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

दिनांक: 15 अप्रैल, 2026

सेवा में / To,

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

विषय: 57 वीं तकनीकी समन्वय समिति (टीसीसी) और 82 वीं उत्तरी क्षेत्रीय विद्युत समिति (एनआरपीसी) की अतिरिक्त कार्यसूची के संदर्भ में ।

Subject: Additional agenda for 57th Technical Co-ordination Committee (TCC) and 82nd Northern Regional Power Committee (NRPC) & reg.

महोदय / महोदया,

The 57th meeting of Technical Co-ordination Committee (TCC) will be held on **17.04.2026(10:00 AM) at Rishikesh, Uttarakhand.** The 82nd meeting of Northern Regional Power Committee (NRPC) will be held on **18.04.2026 (10:00 AM) at same place.** The meetings are being hosted by THDCIL.

Additional agenda for the above meetings is attached.

भवदीय,

(ऋषिका शरण)
(Rishika Sharan)
सदस्य सचिव
Member Secretary

Copy to:

1. Sh. Basant Garg, IAS, Administrative Secretary (Power), Government of Punjab & CMD, PSTCL (**cmd@pstcl.org)**
2. Er. Sanjeev Kumar Sood, Director/Technical, PSTCL (**dir-tech@pstcl.org).**

सत्यमेव जयते

उत्तर क्षेत्रीय विद्युत समिति

NORTHERN REGIONAL POWER COMMITTEE

Additional agenda of the

57th meeting of

Technical Co-ordination Committee &

82nd meeting of

Northern Regional Power Committee

Date: 17th & 18th April, 2026

Time: 10:00 AM

Venue: Rishikesh, Uttarakhand

Contents

AA. Additional agenda for TCC and NRPC meeting

AA.1 Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region (Agenda by CTUIL)

AA.1.1 As per the CEA letter dtd. 22.05.2024 (attached at **Annexure-AA.I)**, all lines 110 kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels. Further as CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths.

AA.1.2 During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition takes lot of time on exiting lines compared to new transmission lines. The installation of OPGW will also enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system.

AA.1.3 Subsequently CEA vide their letter dtd. 22.11.2024 (attached at **Annexure-AA.II**) communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater to broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity.

AA.1.4 In the 16th NPC meeting held on 04.07.2025 (relevant extract of MoM attached at **Annexure-AA.III**), proposal for installation of OPGW on the existing ISTS & STU lines were deliberated. In the meeting it was decided that a comprehensive scheme for installation of OPGW on existing ISTS lines may be put up in the upcoming TCC/RPC meeting by CTU.

AA.1.5 Thereafter, this scheme was put up by CTU in the 55th TCC/ 80th NRPC meeting held on 17.07.2025/ 18.07.2025 (relevant extract of MoM attached at **Annexure-AA.IV)** in line with the 16th NPC MoM. The scheme was agreed in principle by the NRPC forum, and CTU was requested to formulate a comprehensive scheme for implementation of OPGW on existing ISTS lines where OPGW is not available.

AA.1.6 Summary of scheme agreed in 55th TCC/ 80th NRPC is given below:

Sr. No.	Projects	Total Transmission Length (Kms)
1.	RTM	4084
2.	JV	742
Grand Total		**4826**

The tentative cost estimate of above requirement is **Rs. 265 Crs.**

AA.1.7 Accordingly, CTU has again collected inputs from the ISTS TSPs and STUs. Based on these inputs, requirement of OPGW and FOTE was estimated by CTU and scheme was formulated and was discussed in the 9th and 10th CPM (Communication Planning Meeting) of NR held on 19.08.2025 and 31.12.2025 respectively (MoM attached at **Annexure-AA.V & AA.VI**).

