practices, other legal requirements.

Further, the “Prudent Utility Practices” defined in the TSA are as under:

“Prudent Utility Practices” shall mean the *practices, methods and standards that are generally accepted internationally from time to time by electric transmission utilities for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation, repair and maintenance of the Project and which practices, methods and standards shall be adjusted as necessary, to take account of:*

- (i) operation, repair and maintenance guidelines given by the manufacturers to be incorporated in the Project,*
 - (ii) the requirements of Law, and*
 - (iii) the physical conditions at the Site*
-”*

As per the above, the TSP (i.e. Transmission licensee) is obligated to adopt the practices, methods and standards that are generally accepted internationally from time to time by electric transmission utilities for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation, repair and maintenance of the Project and to take into account the guidelines given by the manufacturers, requirements of law and physical conditions at the site.



27. Regulation 7.2 of the Communication System Regulations, 2017, provides as under:

“7.2 Role of CTU (i) The CTU shall in due consideration of the planning criteria and guidelines formulated by CEA, be responsible for planning and coordination for development of reliable National communication backbone Communication System among National Load despatch Centre, Regional Load Despatch Centre(s) and State Load Despatch Centre(s) and REMCs along with Central Generating Stations, ISTS Sub - Stations, UMPPs, inter-State generating stations, IPPs, renewable energy sources connected to the ISTS, Intra-State entities, STU, State distribution companies, Centralised Coordination or Control Centres for generation and transmission. While carrying out planning process from time to time, CTU shall in addition to the data collected from and in consultation with the users consider operational feedback from NLDC, RLDCs and SLDCs.

(ii) The CTU shall plan the communication system comprehensively and prospectively for users considering the requirement of the expected nodes in consultation with Standing Committee to be constituted by CEA.”

As per the above, CTUIL shall be responsible for planning and coordination for the development of a reliable National communication backbone Communication System among the National Load despatch Centre, Regional Load Despatch Centre(s) and State Load Despatch Centre(s) and REMCs along with Central Generating Stations, ISTS Sub -Stations, UMPPs, inter-State generating stations, IPPs, renewable energy sources connected to the ISTS, Intra-State entities, STU, State distribution companies, Centralized Coordination or Control Centres for generation and transmission.

28. Clause (aa) of Regulation 2(i) and Regulation 7.8 of the Communication System Regulations, 2017, provide as under:

“2(i) aa) “User” means a person such as a Generating Company including Captive Generating Plant, RE Generator, Transmission Licensee [other than the Central Transmission Utility (CTU) and State Transmission Utility (STU)], Distribution Licensee, a Bulk Consumer, whose electrical system is connected to the ISTS or the intra-State transmission system.

.....

7.8 Role of Users:

(i) The Users including renewable energy generators shall be responsible for provision of compatible equipment along with appropriate interface for uninterrupted communication with the concerned control centres and shall be responsible for successful integration with the communication system provided by CTU or STU for data communication as per guidelines issued by NLDC.

(ii) Users may utilize the available transmission infrastructure for establishing communication up to nearest wideband node for meeting communication requirements from their stations to concerned control centres.

(iii) The Users shall also be responsible for expansion /up-gradation as well as operation and maintenance of communication equipment owned by them.”



As per the above, Users, inter-alia including transmission licensee, may utilize the available transmission infrastructure for establishing communication up to the nearest wideband node for meeting communication requirements and shall also be responsible for expansion /up-gradation as well as operation and maintenance of communication equipment owned by them.

29. Regulation 26(1) of the Communication Standards Regulations, 2020 provides as under:

“26. Requirements of fibre optic communication. (1) All wideband communications shall be established using fibre optic communication consisting of underground fibre optic cable, optical ground wire (OPGW) or underground fiber optic cable (UGFO) and all dielectric self supporting (ADSS).”

As per the above, all wideband communications shall be established using fibre optic communication.

30. The Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS) issued by MoP on 09.03.2022 provides as under:

“Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)

1. Introduction

In order to achieve safe, secure, stable and reliable operation of the grid as well as its economical and integrated operation, communication system plays a critical role. The communication system may be treated as an integral part of the transmission system. Therefore, it is imperative to carry out the planning for Communication System in Power Sector.

For planning, and coordination for development of communication system for inter-State transmission system, Central Transmission Utility is designated as the nodal agency.

Ministry of Power has formulated this guidelines named as “Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)”. This guidelines defines the categories of Communication System Schemes for ISTS and their corresponding approval procedure.

2. Objective

Considering the critical role of Communication System in ISTS, a separate guidelines for its planning is essential. This guideline on Planning of Communication System for Inter-State Transmission System (ISTS) is being formulated with the objective to help in efficient, coordinated, smooth, economical and uniform planning of Communication System for ISTS.

3. Applicability

i. This guideline shall come into force from the date of its issuance by the Ministry of Power.

ii. The guidelines shall be applicable for communication system for ISTS only.

4. Categorization of Communication Schemes/Packages



Communication Schemes/Packages under this policy are categorized as Category (A) and Category (B). The description of categories is as under:-

Category (A): Communication system directly associated with new ISTS as well as incidental due to implementation of new ISTS elements (e.g. LILO of existing line on new/existing S/s where OPGW/terminal equipment are not available on the existing main line/substations etc.)

Category (B): Upgradation/modification of existing ISTS Communication system pertaining to following:

- Missing Links
- Redundancy/ System Strengthening
- Capacity upgradation (Terminal equipment)
- Completion of life of existing communication system elements
- Other standalone project e.g. Cyber Security, Unified Network Management System (UNMS)
- Adoption of New Communication Technologies

5. Procedure for approval of Communication Schemes/Packages

Category (A): As planning of ISTS Communication System is an integral part of planning of new Inter-State Transmission System, the requirement for communication system linked with new ISTS shall be included in new ISTS package and combined proposal shall be approved as per the directions contained in MoP office order dated 28.10.2021 regarding Re-constitution of the "National Committee on Transmission" (NCT).

Further, Communication requirements which are incidental due to implementation of new ISTS elements (e.g. LILO of existing line on new/existing S/s where OPGW/Terminal Equipment are not available on the existing main line/substations etc.) are also to be approved alongwith that of respective transmission system package.

Category (B):

Communication Schemes/Packages proposed by CTUIL for upgradation/modification of existing ISTS Communication System, standalone projects, adoption of new technologies shall be put up to RPC for their views. RPC to provide their views on the Schemes/Packages proposed by CTUIL within 45 days of receipt of the proposal from CTUIL.

The Schemes/Packages alongwith the views of RPC shall be approved by NCT.

6. Communication system shall be planned in accordance with Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, Manual of Communication System Planning in Power System Operation published by Central Electricity Authority and other relevant regulations/guidelines/orders/policies issued by Government of India for development of reliable communication system for the power system."

As per the above, Communication Schemes shall be proposed by CTUIL for the upgradation/modification of the existing ISTS Communication System, standalone projects, and adoption of new technologies, respectively.

31. We observe that the modalities of implementation of the said OPGW by the existing transmission licensee or POWERGRID are not covered specifically in the MOP



Communication Guidelines. However, on the direction of the Commission, Petitioner has convened meetings on 14.07.2021,13.08.2021,13.03.2023 and 8.05.2023 with the ISTS licensees to come out with a suitable proposal for smooth and proper adjudication of the issues involved. Consensus for the installation of OPGW by replacing the existing earth wire has been reached in the meetings held on 13.03.2023 and 08.05.2023. The relevant extracts of the same are as follows :

Minutes of the Meeting held on 13.03.2023 between CTU, POWERGRID &NRSS XXXI (B) Transmission Ltd./ Sekura

“

3. CTU added that a compliance affidavit was submitted before CERC after receiving communication from POWERGRID that it has no objection if the implementation of laying of OPGW is undertaken by M/s NRSS XXXI (B) Transmission Ltd. / Sekura on its 400kV D/C Malerkotla - Kurukshetra line. Subsequently M/s NRSS XXXI (B) Transmission Ltd. / Sekura submitted a proposal to CTU via letter dtd. 23.01.2023 for OPGW installation on its 400kV Malerkotla - Kurukshetra line as well as on 400kV Malerkotla – Amritsar line of 48F OPGW on both the lines.
4. CTU further informed that after reviewing the proposal of M/s NRSS XXXI (B) Transmission Ltd. / Sekura, the 400kV D/C Malerkotla – Amritsar line was not found to be required at present for OPGW installation. Moreover, the OPGW fibre capacity of 24F is sufficient at present. In view of this CTU has put up an agenda in 63rd NRPC for OPGW installation on the 400kV D/C Malerkotla - Kurukshetra line with 24F OPGW. NRPC after deliberations, was of the view that Hon'ble CERC should be apprised about the proposal before reviewing in RPC and getting approved in NCT. If M/s NRSS XXXI (B) Transmission Ltd. / Sekura wants to install OPGW on its 400kV D/C Malerkotla – Amritsar line and 48F in place of 24F in both 400kV D/C Malerkotla - Kurukshetra line & 400kV D/C Malerkotla – Amritsar line, the cost of the OPGW with 48F on 400kV Malerkotla – Amritsar line and additional fibers of 400kV D/C Malerkotla - Kurukshetra line shall be borne by the M/s NRSS XXXI (B) Transmission Ltd. / Sekura.
5. CTU further stated that the various issues raised earlier by M/s NRSS XXXI (B) Transmission Ltd. / Sekura viz., impact on tariff and revenue after replacement of earthwire with OPGW (POWERGRID Ownership), handing over the earth wire to POWERGRID, rectification of any damaged asset in the process of OPGW installation, prior intimation & work planning of OPGW laying work and; details of responsible contractor, indemnification on of any outage or claimed compensation by any landowner, issue related to the ownership of the OPGW and its O&M, and issue related to any commercial use of OPGW etc. shall get resolved as the OPGW laying work shall be awarded to NRSS XXXI (B) Transmission Ltd. / M/s Sekura after NCT approval under RTM mode, and M/s Sekura being the Owner of this ISTS transmission line the ownership of this OPGW would also remain with them.
6. NRSS XXXI (B) Transmission Ltd. / M/s Sekura suggested that this OPGW work shall be awarded to them as additional work by change in the original transmission line scope and cost of the same shall be recovered by revision in their existing TBCB tariff. However, CTU stated that as the TBCB asset has already lived its prominent life so this work shall be awarded in RTM mode and tariff of the same shall be determined by the applicable RTM regulations of CERC.
7. CTU stated that deliberations of this meeting shall be communicated to CERC as part of Petition no. 94/MP/2021.



.....”

As per the above, NRSS XXXI(B) Transmission Ltd / M/s Sekura suggested installing 48 F OPGW in place of 24 Fibre suggested by CTUIL. Further, Sekura suggested that OPGW work may be awarded to them as additional work by a change in the original transmission line scope, and the cost of the same may be recovered by a revision in their existing TBCB tariff. However, CTU stated that this work shall be awarded in RTM mode, and the tariff of the same may be determined as per RTM regulations of CERC. Further, CTU also stated that various issues raised earlier by M/s NRSS XXXI (B) Transmission Ltd. / M/s Sekura shall also be resolved by awarding the OPGW work to them.