AA.1.8 In the above CPM meetings, it was noted that some of the lines in the scheme have multiple ownership e.g., States, POWERLINK and POWERGRID. Further some lines also fall under TBCB as well as RTM projects under ISTS. During the CPM meetings it was deliberated that respective asset owners like transmission line owner or substation bay owner shall install OPGW and FOTE for their respective ownership portions to avoid ambiguity in maintenance, ownership and monetization issues later. Further, in line with CERC order on Petition No. 94/MP/2021 dated 25.06.2021 OPGW shall be installed by replacing earth wire by owner of the transmission line and FOTE to be installed by respective Substation / Bay Owner following the required procedure with the approval of the competent authority.

AA.1.9 In the MoM of 10th CPM, scheme was bifurcated into ISTS Portion (RTM & TBCB) and STU (RRVPNL, UPPTCL & PTCUL) portion for their respective transmission asset ownership, similar methodology is adopted for BBMB lines.

AA.1.10 The finalized detailed scheme for Installation of OPGW & associated communication systems on the existing lines of ISTS is attached at **Appendix-I**. Scheme consists of List of lines with kms, No of FOTE and their locations, Tentative Cost Estimate, mode of implementation and implementation schedule.

AA.1.11 STUs scope is also identified, however same to be implemented by respective STUs in matching timeframe ISTS scheme, the details of same are attached at **Appendix-II**.

AA.1.12 Summary of the schemes under ISTS is given below:

A. ISTS

S. No	TSP	OPGW (Km)	FOTE (Nos.)	Estimated Cost (Cr.)

1	POWERGRID	5392.33	68	342.265
2	POWERLINK	856.3	0	47.09
3	NRSS XXXI (B) Transmission Ltd	149	0	8.195
4	PKTCL	66.381	0	3.65
Grand Total		**6464**	**68**	**401.2 (approx.)**

B. BBMB/STU

S. No	Utility	OPGW (Km)	FOTE (Nos.)	Cost (Cr.)
1	BBMB	576.2	3	Through BBMB/STU Schemes
2	RRVPNL	124.61	6	
3	UPPTCL	221.736	9	
4	PTCUL	113.54	1	
Grand Total		**1036**	**19**	

AA.1.13 Implementation timeframe of the scheme is considered as 36 Months from the date of allocation.

AA.1.14 Implementation schedule of scheme 1.2, 1.3 & 1.4 mentioned in Appendix-1 is considered as 36 months i.e. matching with scheme 1.1, because FOTE at the end stations are considered in scheme 1.1 in line with CERC order on Petition no. 94/MP/2021(end stations ownership is of POWERGRID).

AA.1.15 Subsequently, POWERGRID vide mail dated 27.03.2026 (attached at **Annexure-AA.VII**) has submitted additional list of links. It has been observed that some of the links having mixed ownership with STUs and POWERGRID. In this regard an online meeting was convened by CTU on 06.04.2026 among POWERGRID, CTU and STUs to deliberate and finalize the list of links for Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region. Based on the inputs received during the meeting, scheme was updated and discussed in 30th TeST Sub Committee Meeting held on 10.04.2026, wherein members approved the scheme and

recommended for TCC and NRPC Meetings. However, since implementation of BBMB portion was not concluded in the 30th TeST meeting, it was decided to be taken up in upcoming TCC and NRPC Meetings.

AA.1.16 Further in line with MoM of 38th NCT meeting, mode of implementation for the schemes shall be considered under RTM mode owner wise.

AA.1.17 After deliberation of the scheme "Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region"(for **Appendix-I**) in TCC/ NRPC, this scheme shall be put up by CTU in the upcoming NCT for approval along with RPC views.

Decision required from Forum:

Members may deliberate.

AA.2 Replacement/Upgradation of FOTE at ISTS Locations due to Bandwidth congestion in Northern Region (Agenda by CTUIL)

AA.2.1. In 27th TeST Meeting held on 21.04.2025 and 28th TeST meeting held on 23.07.2025 (MoM attached at **Annexure-AA.VIII**), NMT brought out bandwidth congestion in some of the FOTE of NR which requires upgradation/replacement. System generated report from UNMS system is attached where Bandwidth Utilization is over 75%. CTU has studied these nodes for bandwidth congestion and summary of these nodes showing bandwidth utilization as reviewed from UNMS is attached at **Annexure-AA.IX**. Considering critical grid operations, these FOTEs experiencing high bandwidth congestion and may be upgraded/replaced as per the date of commissioning /useful life of the asset in line with CERC tariff regulation.

AA.2.2. This agenda was further deliberated in the 10th NR CPM (Communication Planning Meeting) held on 31.12.2025 regarding upgradation of FOTE where there existing bandwidth congestion in critical links of NR. At Allahabad & Varanasi node, requirement of STM-64 FOTE (with minimum 5 MSP) was deliberated in view of inter-regional data transfer towards Main & Backup NLDC and Main and Backup RLDCs. POWERGRID and NMT suggested that upgrading to STM-64 for Allahabad-Varanasi link also requires nearby nodes to be upgraded to STM-64 for utilization of STM-64 bandwidth. It is proposed that to provide congestion free corridor between NLDC/NRLDC – ERLDC/Backup NLDC, STM-64 based path can be created, which cater critical interregional data between ER- NR such as ICCP, AGC etc.

AA.2.3. The proposed path for NR-ER corridor is given below:

NRLDC/NLDC (16/64) (Via Mehrauli Okhla) NTPC_Badarpur (64) Ballabhgarh (16/64) Mainpuri Fatehpur Allahabad Sasaram Biharshariff Banka Kahalgaon Farakka Baharampur Jeerat New Kasba ERLDC (backup NLDC)

AA.2.4. In coordinated approach the above path shall also be deliberated in the ERPC TeST meetings and therefore agenda maybe discuss in upcoming NRPC TeST meeting.

AA.2.5. Further the requirement of STM-64 FOTE upgradation at Tughlakabad, Bhiwadi & Kotputli S/s has been agreed in 10th CPM. STM-64 FOTE at Tughlakabad, Kotputli S/s are considered in this scheme and STM-64 FOTE at Bhiwadi S/s is considered in Comprehensive OPGW scheme.

AA.2.6. The FOTE locations which are already covered in the Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region has been removed from the FOTE upgradation scheme to optimize the cost & quantity.

AA.2.7. After receiving inputs from NMT and POWERGRID, CTU studied the network from UNMS, and scheme has been updated and attached at **Appendix-III**. Detailed list of nodes where upgradation/replacement of FOTE is considered is attached at **Annexure-AA.X**. UNMS generated bandwidth congestion details of some links are also attached at **Annexure-AA.XI**.

AA.2.8. Implementation timeframe for this scheme is considered as 24 months from date of allocation.

AA.2.9. After deliberation of the scheme “Upgradation of FOTE at ISTS Locations due to Bandwidth congestion in Northern Region”(for **Appendix-III**) in 57th TCC/ 82nd NRPC, this scheme shall be put up by CTU in the upcoming NCT for approval.

AA.2.10. This scheme was further discussed in 30th TeST Meeting held on 10th April wherein, one FOTE at Neemrana S/s (STM-64) was agreed to be added in the scheme.

Decision required from Forum:

Members may deliberate.

AA.3 Proposal for installation of Battery Energy Storage Systems (BESS) as Integrated Energy Storage Systems (IESS) for safe and reliable operation of the grid, at existing ISTS substations of POWERGRID and its subsidiaries in Northern Region (Agenda by POWERGRID)

A) Background:

AA.3.1. CERC vide its notification dated 20.03.2026 has issued the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2026. The major change brought out in the latest amendment is the introduction of Integrated Energy Storage System (IESS) as a separate asset, in existing generating stations and ISTS.