Minutes of the Meeting held between CTU & ISTS Transmission Licensees on 08.05.2023

“7. With reference to above ROP and MOP guidelines, CTU proposed below mentioned methodology for deliberation during the meeting:

Sr. No.	CTUIL proposal for deliberations
(i)	<p><i>In view of MoP “Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)” dtd. 09.03.2022 and recent approvals of OPGW on existing lines, following is proposed:</i></p> <p><i>(i) OPGW installation work under ISTS Communication requirement shall be awarded to the transmission line asset owner.</i></p> <p><i>(ii) Terminal equipment associated with OPGW cable shall be awarded to bay owner/s of the transmission line on which OPGW is proposed for installation.</i></p> <p><i>If the Asset owners refuses the work same shall be deliberated in the NCT and awarded to other party with consent of existing asset owner/s.</i></p>
(ii)	<p><i>Other views of Transmission licensees on the above</i></p>

8. Sekura agreed for the methodology put up by CTU, however they raised the concern of provision of Fibre Optic Terminal equipment (FOTE) at bays level for their line, 400kV Kurukshetra- Malerkotla. POWERGRID confirmed they shall provide FOTE as the bays are owned by them as suggested by CTU.

9. Indigrd enquired about the modalities of using OPGW for ISTS communication which is provided by the TSP which was not originally in the scope of RFP of a transmission line. CTU informed that such issues shall be dealt on case-to-case basis in the RPC forum, in view of ISTS system requirement.

10. Other licenses also agreed to the CTU proposal.

.....”

As per the above, it was agreed that OPGW installation work under ISTS Communication requirement might be awarded to the transmission line asset



owner, and if the asset owners refuse the work, same may be deliberated in the NCT and awarded to another party with the consent of existing asset owner(s).

32. We observe that Communication systems are essential to facilitate secure, reliable and economic operation of the grid and are an important pre-requisite for the efficient monitoring, operation and control of the power system CTU, has been entrusted with the responsibility of planning and coordination for the development of an efficient and coordinated communication system on a regional basis to provide a backbone communication system for the ISTS under various Regulations of CEA and CERC and Guidelines of MOP.

33. We observe that during the meetings held on 13.03.2023 and 8.5.2023, Petitioner CTUIL and Respondent No.1 Sekura have agreed on the modalities of implementation of OPGW on instant transmission asset of Malerkotla-Kurukshetra line. Further, during the hearing on 15.05.2023, CTUIL based on the meeting held on 08.05.2023 between CTU and various transmission licensees, submitted that the OPGW work may be awarded to the transmission line asset owner. Accordingly, the work of replacement of earth wire under instant case may be allowed to be executed by the transmission licensee owning such earth wire following the required procedure with the approval of the competent authority.

Issue No. 2: What other factors need to be considered while such replacement is carried out, such as impact on discovered tariff, availability, loss due to damage etc, for the Transmission licensee?

34. During the Meeting held on 13.03.2023 and during a hearing on 15.05.2023, CTU has submitted that the work may be awarded in RTM mode and the tariff of the same may be determined by the Commission as per the applicable regulations.

35. Respondent No.1 has submitted that the implementation of the Communication System by replacing the earth-wire with OPGW cables is an additional requirement under the mandate of law, and the same may be considered under the Change in Law provision of the Transmission Service Agreement (TSA). Further, the consequences of Change in Law and, in particular, the computation of the impact thereof upon the tariff have been set out in detail under the TSA, and any change in tariff would fall within the purview of the TSA.



36. We observe that installation of OPGW is a requirement which has emerged at a stage after the TBCB project has been declared commercial. Further, we observe that the tariff of the TBCB Project is governed in terms of TSA and are of the view that appropriate compensation needs to be provided for recovery of additional expenditure towards OPGW installation and its maintenance by the licensee.
37. We have perused the TSA signed on 02.01.2014 between NRSS XXXI (B) Transmission Limited and LTTCs, submitted in another Petition No. 89/TT/2014, which provides the treatment of Change in Law as under:

“12 CHANGE IN LAW

12.1 Change in law

12.1.1 *Change in law means the occurrence of any of the following after the date, which is seven (7) days prior to the Bid Deadline resulting into any additional recurring/ non – recurring expenditure by the TSP or any income to the TSP:*

- *The enactment, coming into effect, adoption, promulgation, amendment, modification or repeal (without re-enactment or consolidation) in India, of any Law, including rules and regulations framed pursuant to such Law;*
- *a change in the interpretation or application of any Law by any Indian Governmental Instrumentality having the legal power to interpret or apply such Law, or any Competent Court of Law;*
- *the imposition of a requirement for obtaining any Consents, Clearances and Permits which was not required earlier;*
- *a change in the terms and conditions prescribed for obtaining any Consents, Clearances and Permits or the inclusion of any new terms or conditions for obtaining such Consents, Clearances and Permits;*
- *any change in the licensing regulations of the Appropriate Commission, under which the Transmission License for the Project was granted if made applicable by such Appropriate Commission to the TSP;*
- *any change in the Acquisition Price; or*
- *any change in tax or introduction of any tax made applicable for providing Transmission Service by the TSP as per the terms of this Agreement*

12.2 Relief for Change in Law

12.2.1 During Construction Period

During the Constriction Period, the impact of increase/decrease in the cost of the Project in the Transmission Charges shall be governed by the formula given below:

- *For every cumulative increase/decrease of each Rupees One Crore Fifteen Lakhs Eighty Thousand Only (Rs. 1.158 Cr) in the cost of the Project up to the Scheduled COD of the Project, the increase/decrease in Non-Escalable Transmission Charges shall be an amount equal to Zero Point Three One Three percent (0.313%) of the Non-Escalable Transmission Charges.*

12.2.2 During the Operation Period:

During the Operation Period, the compensation for any increase/decrease in revenues shall be determined and effective from such date, as decided by the Appropriate Commission whose decision shall be final and binding on both the Parties, subject to rights of appeal provided under applicable Law.

Provided that the above mentioned compensation shall be payable only if the increase/decrease in revenues or cost to the TSP is in excess of an amount equivalent to one percent (1%) of Transmission Charges in aggregate for a Contract Year.



12.2.3 For any claims made under Articles 12.2.1 and 12.2.2 above, the TSP shall provide to the Long Term Transmission Customers and the Appropriate Commission documentary proof of such increase/decrease in cost of the Project/ revenue for establishing the impact of such Change in Law.

12.2.4 The decision of the Appropriate Commission, with regards to the determination of the compensation mentioned above in Articles 12.2.1 and 12.2.2, and the date from which such compensation shall become effective, shall be final and binding on both the Parties subject to rights of appeal provided under applicable Law.”

We observe that the instant case of replacement of earth wire with OPGW is a work which was not part of the original scope of TSA. Since the OPGW has not been provided with a separate transmission licence, we are not inclined to consider the suggestion of CTU to consider the instant work of replacement under RTM. We observe that TSA provides for treatment of additional expenditure under “Change in Law”. We are of the considered view that additional expenditure on account of the replacement of earth wire after adjusting the buy-back or the scrap value of that earth-wire shall be treated in the manner as expenditure under Change in Law so that its recovery is simplified. The transmission licensee is directed to follow a transparent process of competitive bidding while implementing such work. After implementation of the work, the transmission licensee is required to approach the Commission for approval of such expenditure along with audited data of the expenditure and details of competitive bidding carried out by it. The transmission licence shall not be required to be amended to include OPGW since the transmission licence issued to Respondent No.1 does not specifically provide the specification of earth wire, and OPGW shall be considered within the same transmission licence.

38. Further regarding the treatment of deemed availability for the period when such replacement is carried out, we have perused the TSA signed on 02.01.2014 between NRSS XXXI (B) Transmission Limited and LTTCs, submitted in another Petition No. 89/TT/2014, which provides the provision for availability of the project as under:

“8 AVAILABILITY OF THE PROJECT

8.1 Calculation of Availability of the Project:

Calculation of Availability for the Elements and for the Project, as the case may be, shall be as per Appendix IV of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, as applicable seven (7) days prior to the Bid Deadline and as appended in Schedule 9.

.....



Schedule 9

Appendix IV of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009

Procedure for Calculation of Transmission System Availability Factor for a Month

.....
5. The transmission elements under outage due to following reasons shall be deemed to be available:

i. Shut down availed for maintenance or construction of elements of another transmission scheme. If the other transmission scheme belongs to the transmission licensee, the Member-Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved.

ii. Switching off of a transmission line to restrict over voltage and manual tripping of switched reactors as per the directions of RLDC.

.....”

As per the above, the transmission elements under outage due to shutdown availed for maintenance or construction of elements of another transmission scheme, which may be of the same transmission licensee also, shall be deemed to be available. Hence the issue of deemed availability shall be handled accordingly.

39. Considering the above we are of view that the treatment of deemed availability during the period of OPGW installation work by replacing the exiting earth wire, shall be treated in terms of the provisions under TSA.

40. CTUIL is directed to follow similar principles for facilitating and allowing OPGW installation by other transmission licensees.

41. The Petition No. 94/MP/2021 is disposed of in terms of the above.

Sd/
(P. K. Singh)
Member

Sd/
(Arun Goyal)
Member

Sd/
(I. S. Jha)
Member

Sd/
(Jishnu Barua)
Chairperson



Tej Prakash Verma {तेजप्रकाश वर्मा}

From: Sangeet Attri <sangeet.attri@sterlite.com>
Sent: Wednesday, May 8, 2024 11:23 AM
To: Prakhar Pathak {प्रखर पाठक}
Cc: H S Kaushal {एच.एस. कौशल}; Shiv Kumar Gupta {एस.के. गुप्ता}; Kalpana Shukla {कल्पना शुक्ला}; Kaushal Suman {कौशल सुमन}; Tatimakula Amarendranath Reddy; Sandip Maity; Aryaman Saxena; Tej Prakash Verma {तेजप्रकाश वर्मा}; Abhay Kumar {}
Subject: RE: Cost estimate for the upgradation of Gateway/ FOTE Ports for 2+2 SCADA channels requirement for RLDC

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Respected Sir,

With reference to the trail mail, the tentative cost estimate for each station Gateway augmentation would be approx. 30 Lakh + applicable duties & overheads based on present market rate.

However, it is also submitted that as per time frame of actual implementation this cost may vary based on market condition.

Regards,
Sangeet Attri
Chief Manager- Regulatory Affairs
Sterlite Power
8745915399

From: Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>
Sent: Monday, May 6, 2024 4:30 PM
To: Sangeet Attri <sangeet.attri@sterlite.com>
Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Tatimakula Amarendranath Reddy <tan.reddy@sterlite.com>; Sandip Maity <sandip.maity@sterlite.com>; Aryaman Saxena <aryaman.saxena1@sterlite.com>; Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>; Abhay Kumar {} <abhay3031@powergrid.in>
Subject: Cost estimate for the upgradation of Gateway/ FOTE Ports for 2+2 SCADA channels requirement for RLDC

[EXTERNAL EMAIL] Do not click links or attachments unless you recognize the sender and know the content is safe.