Quote

Regulation 3A(8): *"'**Integrated energy storage system**' means the energy storage system co-located with the generating station or the transmission system, as the case may be, connected to a common bus-bar through the electrical system of existing generating station or the transmission system, as the case may be, and **for the purpose, including safe and reliable operation of the grid or for deferring the transmission investment and for enhancing the flexible operation of the generating station**, as the case may be, as per the requirement of the National Load Despatch Centre or beneficiaries or the designated ISTS customers, as the case may be."*

Unquote

AA.3.2. As mentioned above, this amendment introduces a comprehensive regulatory framework for IESS, attached to generating station or the transmission system for -

a) Safe and reliable operation of the grid (ancillary services) or
b) For deferring the transmission investment and
c) Enhancing the flexible operation of the generating station.

AA.3.3. Under 2(a) above, **for safe and reliable operation of the grid**, Central Electricity Regulatory Commission (Ancillary Services) Regulations, 2022, defines Ancillary Services as:

Quote

Regulation 3(1)(c): *"Ancillary Service" or "AS" in relation to power system operation, means the service necessary to support the grid operation in maintaining power quality, reliability and security of the grid and includes Primary Reserve Ancillary Service(PRAS), Secondary Reserve Ancillary Service(SRAS), Tertiary Reserve Ancillary Service(TRAS), active power support for load following, reactive power support, black start and such other services as defined in the Grid Code;"*

Unquote

AA.3.4. Battery Energy Storage System (BESS) as an IESS, can provide the following **Ancillary Services under 2(a) above, for safe and reliable operation of the grid,**

thereby strengthening reliability of grid operation and increasing efficiency of operation**:**

a) **Frequency response:** BESS with fast ramping & bi-directional capability can provide:
   i. **Primary Reserve Ancillary Service (PRAS)**
   ii. **Secondary Reserve Ancillary Service (SRAS)**
   iii. **Tertiary Reserve Ancillary Service (TRAS)**
b) **Dynamic voltage & reactive power** support, and
c) **Grid-forming functions**, including **synthetic inertia** emulation, **black start** support and for damping the magnitude of **voltage oscillations**.

AA.3.5. GRID-INDIA evaluated 20 MW/40 MWh BESS under SRAS as a pilot project, as per the consultation paper dated 31/12/2025. It has concluded that BESS is technically well suited for Automatic Generation Control (AGC), owing to its very high ramping capability, near-instantaneous response, and ability to provide both SRAS-Up (discharging) and SRAS-Down (charging).

AA.3.6. In view of all above, we propose to implement BESS at POWERGRID Substations.

AA.3.7. For implementation of BESS, the following procedure has to be complied with:-

Quote
Regulation 29B*. "Additional Capitalization on account of integrated energy storage system with the transmission system :* *(1) A transmission licensee required to incur additional capital expenditure in the existing transmission system for an integrated energy storage system shall share its proposal with all long-term transmission customers or the Designated ISTS Customers of the region, concerned Regional Power Committee, Central Transmission Utility, and the concerned Regional Load Despatch Centre, for their consideration and seek response within 30 days."*
Unquote

AA.3.8. The methodology of claiming tariff against installation of IESS is given in the latest amendment as follows: -

Quote
Regulation 9(3a) *"In case an integrated energy storage system is installed with the generating station or unit thereof, transmission system or its sub-station, an application shall be made for the determination of supplementary tariff (fixed storage charges with or without variable energy charges) based on the actual capital expenditure duly certified by the Auditor".*
Unquote

AA.3.9. Additionally, in the latest amendment, CERC has laid down the following normative technical parameters for eligibility of tariff, in case of IESS:-

S. No.	Parameter	Unit	Normative Value
i	Normative Availability Factor of integrated energy storage system ($NAPAF_{ess}$)	%	90
ii	Round Trip Efficiency (RTE_{ess})	%	85
iii	Auxiliary Energy Consumption (AEC_{ess})	%	5
iv	Useful Life for Li-ion based ESS	Years	15
v	Annual Degradation	% per annum	2

AA.3.10. The procedure for charging, scheduling, and dispatch of electricity and energy account for the IESS is given below:

Quote

Regulation 74:

"(2) The procedure for charging, scheduling, and dispatch of electricity and energy account for the integrated energy storage system shall be prepared by:

……

(b) the National Load Despatch Centre in consultation with the designated ISTS customers, respective Regional Power Committee and Regional Load Dispatch Centre, consistent with the Grid Code for integrated energy storage system with the transmission system.