Dear Sir,

This is with reference to the trailing mail, it is requested that tentative cost estimate may be provided for the upgradation of additional ethernet ports in Gateway & FOTE as per the locations furnished by you in trailing mail for the preparation of scheme.

It is requested to provide the cost estimate by **08.05.2024**.

Regards

From: Sangeet Attri <sangeet.attri@sterlite.com>
Date: Monday, 8 April 2024 at 6:55 PM
To: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>
Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>, Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>, Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>, Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>, Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>, Ashok Pal {अशोक पाल} <ashok@powergrid.in>, Tatimakula Amarendranath Reddy <tan.reddy@sterlite.com>, Sandip Maity <sandip.maity@sterlite.com>, Aryaman Saxena <aryaman.saxena1@sterlite.com>
Subject: FW: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

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Respected Sir,

Please find attached the desired data of the operational assets viz. Lakadia-Vadodra Transmission Project Limited (**LVTPL**) & Mumbai Urja Marg Limited-D (**MUML-D**) pertaining to Sterlite Power Transmission Limited (**SPTL**).

In addition to Operational Asset detail mentioned in the attachment , for other under construction projects (which are having bays and S/Stn), associated with SPTL , the desired detail has been tabulated below:

Sl.No.	Name of Bays / Substation	Project	Additional port in main and standby SAS Gateway/ RTUs	Additional ethernet ports in the FOTE available at ISTS substations
1	2x500MVA, 400/220kV S/stn at Xeldem	Goa Tamnar Transmission Limited (GTTPL)	Not Available	Yes, 2 additional ethernet ports in the FOTE.
2	2x500MVA, 400/220 kV S/stn at Kasargode	Udupi Kasargode Transmission Limited (UKTL)	Not Available	Yes, 2 additional ethernet ports in the FOTE.
3	2 x 500 MVA, 400/220 kV S/s at Vapi – II	Mumbai Urja Marg Limited (MUML-B)	Not Available	Yes, 2 additional ethernet ports in the FOTE.
4	400/132 kV pooling Station at Kishtwar	Kishtwar Transmission Limited	Not Available	Yes, 2 additional ethernet ports in the FOTE.
5	2X1500MVA , 765/400kV S/s at Beawar	Beawar Transmission Limited (BTL)	Not Available	Yes, 2 additional ethernet ports in the FOTE.
6	2 nos. of 765 kV line Bays at both Beawar & Fatehgarh-3 Substations	Fatehgarh III Beawar Transmission Limited (FIIIBTL)	Not Available	Yes, 2 additional ethernet ports in the FOTE.
7	Establishment of 765/400 kV, 4x1500 MVA Neemrana-II S/s	Neemrana II Kotputli Transmission Limited (NIKTL)	Not Available	Yes, 2 additional ethernet ports in the FOTE.

8	-2 Nos. of 22V kV Line Bays at Bongaigaon (PGCIL) S/stn - 2 Nos. 132 kV Line Bays at Ampati (Meghalaya) - 2 Nos. 132 kV Line Bays at Ampati (Meghalaya)	Nangalbimbura Bongaigaon Transmission Limited(NBTL)	Not Available	Yes, 2 additional ethernet ports in the FOTE.
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Submitted for your kind perusal please.

Regards,
Sangeet Attri
Chief Manager- Regulatory Affairs
Sterlite Power
8745915399

From: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>

Sent: Friday, April 5, 2024 4:12 PM

To: Hareshp.Vaghasiya@adani.com; ashish.bhakre@adani.com; Prateek Mohan Rai <prateek.raai@sterlite.com>; Md Sharique Afzal <sharique.afzal@sterlite.com>; Bharat <bharatkumar.varu@sterlite.com>; pinkesh.kumar@indigrid.com; Lokendra Ranawat <lokendra.ranawat@indigrid.com>; diwakar.kumar@adani.com; sumit.mehta@adani.com; Mahendra singh dabi <Mahendrasingh.dabi@adani.com>; Jeetendra Bisht <jeetendra.bisht@sterlite.com>; mohit.jain@renew.com; mohit.jain@renew.com; gopal.eti@apraava.com; suresh.a@renewpower.in; ronaknaik@torrentpower.com; Mohit.jain@renewpower.in; modassar.a@grinfra.com; ronaknaik@torrentpower.com; neeraj.verma@sekura.in

Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>

Subject: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

Importance: High

[EXTERNAL EMAIL] Do not click links or attachments unless you recognize the sender and know the content is safe.

Dear Sir/Madam,

This is with reference to requirement of dual channel reporting at Main RLDC and backup RLDC requested by Grid-India. Presently one channel of SCADA data (from SAS Gateway/RTU) reporting to main RLDC and second channel of SCADA data from another gateway of SAS / RTU reporting to backup RLDC. To enhance more redundancy in the system in view of grid-operation Grid-India has requested CTU to plan 2+2 SCADA channels to Main as well as Backup RLDC.

In this regard some of the meetings held with CEA/RLDC where it was decided that for the new TBCB projects requirement of 2+2 channel shall be provided in the RFP document (that has been started now by CTU). And for existing/ under construction ISTS substations CTU shall plan for 2+2 channels in coordination with ISTS licensees.

It is requested that all TSPs/ ISTS Licensees shall provide following details:

1. Availability of 1 additional port in main and standby SAS Gateway/ RTUs

2. 2 additional ethernet ports in the FOTE available at ISTS substations

After getting this information we will take further action for planning of 2+2 channel requirement for RLDC/Backup RLDCs.

The details may be provided at earliest.

Thanks & Regards,
T P Verma,
Chief Manager (Comm),
Central Transmission Utility of India Ltd.,
1st Floor, Suadamini, Plot No. 2, Sector-29,
Gurugram (Haryana) – 122001.
Phone No.- +91-124-2822154
Mo. +91-9650598191

दावात्याग : यह ईमेल पावरग्रिड के दावात्याग नियम व शर्तों द्वारा शासित है जिसे <http://apps.powergrid.in/Disclaimer.htm> पर देखा जा सकता है।

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FW: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

Ghosh, Siddhartha <siddhartha.ghosh@apraava.com>

Fri 4/19/2024 1:13 PM

To: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>

Cc: Beg, Haziq <haziq.beg@apraava.com>; Dhakar, Rajesh <rajesh.dhakar@apraava.com>; S, Ramesh Kumar <ramesh.kumar@apraava.com>; Khandekar, Neeraj <neeraj.khandekar@apraava.com>; Kundra, Ashish <ashish.kundra@apraava.com>; Madhanagopal, K <k.madhanagopal@apraava.com>; Sinha, Sumit Kumar <sumit.sinha@apraava.com>; Eti, Gopal Kiran Sai <gopal.eti@apraava.com>

You don't often get email from siddhartha.ghosh@apraava.com. [Learn why this is important](#)

Dear Sir,

The requirement of dual-channel reporting at Main RLDC and backup RLDC as requested by Grid-India has been carefully reviewed and the confirmation is given below;

1. Availability of 1 Additional Port in Main and Standby SAS Gateway/RTUs:

We confirm that both the main and standby SAS Gateway/RTUs have the availability for an additional port. This ensures the implementation of dual-channel reporting effectively.

2. Availability of 2 Additional Ethernet Ports in the FOTE at ISTS Substations:

Our ISTS substations will be equipped with the necessary infrastructure to accommodate 2 additional Ethernet ports in the FOTE. This enhancement will support improved connectivity and redundancy in line with the grid-operation requirements set forth by Grid-India.

We understand the criticality of these requirements in enhancing system redundancy and reliability, and we are committed in ensuring that our infrastructure aligns with the standards and expectations outlined and also share this requirement to the OEM of SAS/FOTE to develop the architecture as per Grid-INDIA requirement

Regards,
Siddhartha Ghosh

General Manager (Engg. & Tech Support)
Apraava Renewable Energy Pvt. Ltd

Apraava Energy Information Classification: PROPRIETARY

Apraava Energy Information Classification: PROPRIETARY

Apraava Energy Information Classification: PROPRIETARY

From: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>

Sent: Friday, April 5, 2024 4:12 PM

To: Hareshp.Vaghasiya@adani.com; ashish.bhakre@adani.com; prateek.rai@sterlite.com; sharique.afzal@sterlite.com; Bharatkumar Varu <bharatkumar.varu@sterlite.com>; pinkesh.kumar@indigrid.com; Lokendra Ranawat <lokendra.ranawat@indigrid.com>; diwakar.kumar@adani.com; sumit.mehta@adani.com; Mahendra singh dabi <Mahendrasingh.dabi@adani.com>; Jeetendra Bisht <jeetendra.bisht@sterlite.com>; mohit.jain@renew.com; mohit.jain@renew.com; Eti, Gopal Kiran Sai <gopal.eti@apraava.com>;

suresh.a@renewpower.in; ronaknaik@torrentpower.com; Mohit.jain@renewpower.in;
modassar.a@grinfra.com; ronaknaik@torrentpower.com; neeraj.verma@sekura.in

Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Prakhar Pathak {प्रखर पाठक} <prakharpatak321@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>

Subject: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

Importance: High

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The details may be provided at earliest.

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Chief Manager (Comm),

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1st Floor, Suadamini, Plot No. 2, Sector-29,

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Phone No.- +91-124-2822154

Mo. +91-9650598191

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6NDVjZjgxN2MwNDg3Y2UyOTgyNTBkYjI5YzRiYWU2NGY6NjpmMzc5Ojk2MTg0Zjg0YmY2ZWNIOTY2MzE2OGUwYzlkZGM2MjM1ODQ3MjcZjFjM2RlMjI5ZGMzZTU4N2FIM2FINzIzZDY6dDpU

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Tej Prakash Verma {तेजप्रकाश वर्मा}

From: Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>
Sent: Monday, June 10, 2024 4:36 PM
To: Prakhar Pathak {प्रखर पाठक}
Cc: H S Kaushal {एच.एस. कौशल}; Shiv Kumar Gupta {एस.के. गुप्ता}; Kalpana Shukla {कल्पना शुक्ला}; Kaushal Suman {कौशल सुमन}; Vivek Karthikeyan; Tej Prakash Verma {तेजप्रकाश वर्मा}; Manvendra Singh Hada; Narinder Singh; Prayas Gupta
Subject: RE: Reminder: Re: Cost estimate for the upgradation of Gateway/ FOTE Ports for 2+2 SCADA channels requirement for RLDC

General

Dear Sir,

This is with reference to the requirement sought by CTUIL in the trailing email, in view of the same please be informed that the details of ports that are vacant at respective substation under IndiGrid portfolio was provided to your kind office earlier. However, it is pertinent to mention that the details that were provided earlier were corresponding to the present status of free ports at each substation and the future utilization of those ports was not evaluated at that point in time.

In order to identify the utilization of these ports at respective substations, we have started a correlation with respect to the overall scope that has been provided for these substations under the TSA as well as the additional requirements that are to be captured under the latest provisions placed under Indian Electricity Grid Code. This exercise is underway and would take approx. a week's time in collating complete data. Additionally, we have also reached out to OEMs to confirm us the operationality of existing system with new gateway card arrangement, if need so be.

Accordingly, we request you to grant us another 15 working days so that a concise and precise data is provided.

Regards

Lokendra Singh Ranawat
Head Regulatory | IndiGrid

M: 9311279183

lokendra.ranawat@indigrid.com

10th Floor, Berger Delhi One Towers,
Sector-16 B, Noida, Uttar Pradesh

www.indigrid.co.in

From: Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>
Sent: Monday, June 10, 2024 3:03 PM
To: Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>
Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Vivek Karthikeyan <vivek.karthikeyan1@indigrid.com>; Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>
Subject: Reminder: Re: Cost estimate for the upgradation of Gateway/ FOTE Ports for 2+2 SCADA channels requirement for RLDC

Some people who received this message don't often get email from prakharpathak321@powergrid.in. [Learn why this is important](#)

General

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Dear Sir,

This is a gentle reminder to provide the tentative cost estimate for the upgradation of additional ethernet ports in Gateway & FOTE as per the locations furnished by you for preparation of scheme.

Regards
Prakhar Pathak
Engineer
CTUIL

From: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>
Date: Monday, 6 May 2024 at 1:20 PM
To: Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>
Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>, Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>, Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>, Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>, Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>, Vivek Karthikeyan <vivek.karthikeyan1@indigrid.com>
Subject: Cost estimate for the upgradation of Gateway/ FOTE Ports for 2+2 SCADA channels requirement for RLDC

Dear Sir,

This is with reference to trailing, it is requested that tentative cost estimate may be provided for the upgradation of additional ethernet ports in Gateway & FOTE as per the locations furnished by you for preparation of scheme:

Sr. No.	SS	Spare SAS Ports	Tentative cost estimate for additional ports at gateway	FOTE Ethernet Spare Ports	Tentative cost for additional ports at FOTE
3	Dhule	Gateway-1- 0 nos Gateway-2- 1 nos		5	
7	Kabulpur	RTU 1 - 0 nos RTU 2 - 1 nos		SDH Cabinet panel -Keymile XMP1-LCC Port. Spare port - 11 Nos	
8	Prithla	Gateway-1- 3 nos Gateway-2- 0 nos		Tejas Panel- 0; GE(Alstom) Panel-8	
10	Kadarpur	Gateway-1- 1 Nos Gateway-2= NA		11	
11	PK Bari	Gateway-1- 2 nos Gateway-2- 2 nos		0	

It is requested to provide the cost estimate by 08.05.2024.

Thanks & Regards,
T P Verma,
DGM (Comm),
Central Transmission Utility of India Ltd.,
1st Floor, Suadamini, Plot No. 2, Sector-29,
Gurugram (Haryana) – 122001.
Phone No.- +91-124-2822154
Mo. +91-9650598191

From: Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>
Sent: Thursday, May 2, 2024 7:01 PM
To: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>
Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>; Vivek Karthikeyan <vivek.karthikeyan1@indigrid.com>
Subject: RE: Gentle Reminder: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

General

Dear Sir,

As per request below is the current status of spare ports availability at various SPVs under IGT portfolio.

1. Availability of 1 additional port in main and standby SAS Gateway/ RTUs (Status Below)
2. 2nos additional ethernet ports in the FOTE available at ISTS substations (Status Below)

Sr. No.	SS	Spare SAS Ports	FOTE Ethernet Spare Ports
1	Amargarh	Gateway-1- 1 nos Gateway-2- 1 nos	Tejas Panel-18 & RJ45 port-5, GE Panel-8
2	Bhopal	Gateway-1- 1 nos Gateway-2- 1 nos	Tejas Panel-16 GE Panel-7
3	Dhule	Gateway-1- 0 nos Gateway-2- 1 nos	5
4	Khandwa	Gateway-1- 1 nos Gateway-2- 2 nos	20
5	Patran	Gateway-1- 2 nos Gateway-2- 2 nos	Ethernet port: 12 FO port: 10
6	Dipalpur	RTU 1 - 1 nos RTU 2 - 1 nos	SDH Cabinet panel -Keymile XMP1-LCC Port. Spare port - 11 Nos
7	Kabulpur	RTU 1 - 0 nos RTU 2 - 1 nos	SDH Cabinet panel -Keymile XMP1-LCC Port. Spare port - 11 Nos
8	Prithla	Gateway-1- 3 nos Gateway-2- 0 nos	Tejas Panel- 0; GE(Alstom) Panel-8
9	Sohna	Gateway-1- 5 nos Gateway-2- 4 nos	Tejas Panel-5 (1 RJ45 port and 4 slot); GE Panel-6 Port
10	Kadarpur	Gateway-1- 1 Nos Gateway-2= NA	11

11	PK Bari	Gateway-1- 2 nos Gateway-2- 2 nos	0
12	SM NAGAR	Gateway-1- 2 nos Gateway-2- 2 nos	2

This is for your kind information please.

Regards

Lokendra Singh Ranawat
Head Regulatory | IndiGrid

M: 9311279183

lokendra.ranawat@indigrid.com

10th Floor, Berger Delhi One Towers,
Sector-16 B, Noida, Uttar Pradesh

www.indigrid.co.in

From: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>

Sent: Wednesday, April 17, 2024 11:48 AM

To: Hareshp.Vaghasiya@adani.com; ashish.bhakre@adani.com; Pinkesh Kumar <pinkesh.kumar@indigrid.com>; Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>; diwakar.kumar@adani.com; sumit.mehta@adani.com; Mahendra singh dabi <Mahendrasingh.dabi@adani.com>; Jeetendra Bisht <jeetendra.bisht@sterlite.com>; mohit.jain@renew.com; mohit.jain@renew.com; gopal.eti@apraava.com; suresh.a@renewpower.in; ronaknaik@torrentpower.com; Mohit.jain@renewpower.in; modassar.a@grinfra.com; ronaknaik@torrentpower.com

Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>

Subject: Gentle Reminder: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

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Gentle Reminder

Dear Sir/ Madam,

This is with reference to trailing mail, please provide the details latest by 19.04.24 so that we can form a scheme for deliberations in various forums.

Thanks & Regards,

T P Verma,

Chief Manager (Comm),

Central Transmission Utility of India Ltd.,

1st Floor, Suadamini, Plot No. 2, Sector-29,

Gurugram (Haryana) – 122001.

Phone No.- +91-124-2822154

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Sent: Friday, April 5, 2024 4:12 PM

To: Hareshp.Vaghasiya@adani.com; ashish.bhakre@adani.com; prateek.raai@sterlite.com; sharique.afzal@sterlite.com; Bharatkumar Varu <bharatkumar.varu@sterlite.com>; pinkesh.kumar@indigrid.com; Lokendra Ranawat <lokendra.ranawat@indigrid.com>; diwakar.kumar@adani.com; sumit.mehta@adani.com; Mahendra singh dabi <Mahendrasingh.dabi@adani.com>; Jeetendra Bisht <jeetendra.bisht@sterlite.com>; mohit.jain@renew.com; mohit.jain@renew.com; gopal.eti@apraava.com; suresh.a@renewpower.in; ronaknaik@torrentpower.com; Mohit.jain@renewpower.in; modassar.a@grinfra.com; ronaknaik@torrentpower.com; neeraj.verma@sekura.in

Cc: H S Kaushal {एच.एस. कौशल} <hsk@powergrid.in>; Shiv Kumar Gupta {एस.के. गुप्ता} <shivkumar@powergrid.in>; Kalpana Shukla {कल्पना शुक्ला} <kalpanashukla@powergrid.in>; Prakhar Pathak {प्रखर पाठक} <prakharpatak321@powergrid.in>; Kaushal Suman {कौशल सुमन} <k.suman@powergrid.in>; Ashok Pal {अशोक पाल} <ashok@powergrid.in>

Subject: Urgent: Details required regarding 2+2 SCADA channels requirement for RLDC

Importance: High

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The details may be provided at earliest.

Thanks & Regards,

T P Verma,

Chief Manager (Comm),

Central Transmission Utility of India Ltd.,

1st Floor, Suadamini, Plot No. 2, Sector-29,

Gurugram (Haryana) – 122001.

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Inputs received by ADANI POWER (Pvt.TBCB)

SR.NO.	PLANT	DATA REPORTING TO	LINK TYPE	2024-05-01 STATUS	GATEWAY SPARE PORT	FOTE SPARE PORT	DATA LINK TYPE	REMARK
1	400kv Fategarh	NRLDC	NRLDC-MAIN	In Service	YES	YES	FOTE	
2	400kv Fategarh	NRLDC	NRLDC- BACKUP	In Service				
3	765/400kv Lakadia	WRLDC	WRLDC-MAIN	In Service	YES	YES	FOTE	
4	765/400kv Lakadia	WRLDC	WRLDC-BACKUP	In Service				
5	440/220 kv Jam Khambhaliya	WRLDC	WRLDC-MAIN	In Service	YES	YES	MPLS	OPGW Connectivity can be establish after powergrid confirm their
6	440/220 kv Jam Khambhaliya	WRLDC	WRLDC-BACKUP	In Service				
7	765kv Rajnandgaon	WRLDC	WRLDC-MAIN	In Service	YES	YES	FOTE	
8	765kv Rajnandgaon	WRLDC	WRLDC-BACKUP	In Service				
9	400/220kv Dhanbad	ERLDC	ERLDC Main	In Service	Yes	YES	FOTE	
10	400/220kv Dhanbad	ERLDC	ERLDC Backup	In Service				
11	765/400kv Khavda	WRLDC	WRLDC-MAIN	In Service	YES	YES	FOTE	
12	765/400kv Khavda	WRLDC	WRLDC-BACKUP	In Service				
13	765/400kv Khavda	NRLDC	NRLDC	In Service	YES	YES	FOTE	
14	765kv Warangal	SRLDC	SRLDC-MAIN	In Service				
15	765kv Warangal	SRLDC	SRLDC-BACKUP	In Service	Yes	YES	FOTE	
16	400/220kv Morena	WRLDC	WRLDC-MAIN	In Service				
17	400/220kv Morena	WRLDC	WRLDC-BACKUP	In Service				

Minutes for 5th Meeting for Planning of Communication system for Inter-State Transmission system (ISTS) of Northern Region (NR-CPM) held in virtual mode (MS-Teams) on 20th March 2024

The 5th meeting of NR-CPM held on 20.03.2024 through virtual mode (MS-Teams).

The list of participants is attached at *Annexure-I*.

CM (CTU) welcomed all the participants at the meeting and proceeded with the agenda items.

Agenda wise deliberation are as under:

A. Confirmation of Minutes of 4th ISTS Communication Planning Meeting-NR (4th NR-CPM)

The meeting of 4th NR-CPM was held on 25.07.2023 and minutes were issued on dtd. 01.08.2023. No comments have been received on the MoM of 4th NR-CPM. The MoM of 4th NR-CPM were confirmed as circulated.