(3) In case of an integrated energy storage system with the generating station, the surplus stored energy can be made available to the National Load Dispatch Centre to use under ancillary services. In case of stored energy of an integrated energy storage system with the transmission system, the priority of usage will be decided by the National Load Despatch Centre."

Unquote

B) Proposal:

AA.3.11. Rajasthan has been witnessing very rapid renewable energy (RE) integration, with installed RE capacity having crossed 44GW (25GW for ISTS). Further, it is gathered that RE potential in Rajasthan has been declared for about 230 GW. Increasing RE penetration has created significant challenges for grid operation and stability. Several instances of voltage oscillations have been observed due to inadequate voltage control response from IBRs and unstable operation under weak grid conditions, etc. thereby leading to a clamour to add new transmission lines.

AA.3.12. In this context, installation of Battery Energy Storage Systems (BESS) at strategic locations would support the "**safe and reliable operation of grid mentioned under 2(a)**" above, by providing ***frequency support, dynamic voltage and reactive power support,*** **damping the magnitude of voltage oscillations,** ***synthetic inertia and black start capability***.

AA.3.13. Accordingly, POWERGRID proposes to install **BESS** as **IESS under 2(a)** above**,** for safe and reliable operation of the grid and to support India's RE integration targets. The details of proposed installations at existing substations of POWERGRID and its subsidiaries in the Northern Region, under RTM mode are as follows: -

Sl.No.	**Station Name**	**Owner**	**Proposed BESS capacity (in MW/MWh)**
1	Kanpur	POWERGRID	250/1000
2	Bhadla-III	PBIIITL	250/1000
3	Bikaner-III	PBNTL	250/1000
	Total		**750/3000**

Further, plant characteristics for 250MW/1000MWh BESS is proposed at **Annexure-AA.XII**.

AA.3.14. Justification**:** Following reasons have been considered for selection of substations for BESS:

AA.3.15. **Bhadla-III & Bikaner-III S/s:** These are among the major pooling stations facilitating integration of large amount of Renewable Energy (predominantly Solar) in Northern Region. The NR grid (especially Rajasthan) is observing several operational issues such as voltage oscillations, low frequency oscillations, steady-state voltage variations, angular stability issues etc. BESS with grid forming capabilities provides frequency support, dynamic voltage & reactive power support, damping the magnitude of voltage oscillations, synthetic inertia and black start capabilities. Installing BESS at these important RE pooling stations of Bhadla-III & Bikaner-III shall support secure and reliable operation of the Northern grid. Sufficient land for the proposed capacity is available at these substations.

AA.3.16. **Kanpur S/s**: Kanpur is a very important substation at the midst of the Northern Grid, supplying power to a major industrial hub in the vicinity. At Kanpur, earlier a ±140

MVAr SVC has supported the voltage and maintained the dynamic stability in the Northern Grid. After retirement of the SVC, it is proposed to install a BESS as an active grid balancing asset, that can provide fast voltage support along with other ancillary functions, for safe and reliable operation of the Northern Grid. It can provide the desired frequency regulation, voltage support and short-term reserve services within the emergency response times. It shall also help smoothen intermittency of renewable energy, facilitating grid operation. In addition to all above, adequate land is available for establishing the BESS at the substation.

AA.3.17. 4-hour storage capacity is proposed in the BESS, due to following reasons:

i. Flexibility: 4-hour/1-cycle can be split into multiple partial discharges as per grid requirement to maintain the grid safety & reliability.
ii. Facilitating ramp rate during shoulder periods of solar up to evening peak load period.
iii. Prioritizing battery health and lower augmentation risk over useful life of 15 years assuming ~6500 cycles over contract life (≈1 cycle/day)
iv. Long-duration evening peak support and RE firming.