B. Inputs from Grid-India/ STUs to finalize Scope/BoQ for VOIP Hotline exchange

1. Hot Line Speech Communication System (VOIP based PABX system) was implemented in 2016 by POWERGRID in all five regions after grid disturbance in 2012 where grid operators faced problem of fast communication due to unavailability of dedicated speech communication PAN India between NLDC, RLDCs, SLDCs, important state and ISTS substations and generators. The said PABX was implemented by M/s Orange through Alcatel Lucent as OEM.
2. In the 67th NRPC meeting, POWERGRID representative stated that the scheme executed by M/s ORANGE was with a provision of AMC of 7 years as part of the contract and the same is expiring in July' 2023 for most of the sites.
3. AMC of the same was extended and approved in the 67th NRPC for further 2 years upto July'25 with financial implication and shall be booked in ULDC O&M charges as per the CERC norms. After July'25 there is no support shall be extended by Alcatel (OEM).
4. In 67th NRPC Meeting, MS, NRPC advised CTU to plan upgradation/ new system and implementation of existing Hot line speech communication or new EPABX system timely in view of expiration of AMC in July'25.
5. It is understood that during the execution of the said project, RPCs approval was sought in all regions and cost of the project was booked in the ongoing Communication System packages of the respective regions. So, it is understood that useful life of hotline speech communication is 15 years per CERC tariff regulation.

6. In the 23rd TeST meeting NRPC advised CTU to take up the planning and approval process parallelly as POWERGRID shall file petition to CERC in 2024 for revised depreciation. It was deliberated that as the AMC extension has been approved by POWERGRID for 2 years, meanwhile CERC order will be pursued during this time. CTU also requested that POWERGRID shall provide a copy of petition for which POWERGRID agreed.
7. In view of above CTU is planning a new EPABX system which shall replace the existing system within 2 years.
8. CTU has discussed the requirement with various VOIP Exchange suppliers and proposed VOIP System Architecture is attached at *Annexure-II*. Salient features of proposed VOIP system are given below:
 - (i) Server based architecture
 - (ii) Multiple level of redundancy in compared to present system e.g. If RLDC exchange failed complete load shall be transferred to backup RLDC. If both Main & Backup RLDC failed NLDC server can take complete load. At state level Main & Backup Server are proposed main and backup SLDC. If main SLDC server failed, backup will take entire load if both main & backup SLDC failed complete load shifted to RLDC servers.
 - (iii) For cost optimization main and backup servers works in dual mode as main as well as backup of backup RLDC servers vice-versa
 - (iv) NMS for adding/ deleting users shall be provided at RLDC/ SLDC levels
 - (v) Operator console shall be provided to manage calls at RLDC/SLDC
 - (vi) Call recording features shall be provided at RLDC & SLDC level
 - (vii) VOIP, Digital, Analog, Four Wire E&M (at PLCC) locations are considered
 - (viii) Video Phones at RLDC/ SLDC for Senior officials
 - (ix) Trunk lines for outside calling, recurring tariff of trunk lines to be borne by respective utilities
 - (x) Sufficient numbers of licenses to cater future RE/ ISTS/ ISGS/ IPP locations and STU substations locations.
9. A presentation is also arranged by prospective OEM of VOIP M/s Coral in the meeting.
10. To finalize the BoQ & Scope inputs are required from RLDC/ Grid-India and STUs e.g. no. of subscribers/locations.

11. Location for NRLDC, Backup NRLDC, SLDC, backup SLDCs as mentioned below are to be confirmed:

Sr No.	Name	Backup CC location
1	Backup NRLDC	Guwahati
2	SLDC, RRVPNL (Jaipur)	Sub-LDC Bhilwara
3	SLDC, HVPNL (Panipat)	HW, Shakti Bhawan Panchkula
4	SLDC, BBMB (Chandigarh)	SLDC, Patiala, Punjab
5	SLDC, DTL (New Delhi)	400kV Bamnauli (ALDC Bldg)
6	SLDC, HPSEBL (Shimla)	Sub-LDC Hamirpur
7	SLDC JKPTCL (Jammu)	Backup SLDC Srinagar
8	SLDC Lucknow (UPPTCL)	SLDC Modipuram (UPPTCL)
9	SLDC PSTCL (Patiala)	SLDC, BBMB (Chandigarh)
10	SLDC PTCUL (Dehradun)	Backup SLDC Kashipur

12. Location of Remote locations

13. Proposal to be discussed in the all 5 regions and combined proposals may be prepared after taking inputs from all regions and cost estimates.

Deliberations:

CTU enquired POWERGRID regarding the status of petition which was supposed to be filed by POWERGRID to CERC for revised depreciation of existing Hotline VOIP Exchange system. POWERGRID stated that petition is yet to be filed as CERC has recently notified Tariff Regulation 2024-29 and per new regulation useful life of communication system including telephone is now 7 years compared to earlier 15 years.

CTU requested that POWERGRID file the petition and give a copy to CTU so that CTU can put the scheme for review in various forums (RPC/NCT), POWERGRID agreed for the same.

CTU has given brief of proposed VOIP Exchange system and their salient features. The new system shall have server-based architecture and have multiple level of redundancies. Further different types of phones are proposed at various levels e.g. NLDC/RLDC/SLDC/Substation/Generator. The system shall also have feature of trunk call for calling to outside networks.

CTU apprised members that a presentation is also arranged from one of prospective VOIP Exchange OEM for the explanation of architecture and features of proposed VOIP system.

CTU welcomed representative from M/s Coral Telecom and request to give a presentation on VOIP exchange. Coral representative explained the proposed server architecture, multiple level of redundancy and other technical features in the meeting. Presentation is attached at ***Annexure-III***.

Coral representative explained that in place of multiple servers some serves can be configured virtually for cost optimisation at SLDC/Backup SLDC level. He also requested members for their suggestions regarding the same. POWERGRID, Grid-India and STUs suggested that Voice server can be taken as standalone however NMS & Recording server can be optimised in view of lesser criticality.

So that final configuration of servers shall be as follows:

Sr. No.	Name of location	Type of Servers		
		Voice (Calling)	NMS	Recording
1.	NLDC	2 No.	1 no.	1 no.
2.	Backup NLDC	2 No.	1 no.	1 no.
3.	RLDC	2 No.	1 no.	1 no.
4.	Backup RLDC	2 No.	1 no.	1 no.
5.	SLDC	1 No.	1 No. with virtualisation to house both	
6.	Backup SLDC	1 No.	1 No. with virtualisation to house both	

At NLDC/Backup NLDC/ RLDC/ Backup RLDC 2 nos. of servers proposed for Voice and 1 no. for NMS & 1 no. for Recording in view of higher load and criticality as these serves can take complete load all SLDCs in case of failure.

CTU asked about the failure rate of servers and time required in rectification of servers to which Coral representative informed that if there is software issue than it need 24-48 hrs but if there is hardware issue than it may take 5-7 days.

CTU also informed that as per previous discussion regarding VOIP Exchange voice recording for STUs and RLDCs are kept separately and each utility to keep the recording backup at their end. CTU further requested all members to provide feedback on the frequency of backup of voice recording so that system can be planned. In this regard STUs and RLDC stated that they shall provide details alongwith number of Phones / Subscribers.

RLDC also informed that as per practice 6 months of backup is kept for voice recording.

CTU and other members asked about the normal SIP phones that can it used, or the IP phones will be in proprietary in nature. Coral representative stated that normal standard SIP phones can also be used. Coral representative informed that if existing phones are standard SIP phones than it can be integrated. POWERGRID stated that existing VOIP phones can also be utilized wherever possible. NRLDC informed that most of the old sites have Alcatel 4028 and 8028 model phones. Coral representative stated that Alcatel 4028 and 8028 phones cannot be integrated, however they will check and revert back.

POWERGRID also has views that at present there is no requirement to take switches and gateways at each sub-station. CTU stated that in earlier discussions with STUs it was informed that at Substation and generator level they are also require Analog 2 wire and 4 fire E&M phones (PLCC). So based on the inputs of STUs requirement of switches and gateways shall be finalised.

CTU enquired about the number of ports available in the IP phones in view of 1+1 channel requirement of RLDCs. Coral representative informed that globally IP phones are coming with single ethernet port only, however this port can be mapped into two IP and both IP can be configured to main and backup location through communication system VLAN wise.

RVPNL stated that 1 no. of VOIP phone is sufficient because they are already having analog phones in their existing exchange.

UPPTCL informed that they have around 670 stations and 1 no of VOIP phone is sufficient for station and for generator locations they shall revert back.

CTU informed that existing UPS shall be utilized at each location for this project and maintenance of same shall be the responsibility of concern utility.

HVPNL stated that they have existing exchange that needs to be integrated with new VOIP exchange, CTU stated that all the utility shall provide these information so that their existing exchange can also be integrated.

It was decided in the meeting that RLDCs/ STUs and POWERGRID shall provide the inputs required by CTU for finalisation of BoQ/ Scope of proposed VOIP system by **05.04.2024**. **Input includes numbers of subscribers/locations considering existing as well as future expansion in next 10 years as per Annexure-IV.**

POWERGRID shall also provide existing VOIP/ Analog subscribers and locations from existing Alcatel VOIP exchange.

CTU emphasized that this agenda is discussed from long time, therefore all the inputs for BoQ & Scope finalisation are required at Fast Pace so that scheme can be prepared for review/approval in various forums (RPC/NCT).

**C. Replacement of old OPGW on following 04 links in Northern Region
(Total:787km) (Agenda by POWERGRID)**

- (i) **400kV Moga– Hisar (Length: 210 km)**
- (ii) **400kV Kanpur-Allahabad (Length: 219 km)**
- (iii) **400kV Agra-Kanpur (Length: 235 km)**
- (iv) **400kV Hamirpur II-Jalandhar (Length: 123 km)**

1. OPGW on above mentioned lines have been installed & commissioned by POWERGRID during the period 2004- 2005. These links mentioned at (a) to (d) are being utilized for ULDC network.

2. The links were established by POWERGRID telecom dept (PDT). Presently, the above links are part of ISTS assets as per CERC provisions stipulated at para 26(ii) in order date 17.05.2023 i.r.o. Petition no. 287/MP/2022 as brought out below:

Quote

The ownership, control and management including operation and maintenance of the transmission system including all cores of OPGW cables, transmission towers, substations shall continue to be vested with and controlled by the Petitioner at all time.

Unquote

POWERGRID being the petitioner.

3. It may be mentioned here that Useful life of these links of 15 years is completed as per CERC norms. The link condition is deteriorating now and condition is declining. Optical Attenuation has increased beyond the design limits. Details compiled in the table below &

S.N.	Description	Link Length (km)	Design Attenuation (dB)	Actual Attenuation and	Year of Commissioning

				attenuation difference from design (dB)	
1	400kV Moga– Hisar	210	52.35	58.55 ↑ (+6.2)	2004
2	400kV Kanpur-Allahabad	219	54.73	57.81 ↑ (+3.1)	2005
3	400kV Agra-Kanpur	235	58.65	66.85 ↑ (+8.2)	2005
4	400kV Hamirpur II- Jalandhar	123	30.73	34.72 ↑ (+4)	2004

4. These links are being utilised for sensitive and critical grid management data to RLDC/NLDC from sub-stations and SLDCs. In view of above, there is need for replacement of the above old OPGW links with new OPGW. Link wise Loss Reports are enclosed in **Annexure-V**.
5. POWERGRID is making regular efforts to maintain availability of these links. Any outage will most likely have an immense impact on grid management capabilities as these links are very important and backbone original ULDC network established for grid operation.
6. Cost of Replacement of old OPGW above links 787km is approx. INR 39.35 Crore. It is proposed to implement replacement of old OPGW as a new scheme i.e. Northern Region OPGW Strengthening Scheme -II.