AA.3.18. Considering the recent pricing trends of Li-Ion based BESS installation, the tentative cost of BESS is about Rs.2Cr./MWh (excluding cost of land and O&M), and accordingly, the total cost for the project is estimated at **Rs. 6000 crore**. The implementation period for proposed IESS will be **18 months**. After implementation of the proposed IESS, POWERGRID and its subsidiaries shall approach CERC for determination of tariff under RTM mechanism.

AA.3.19. Regarding recovery of these charges, Clause (3) of Regulation 78 of CERC Tariff Regulations stipulates that the transmission charges determined for IESS shall be shared by the beneficiaries or long-term customers or the designated ISTS customers, as the case may be, in accordance with CERC Sharing Regulations.

AA.3.20. In view of the above, the proposal for installation of Battery Energy Storage Systems (BESS) as Integrated Energy Storage Systems (IESS) at existing substations of POWERGRID and its subsidiaries in Northern Region for tentative cost estimate of **Rs.6000 crore** is submitted to NRPC forum for its deliberation. This proposal envisions to help nurture the entire eco-system and give more confidence to BESS OEMs to come on board for increased participation towards safe and reliable grid operation.

Decision required from Forum:

Members may deliberate.

AA.4 Proposal of Replacement of SAS at 765/400kV Ajmer Substation under ADDCAP (Agenda by POWERGRID)

AA.4.1. 765/400kV Ajmer substation (Commissioned : Dec-2017) is Substation of POWERGRID in Rajasthan handling critical R.E power import through 765kV Lines of Bhadla-2 & 765kV Chittorgarh. Existing SCADA / SAS system of 765/400kV Ajmer Substation has completed more than 08 years of life.

AA.4.2. At 765/400kV Ajmer Substation, SCADA / SAS system are over seven years old and have reached the end of their useful life. The operating systems in these SCADA setups are outdated and not cyber security compliant. Additionally, these systems are facing numerous issues and require upgrades to ensure smooth operation and monitoring of the substation. The existing SCADA systems (including old computers) are Windows 7-based and are no longer supported from OEM.

AA.4.3. Hence, replacement of SCADA / SAS system is proposed for 765/400kV Ajmer substation.

Tentative Equipment Details/Financial Implication:

AA.4.4. As per the above-mentioned requirement, tentative estimated cost including supply and installation for implementation of replacement of SCADA / SAS system for 765/400kV Ajmer Substation to approximately ₹ 60 Lakhs for Supply , Services , F&I (excluding taxes and duties).

Proposal:

AA.4.5. The proposal for replacement of SCADA / SAS system for 765/400kV Ajmer Substation with a tentative cost estimate of ₹ 60 Lakhs (excluding Tax) under ADD-CAP (2024-29) is submitted to the forum for approval.

AA.4.6. Proposal was deliberated and approved in 30th TeST Meeting held on 10th April,2026, and it was decided to be taken up in upcoming TCC and NRPC Meetings.

Decision required from Forum:

Members may deliberate.

AA.5 Proposal of Replacement of SAS at 400/220kV Kankroli Substation under ADDCAP (Agenda by POWERGRID)

AA.5.1. 400/220kV Kankroli substation (Commissioned: April-2008) is Substation of POWERGRID in Rajasthan handling critical power flow through 400kV Lines of RAPP-C & Jodhpur. Existing SCADA / SAS system of 400/220kV Kankroli Substation has completed more than 08 years of life.

AA.5.2. At 400/220kV Kankroli Substation, SCADA / SAS system are over seven years old and have reached the end of their useful life. The operating systems in these SCADA setups are outdated and not cyber security compliant. Additionally, these systems are facing numerous issues and require upgrades to ensure smooth operation and monitoring of the substation. The existing SCADA systems (including old computers) are Windows 7-based and are no longer supported from OEM.