Deliberations:

CTU requested POWERGRID to explain the agenda. POWERGRID stated that the OPGW on the above mentioned links has completed its useful life of 15 years and also attenuation for fibers are high so they are facing difficulties to maintain these links. Details of LSPM reports showing attenuation is attached at Annexure-V. POWERGRID further stated that as per CERC order dtd 17.05.2023 against Petition no. 287/MP/2022 “all the assets which are installed during PowerTel projects are now belongs to POWERGRID. Further they need to keep 6 fibers for the use of Power System applications and also responsible for their maintenance. They said that these links also cater requirement of ULDC data on sharing basis.

CTU stated that since the OPGW installation on these lines is not done under ISTS scheme under CERC tariff mechanism so CTU cannot consider OPGW on these lines as replacement under ISTS. However as per ISTS communication requirement new OPGW links can be

planned on these lines under ISTS as these links are critical for grid operations in Northern Region.

NRLDC/Grid-India stated that first we need to check whether these links are required for ISTS data purpose as now lot of redundancies have been created in the system with different links. So, we can check links wise requirement of these links.

(i) 400kV Moga– Hisar (Length: 210 km)

POWERGRID stated that since 400kV Moga-Hisar line is LILOed at Fatehabad and Fatehabad is connected linearly so this link is also required connectivity of Fatehabad. CTU stated that scheme shall be prepared to provide redundancy to Fatehabad for OPGW installation on 400kV Moga- Hisar line.

(ii) 400kV Kanpur-Allahabad (Length: 219 km)

POWERGRID stated that Ballabgarh-Agra-Kanpur-Allahabad is the backbone link for transmitting data of Eastern region to NLDC/NRLDC. NRLDC/Grid-India stated that since 400kV Kanpur S/s is connected by two different routes i.e. Kanpur-Ballabgarh and Kanpur-Auraiya-Agra) so OPGW on 400kV Agra -Kanpur line may not be required at present. CTU also agreed with the same.

NRLDC asked about the upcoming Ghatampur S/s. POWERGRID stated that Ghatampur-Hapur is under intra state TBCB network so they are reluctant to give fibers for ULDC purpose. NRLDC stated that fiber sharing policy is to be prepared by CEA so we can use fibers to create additional link from Intra-State.

(iii) 400kV Agra-Kanpur (Length: 235 km)

NRLDC stated that the Agra-Kanpur link there are multiple connectivity from Agra & Kanpur so requirement of OPGW for this links to be rechecked. CTU also of the view that requirement may be re-examine before finalisation of scheme.

(iv) 400kV Hamirpur II-Jalandhar (Length: 123 km)

POWERGRID informed that voltage level of Hamirpur II-Jalandhar line is **220kV** in place of 400kV. POWERGRID stated that 220kV Hamirpur-II (HP)-Jalandhar line is critical for redundancy of BBMB Dehar S/s and Galgal S/s and also for redundancy of SLDC Hamirpur.

CEA stated that CTU while taking this agenda to RPC mention the redundancies created through these links, CTU agreed to the same.

CTU further stated that after implementation of the above scheme, the shared usage of the existing PowerTel links for ISTS purpose shall be discontinued and PowerTel usage for the new ISTS OPGW links, if any required, shall be governed by CERC norms. POWERGRID agreed with the same.

CTU also asked views of other STUs and STUs have no objection of the same. CTU stated that they will examine these links for ISTS communication criticality and redundancy purpose and if any further information required same shall be provided by POWERGRID. POWERGRID agreed for the same.

D. Shifting of FODP for FAOC termination from microwave room to communication room at 220kV Mandi Gobindgarh-I, 220kV Malerkotla and 220kV Jagraon. (Agenda from PSTCL)

Microwave towers along with accessories are being surveyed off by PSTCL and microwave rooms are to be dismantled soon. FOACs at these stations passes near the control room building, thus no requirement of any additional material. Shifting will be helpful in OFC connectivity of FOTE being installed under Reliable FOTE project with proper patching for OFC route redundancy.

1. **220kV Mandi Gobindgarh-I (MGG-I):** MGG-I is an important ISTS station connected to GGSSTP Ropar, BBMB Ganguwal, 400kV Rajpura (and further to SLDC Patiala) and PGCIL Malerkotla (through 220kV Amloh and 220kV Ikolaha. Mandi Gobindgarh-IV is connected to MGG-I radially. Tejas make FOTE being installed at MGG-IV may be shifted to MGG-I for proper patching as existing FiberHome FOTE installed in microwave room is not compatible with other make FOTE and thus limiting route redundancy. One FOTE common for MGG-I & IV will be sufficient for data telemetry as both stations are next to each other.
2. **220kV Malerkotla:** 220kV Malerkotla is another important ISTS stations connected to PGCIL Malerkotla, GHTP Lehra Mohabbat (Via 220kV Sandhaur and 220kV Barnala PSTCL), Mandi Gobindgarh-I (via 220kV Ikolaha and 220kV Amloh) and 400kV Dhuri (through 220kV Dhuri). Data telemetry on IEC-104 is not possible at Malerkotla as distance between RTU (in control room) and FOTE (in microwave room) is larger. FOTE under Reliable FOTE project has been installed in communication room in control room building as there is no space available in microwave room and FODP is also installed in communication room for 220kV Dhuri direction. Shifting of FODP for FOAC termination from microwave room will provide proper OFC patching for route redundancy connecting GHTP Lehra Mohabbat through 220kV Barnala and 220kV Sandhaur.
3. **220kV Jagraon:** Jagraon is an important ISTS station connected to PGCIL Ludhiana and PGCIL Moga through 220kV Ajitwal. Jagraon is connected to 220kV Lalton Kalan too. Shifting of FODP for FOAC termination will provide sufficient redundancy to PSTCL OFC network without entering into PGCIL network at Ludhiana.

Permission for the same shall be given to provide adequate OFC route redundancy on independent PSTCL network

Deliberations:

PSTCL requested POWERGRID to give their consent regarding shifting of FODP from microwave room to communication room at 220kV Mandi Gobindgarh-I, 220kV Malerkotla and 220kV Jagraon. POWERGRID raised concern that some central links are connected using 220kV links of PSTCL like 220kV Malerkotla is connected to Ludhiana(PG), Malerkotla (PG),

Barnal S/s. POWERGRID requested PSTCL to install new approach cable, FODP so that links may not get down. POWERGRID and PSTCL agreed to resolve the issue by taking planned outage. POWERGRID also agreed to provide support to PSTCL during shifting/installation of approach cable and FODP.

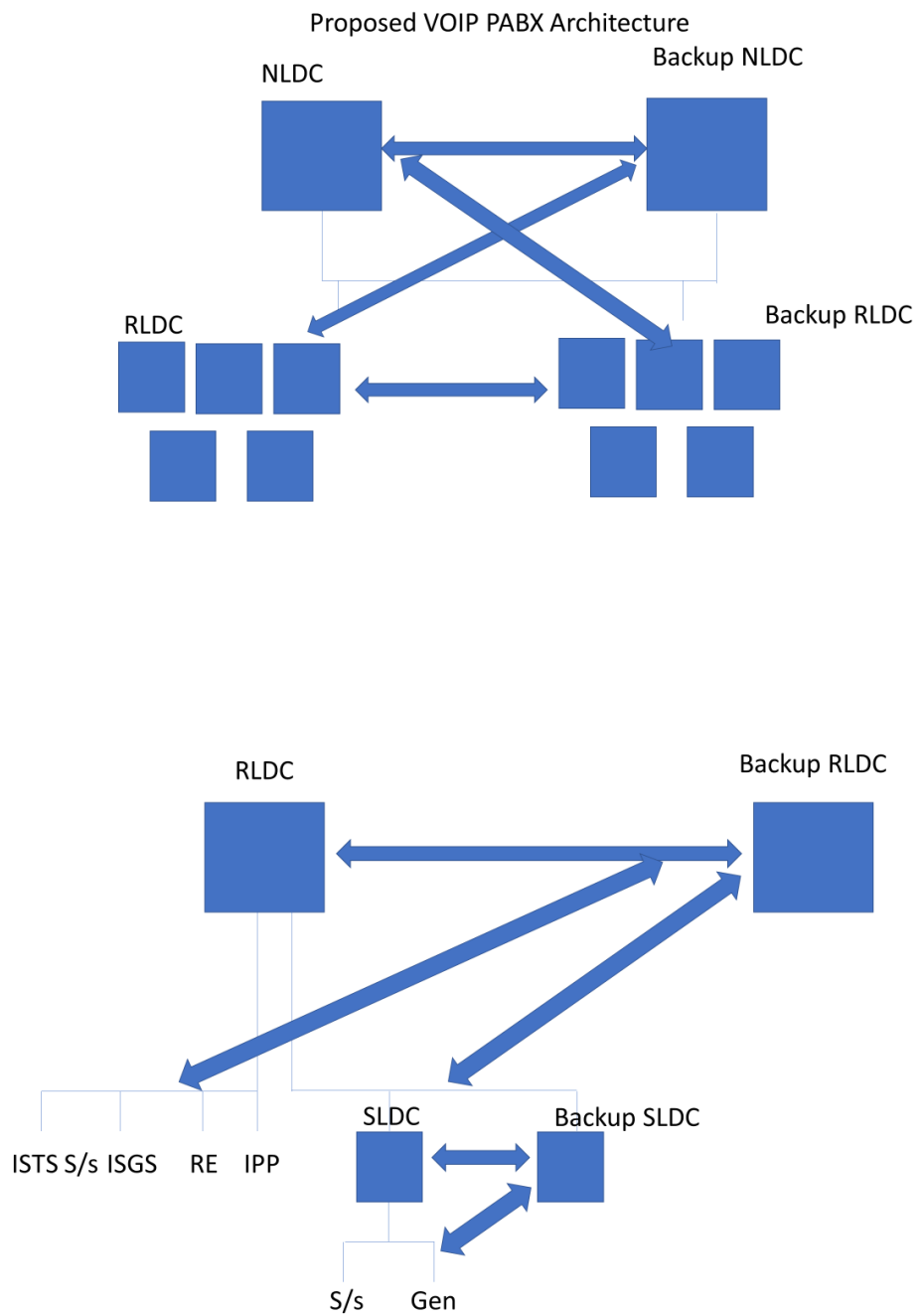
Meeting ended with vote of thanks.

Annexure-I

List of Participants

CTUIL		
1.	Sh. S. K. Gupta	Sr. DGM
2.	Sh. T. P. Verma	Ch. Manager
3.	Sh. Kaushal Suman	Manager
4.	Sh. Prakhar Pathak	Engineer
CEA		
1.	Ms. Priyam Srivastava	Dy. Director
NRPC		
1.	Ms. Priyanka Patel	Manager
NRLDC		
1.	Sh. Ankur Gulati	DGM
POWERGRID		
1.	Ms. Shyama Kumari	Sr. DGM
2.	Sh. Narendra Kumar Meena	Ch. Manager
3.	Sh. Sanjeet Kumar Singh	Manager
UPPTCL		
1.	Sh. Deepak Gupta	A.E.
RVPNL		
1.	Ms. Gaytri Bokariya	S.E.
PSTCL		
1.	Sh. Ashok Kumar	
DTL		
1.	Sh. Jitendra	
HVPNL		
1.	HVPNL Representative	Sr. XEN
Coral Telecom		
1.	Sh. Anil Nagpal	Director
2.	Sh. Rahul Gupta	Asst. General Manager

Annexure-II



SLDC															
Backup SLDC															
Frequency of voice recording backup															Daily/ Weekly /Monthly

Details of existing exchanges /phones also to be provided to integrate with new exchange.

Details of various phones given below:

No of phones (VOIP)- BASIC	No of phones (VOIP)- EXECUTIVE	No of phones (VOIP)- ADVACNE VIDEO	SIP TRUNK (BSNL/JIO ETC)	PRI Line (BSNL/Airtel etc.)	CO/Trunk Line (BSNL/Airtel etc.)	Radio Interface Port	Digital phones with one touch dial	Analog Phones
2.8 Monochrome display 2 SIP Account Dual Ethernet Port with PoE support	4.3 Inch Colour Display 10 SIP Account 20 DSS Keys with LED Indication Inbuilt Bluetooth & Wifi Dual Ethernet Port with PoE Support	Colour Display touch screen LCD 16 SIP account 28 DSS across Display Bluetooth,USB & Wifi Support PoE 200 Programable Soft DSS Keys	SIP trunk provides more than 30 channel in the same ethernet cable and also provide Audio as well as Video call	PRI provide 30 channel in one CAT-6 Ethernet cable	1 CO line provide only 1 line which we generally use in our homes	it is an interface to connect radio communication with TDM network	Digital phone cannot be intercept between exchnage n digital phone Message Wait Lamp 12 Phycial Programmable User Keys with LED Adjustable Ringer and Speaker volume	To connect PCC Exchnage over Electro & Megneto

Annexure-V

(i) Hamirpur- Jalandhar

Optical Attenuation (Top Window)

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Hamirpur_M9...	JALANDHAR_JLDR_M920_N2-SE...	11.85	HPSEB****_HMIR_M920_N2-EONA...	-22.87	34.72

Optical Attenuation (Bottom Window)

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Hamirpur_M9...	HPSEB****_HMIR_M920_N2-SEOB...	16.95	JALANDHAR_JLDR_M920_N2-EO...	-16.31	33.26

(ii) Hisar - Moga

Optical Attenuation (Top Window)

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	OLA 283-EON...	OLA283***_VDLD_M920_N2-EONA...	19.97	PGCIL-SS*_MOGA_M920_N1-EON...	-10.23	30.20

Optical Attenuation (Bottom Window)

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	PGCIL-SS*_M...	PGCIL-SS*_MOGA_M920_N1-SEO...	17.77	OLA283***_VDLD_M920_N2-EONA...	-11.92	29.69

Optical Attenuation (Top Window)

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Hisar-SEOBA[...	HISAR****_****_M920_N2-SEOBA2...	18.07	OLA283***_VDLD_M920_N2-EONA...	-10.24	28.31

Optical Attenuation (Bottom Window)

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Hisar-EONAD...	OLA283***_VDLD_M920_N2-EONA...	18.3	HISAR****_****_M920_N2-EONAD...	-10.05	28.35

(iii) Kanpur - Agra

The image shows two screenshots of the ZTE Optical Attenuation window. The top screenshot shows a table with one row of data for a link between Etawah and Kanpur. The bottom screenshot shows a table with one row of data for a link between Kanpur and Agra.

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Etawah-EONA...	Etwah****_ALD*_M920_N3-EONAD...	19.27	KANPUR***_KNPR_M920_N3-EO...	-11.78	31.05

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	KANPUR***_...	KANPUR***_KNPR_M920_N3-SEO...	18.63	Etwah****_ALD*_M920_N3-EONAD...	-8.67	27.30

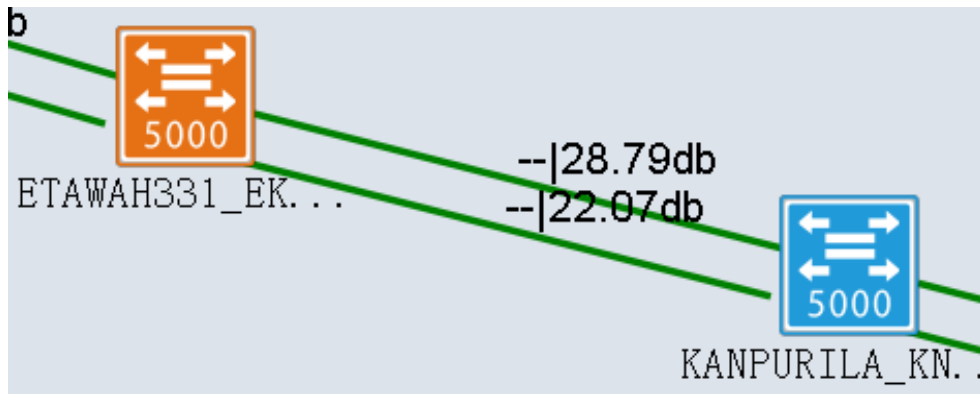
The image shows two screenshots of the ZTE Optical Attenuation window. The top screenshot shows a table with one row of data for a link between Agra and Etawah. The bottom screenshot shows a table with one row of data for a link between Agra and Kanpur.

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Agra-SEOBA[...	PGCIL-POP_AGRA_M920_N1-SEO...	19.63	Etwah****_ALD*_M920_N3-EONAD...	-15.94	35.57

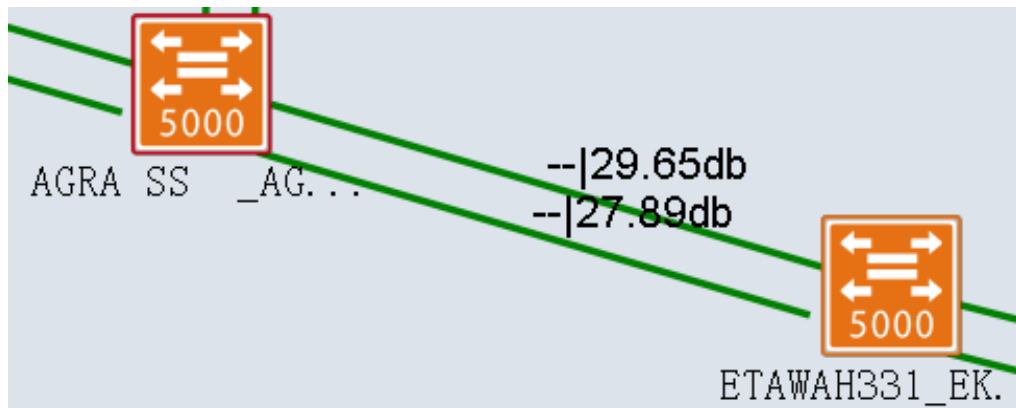
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Agra-EONAD3...	Etwah****_ALD*_M920_N3-EONAD...	20	PGCIL-POP_AGRA_M920_N1-EON...	-15.8	35.80

FiberHome

Kanpur - ILA 331 --> 28.79, 22.07



ILA 331 - Agra --> 29.65, 27.89



(iv) Kanpur – Allahabad

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Fatehpur-EO...	FATEHPUR*_ALD*_M920_N3-EON...	20	PGCIL-POP_ALD*_M920_N3-EON...	-10.59	30.59

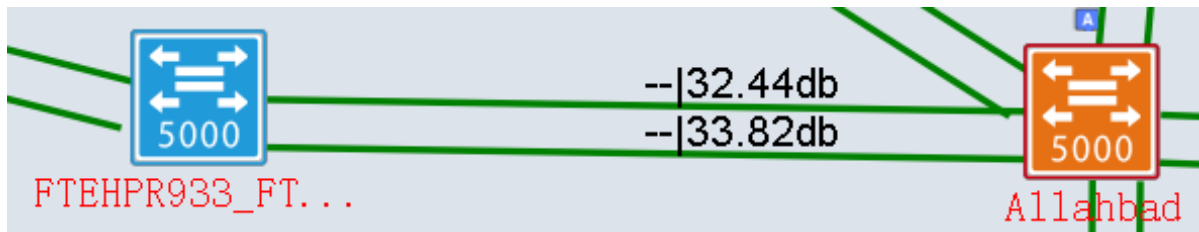
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Fatehpur-EO...	PGCIL-POP_ALD*_M920_N3-SEO...	15.77	FATEHPUR*_ALD*_M920_N3-EON...	-17.13	32.90

Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	Fatehpur-EO...	FATEHPUR*_ALD*_M920_N3-EON...	17.22	KANPUR***_KNPR_M920_N3-EONAD3320[0-1-24]-OTS...	-7.29	24.51

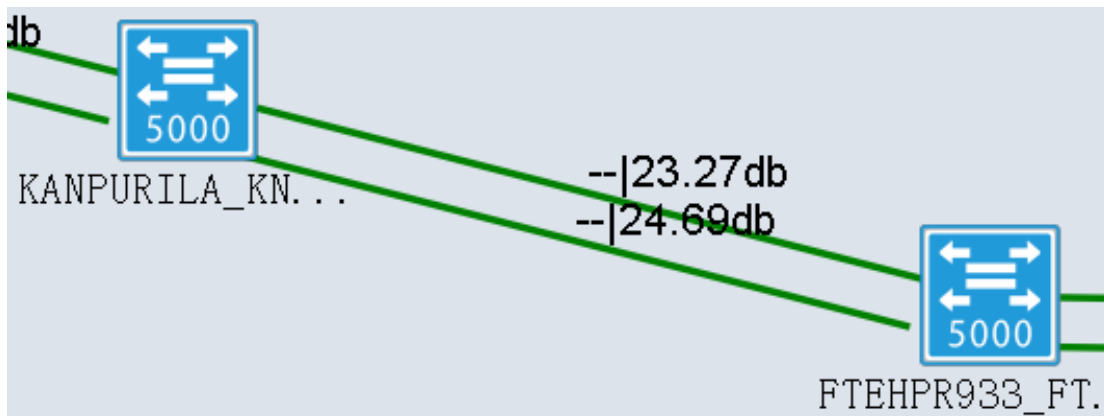
Row ID	Information of...	Source Port	Output Power(d...	Dest Port	Input Power(dB...	Attenuation Val...
1	KANPUR-SE...	KANPUR***_KNPR_M920_N3-SEO...	19.99	FATEHPUR*_ALD*_M920_N3-EONAD3320[0-1-6]-OTS...	-4.92	24.91

FiberHome

Allahabad - Fatehpur



Fatehpur - Kanpur



भारत सरकार केंद्रीय विद्युत प्राधिकरण दक्षिण क्षेत्रीय विद्युत समिति 29, रेस कोर्स क्रॉस रोड बेंगलूरु -560009	 सत्यमेव जयते	Government of India Central Electricity Authority Southern Regional Power Committee 29, Race Course Cross Road Bengaluru-560 009	
Email: seprotnsrpc-ka@nic.in	Web site: www.srpc.kar.nic.in	Ph: 080-22259343	
सं/No.	SRPC/ SE(P,C&SS)/ COMSR/44/2024/ 1400-57	दिनांक /Date	3 rd April 2024

To
As per the mailing list

विषय/Sub: Minutes of the 44th meeting of the communication equipment outage coordination [COM SR - Outage April 2024], held on 21.03.2024 - Reg.