AA.5.3. Hence, replacement of SCADA / SAS system is proposed for 400/220kV Kankroli substation.

Tentative Equipment Details / Financial Implication :

AA.5.4. As per the above mentioned requirement, tentative estimated cost including supply and installation for implementation of replacement of SCADA / SAS system for 400/220kV Kankroli Substation to approximately ₹ 70 Lakhs for Supply , Services , F&I (excluding taxes and duties).

Proposal :

AA.5.5. The proposal for replacement of SCADA / SAS system for 400/220kV Kankroli Substation with a tentative cost estimate of ₹ 70 Lakhs (without Tax) under ADD-CAP (2024-29) is submitted to the forum for approval.

AA.5.6. Proposal was deliberated and approved in 30th TeST Meeting held on 10th April,2026, and it was decided to be taken up in upcoming TCC and NRPC Meetings.

Decision required from Forum:

Members may deliberate.

NRPC Members for FY 2026-27				
S. No.	**Member Organisation**	**Category**	**Nominated/ Notified/Delegated Member**	**E-mail**
1	Chairperson, NRPC	Chairperson, NRPC		
2	CEA	Central Electricity Authority (CEA)	Member (GO&D), CEA	member.god@cea.nic.in
3	NLDC	National Load Despatch Centre	Director (System Operation)	rk.porwal@grid-india.in
4	NRLDC	Northern Regional Load Despatch Centre	Executive Director	sajan@grid-india.in
5	CTUIL	Central Transmission Utility	Chief Operating Officer	coo-ctu@ctuil.in
6	PGCIL	Central Government owned Transmission Company	Director (Operations)	naveensrivastava@powergrid.in
7	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
8	BBMB		Chairman	cman@bbmb.nic.in
9	THDC		CGM (EM-Design)	rrsemwal@thdc.co.in
10	SJVN		CMD	sectt.cmd@sjvn.nic.in
11	NHPC		Director (Technical)	sadhikari@nhpc.nic.in
12	NPCIL		Director (Finance)	df@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC		Chief Engineer (SO&C)	cesocomml@hvpn.org.in
15	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
17	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC		Managing Director	mdhpsldc@gmail.com
20	DTL	State Transmission Utility	CMD	cmd@dtl.gov.in
21	HVPNL		Managing Director	md@hvpn.org.in
22	RRVPNL		CMD	cmd.rvpn@rvpn.co.in
23	UPPTCL		Managing Director	md@upptcl.org
24	PTCUL		Managing Director	md@ptcul.org
25	PSTCL		CMD	cmd@pstcl.org
26	HPPTCL		Managing Director	md.tcl@hpmail.in
27	IPGCL	State Generating Company	Managing Director	md.ipgpp@nic.in
28	HPGCL		Managing Director	md@hpgcl.org.in
29	RRVUNL		CMD	cmd@rrvun.com
30	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
31	UJVNL		Managing Director	mdujvnl@ujvnl.com
32	HPPCL		Managing Director	md@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
34	UHBVN	State owned Distribution Company (alphabetical rotational basis/nominated by state govt.)	Managing Director	nomination awaited
35	Jaipur Vidyut Vitran Nigam Ltd.		Managing Director	nomination awaited
36	Dakshinanchal Vidyut Vitaran Nigam Ltd.		Managing Director	nomination awaited
37	UPCL		Managing Director	md@upcl.org
38	HPSEB		Managing Director	md@hpseb.in
39	Adani Power Rajasthan Limited	IPP having more than 1000 MW installed capacity	Chief Operating Officer (O&M)	sudip.nag@adani.com
40	Apraava Energy Private Limited		CEO	niraj.gupta@apraava.com
41	Aravali Power Company Pvt. Ltd		CEO	brahmajig@ntpc.co.in
42	JSW Hydro Energy Limited		Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
43	Lalitpur Power Generation Company Ltd		Managing Director	vksbankoti@bajajenergy.com
44	MEIL Anpara Energy Ltd		COO & WTD, Executive Director	anandkumar.singh@meilanparapower.com
45	MEJA Urja Nigam Ltd.		CEO	hopmeja@ntpc.co.in
46	Nabha Power Limited		CEO	sk.narang@larsentoubro.com
47	Neyveli Uttar Pradesh Power Limited (NUPPL) Ghatampur		CEO	nomination awaited
48	Prayagraj Power Generation Co. Ltd.		Head (Commercial & Regulatory)	anurag.shukla@tatapower.com
49	Rosa Power Supply Company Ltd		Station Director	Hirday.tomar@relianceada.com
50	Talwandi Sabo Power Ltd.		Head Regulatory & Policy Advocacy	arun.kumar@vedanta.co.in
51	XL Xergi Power Pvt. Ltd.	IPP having less than 1000 MW installed capacity (alphabetical rotational basis)		nomination awaited
52	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	Chief Engineer, JKSPDCL/JKPDD	cejkpcl2@gmail.com/sojpdd@gmail.com
53	UT of Ladakh		Chief Engineer, LPDD	cepdladakh@gmail.com
54	UT of Chandigarh		Superintending Engineer, EWEDC	seelo-chd@nic.in
55	NVVN	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions		ceonvvn@ntpc.co.in
56	BRPL	Private Distribution Company in region (alphabetical rotational basis)		nomination awaited
57	NRSS-XXIX Transmission Ltd	Private transmission licensee (nominated by central govt.)		nomination awaited
58	Shree Cement Limited	Electricity Trader (nominated by central govt.)		nomination awaited
59	Adani Green Energy Limited	RE Generating Company having more than 1000 MW installed capacity	COO	chaitanya.sahoo@adani.com
60	Avaada Energy Private Limited		CEO	kishor.nair@avaada.com
61	Azure Power India Pvt. Limited		CEO	sunil.gupta@azurepower.com
62	NTPC Green Energy Limited		CEO	ceongel@ntpc.co.in
63	ReNew Power Private Limited		CEO	sumant@renew.com
64	SJVN Green Energy		CEO	nomination awaited