महोदय / Sir,

दिनांक 21.03.2024 को वीसी द्वारा आजोजित, संचार उपकरणों की आउटेज समन्वय की बैठक के कार्यवृत्त, आपके अवलोकन के लिए हमारे वेबसाइट <https://srpc.kar.nic.in> में अपलोड किया गया है।

Enclosed please find the minutes of the 44th meeting of the communication equipment outage coordination meeting [COMSR – Outage April 2024], held on 21.03.2024 through VC. The same has been uploaded in SRPC website <https://srpc.kar.nic.in>.

भवदीय/ Yours faithfully


मेका रामकृष्ण
3/4/2024

(मेका रामकृष्ण/ Meka Ramakrishna)

अधीक्षणअभियंता (पी,सी&एस एस) /Superintending Engineer (P,C&SS)

डाक सूची / Mailing List

1. मुख्य अभियंता (एसएलडीसी), एपी ट्रांस्को / Chief Engineer (SLDC), APTRANSCO, Vijayawada.
2. मुख्य अभियंता (एसएलडीसी), बेंगलूरु / Chief Engineer (SLDC), KPTCL, Bangalore
3. मुख्य अभियंता (एसओ), केएसईबीएल / Chief Engineer (SO), KSEBL, Kalamassery
4. मुख्य अभियंता (प्र), टैनट्रांस्को / Chief Engineer (Opn.), TANTRANSCO, Chennai
5. मुख्य अभियंता (ग्रि.प्र.), टी.एस.ट्रानस्को / Chief Engineer (SLDC), TSTRANSCO, Hyderabad
6. अधीक्षक अभियंता-I, विद्युत विभाग, पुदुचेरी / S.E - I, Electricity Department, Puducherry
7. ई.डी, आरएसटीपीएस, एनटीपीसी, रामगुंडम / E.D, RSTPS, Jyothinagar, Ramagundam, Telangana
8. महाप्रबंध, तालचेर स्टेज-II, एनटीपीसी / G.M, STPP Stg - II, NTPC, Talcher, Odisha
9. समूह महाप्रबंधक, सिंहाद्री एस.टी.पी.एस, एन.टी.पी.सी. / G.G.M, Simhadri STPS, Visakhapatnam, AP.

received a mail stating that the card issue persist at their site. Order has been placed with OEM. Still the issue was not resolved.

- c) SE (P,C&SS), SRPC requested SRLDC to kindly take up again with them.

13.11 Real time operation of Southern Regional Grid from Backup Control centre at New Delhi on 22nd Mar 2024

It has been planned to conduct real time grid operation of Southern Regional grid from Backup Control centre at NRLDC on 22nd Mar 2024 between 09:00 to 14:00 hrs. CGM, SRLDC letter dated 14.03.24 in this regard is available in Annex-6.

All utilities are requested to extend their full support and coordination for successful and smooth operation.

Deliberation:

- a) SRLDC informed that real-time grid operation of the Southern Regional grid from the Backup Control Centre at NRLDC is scheduled on March 22, 2024, between 09:00 to 14:00 hrs, and requested all SLDCs to cooperate for this operation.
- b) SRLDC advised all entities to refrain from scheduling any outage of backup links to avoid unnecessary interruptions during the operation time from 09:00 to 14:00. Additionally, SRLDC requested all utilities to abstain from conducting any online activity during this period.
- c) SRLDC requested ULDC team to coordinate with WR and NR during this activity and ensure the operation of backup links from WR. PGCIL SR-1 assured that they would inform ULDC accordingly.
- d) SE (P, C & SS), SRPC requested to all entities to provide full support to SRLDC for the operation of the backup control centre.

14. CTUIL Agenda Items

CTUIL vide email dated 18.03.2024 (**Annexure-14**) has furnished the following agenda items:

14.1 Replacement of old OPGW on following 13 Communication links in Southern Region

CTUIL vide above letter dated 18.03.2024 has furnished as below:

- (i) OPGW replacement is proposed for following lines:
 - a. 400kV Khammam– Vijaywada (Length: 114.57 km)
 - b. 400kV Nellore – Chennai (Length: 189 km)
 - c. 400kV Nagarjunasagr-Gooty (Length: 307.53 km)
 - d. 400kV Vijaywada-Gajuwaka (Length: 317.38 km)

- e. 400kV Salem-Udumalpet (Length: 147.38 km)
- f. 400kV Udumalpet-Madurai (Length: 129.04 km)
- g. 400kV Madurai-Trichy (Length: 129.58km)
- h. 400kV Trichy-Nevvelli (Length: 163.70km)
- i. 400kV Nevvelli-Chennai (Length: 181.07km)
- j. 400kV Madurai-Trivandarum (Length: 215.93km)
- k. 400kV Bengaluru-Kolar HVDC (Length: 97.49km)
- l. 400kV Kolar-Tiruvalem LILO point (Length:54.52km)
- m. 400kV Tiruvalem LILO point-Chennai (Length:162.20km)

(ii) OPGW on above mentioned lines have been installed & commissioned by POWERGRID during the period 2004-2005. The links were commissioned by POWERGRID telecom department (PDT). These links mentioned at (a) to (m) are catering to ULDC operation.

(iii) The above links are part of ISTS assets as per CERC order with conditions stipulated at para 26(ii) vide order date 17.05.2023 i.r.o. Petition no. 287/MP/2022 as brought out below:

Quote

The ownership, control and management including operation and maintenance of the transmission system including all cores of OPGW cables, transmission towers, substations shall continue to be vested with and controlled by the Petitioner at all time.

Unquote

POWERGRID was the petitioner.

(iv) It may be mentioned here that Useful life of these links of 15 years is completed as per CERC norms. The link condition is deteriorating now and condition is declining. Optical Attenuation has increased beyond the design limits. Details compiled in the table below :

S.N	Description	Link Length (km)	Design Attenuation (dB)	Actual Attenuation (dB)	Year of Commissioning
1	400kV Khammam–Vijaywada	114.57	28.64	36.39 ↑ (+7.75)	2004
2	400kV Nellore – Chennai	189	47.25	65.12 ↑ (+17.87)	2004
3	400kV Nagarjunasagar-Gooty	307.53	76.88	103.76 ↑ (+26.88)	2004
4	400kV Vijaywada-Gajuwaka	317.38	79.34	95.33 ↑ (+15.99)	2005
5	400kV Salem-Udumalpet	147.38	36.85	36.58	2004

6	400kV Udumalpet-Madurai	129.04	32.26	36.73 ↑ (+4.47)	2005
7	400kV Madurai-Trichy	129.58	32.40	32.51 ↑ (+0.11)	2005
8	400kV Trichy-Nevvelli	163.70	86.19	110.78 ↑ (+24.59)	2005
9	400kV Nevvelli-Chennai	181.07			2005
10	400kV Madurai-Trivandarum	215.93	53.98	59.76 ↑ (+5.78)	2006
11	400kV Bengaluru-Kolar HVDC	97.49	24.37	29.88 ↑ (+5.51)	2004
12	400kV Kolar-Tiruvalem LILO point	54.52	54.18	78.56 ↑ (+24.38)	2004
13	400kV Tiruvalem LILO point-Chennai	162.20			2004
	Total=	2209.38			

- (v) These links are being utilised for sensitive and critical grid management data to RLDC/NLDC from sub-stations and SLDCs. In view of the above, there is need for replacement of the above old OPGW links with new OPGW.
- (vi) POWERGRID is making regular efforts to maintain availability of these links. Any outage will most likely have an immense impact on grid management capabilities as these links are very important and backbone original ULDC network established for grid operation.
- (vii) Cost of Replacement of old OPGW above links 2209.38 km is approx. INR 110.42 Crore. It is proposed to implement replacement of old OPGW as a new scheme i.e. Southern Region OPGW Strengthening Scheme -I.

Deliberation:

- a) PGCIL explained that initially, OPGW was commissioned on these lines for their Telecom Department, but later the ULDC network also required OPGW on these lines. As the OPGW on these lines already existed, it was decided in the RPC meetings during the years 2009-10 that they needed to share these fibers for the power system as well. PGCIL has made 6 fibers available for the power system, while the rest of the fibers are utilized for commercial purposes. PGCIL further informed that the life of the fibres has been crossed more than 20 years. The useful life as per the Tariff Regulations is 15 years.

These links are being utilised for sensitive and critical grid management data to RLDC/NLDC from sub-stations and SLDCs. In view of the above, there is need for replacement of the above old OPGW links with new OPGW. Due to attenuation increase, the data will be lost.

- b) SE (P, C&SS), SRPC pointed out that the attenuation results /Link wise Loss Reports as mentioned in Appendix-A of the CTU agenda is missing.
- c) MS, SRPC enquired whether charges of these links have been paid by the beneficiaries. CTUIL replied that only 6 fibres have been using under Sharing purpose by ULDC.

MS, SRPC further enquired why PGCIL intends to bring this under the ULDC scheme when POWERTEL may have other schemes available.

PGCIL clarified that as per the CERC order No. 287/MP/2022 issued in May 2023, the ownership of fibers is no longer under POWERTEL but under Power Grid. Consequently, POWERTEL cannot replace any OPGW. Links are catering the ULDC purpose also.

PGCIL stated that the fibre testing has been carried out by AMC firm associated with Powergrid for maintenance of ULDC network.

- d) SE (P,C&SS), SRPC enquired about the normal attenuation of OPGW fibers in db/km, CTUIL replied that it is 0.21db/km.

- e) MS, SRPC suggested that PGCIL should get their fibers tested by a third-party agency instead of internal agency for further taking up the matter with SR entities through sub-committees.

PGCIL stated that there are no designated certified third-party agencies in this field.

MS, SRPC reiterated that the need for replacement of the OPGW shall be justified through the test results which shall be certified/vetted by a designated agency because SR entities in the SRPC meetings have earlier requested such reports in similar cases.

- f) SE (P, C & SS), SRPC emphasized that upon reaching the end of the useful life, the equipment may not necessarily need to be replaced and same would be decided based on operational constraints, and the decisions need to be made accordingly. He requested CTUIL to coordinate with PGCIL to obtain all relevant details in this regard and present them at the next COMSR meeting, to which CTUIL agreed.