TCC Members for FY 2026-27				
S. No.	**Member Organisation**	**Category**	**Nominated/ Notified/Delegated Member**	**E-mail**
1	Chairperson, TCC	Chairperson, TCC		
2	CEA	Central Electricity Authority		cegm-cea@gov.in
3	NLDC	National Load Despatch Centre		mkagarwal@grid-india.in
4	NRLDC	Northern Regional Load Despatch Centre	Executive Director	sajan@grid-india.in
5	CTUIL	Central Transmission Utility	Chief Operating Officer	vbagadia@powergrid.in
6	PGCIL	Central Government owned Transmission Company	ED, NR-I	aloksharma99@powergrid.in
7	NTPC	Central Generating Company	Regional ED, NR	rednr@ntpc.co.in
8	BBMB		Member (Power)	mp@bbmb.nic.in
9	THDC		GM (EMD)	neerajverma@thdc.co.in
10	SJVN		Director (Projects)	de.sectt@sjvn.nic.in
11	NHPC		ED (O&M)	hod-om-co@nhpc.nic.in
12	NPCIL		Outstanding Scientist & ED (commercial)	nrchoudhary@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre		nomination awaited
14	Haryana SLDC		Chief Engineer/SO & Comml.	cesocomml@hvpn.org.in
15	Rajasthan SLDC		Superintending Engineer (SOLD) RVPN	SE.SOLD@RVPN.CO.IN
16	Uttar Pradesh SLDC		Chief Engineer (PSO)/Chief Engineer (C&S)	cepso@upsldc.org
17	Uttarakhand SLDC			nomination awaited
18	Punjab SLDC		Chief Engineer	ce-sldc@pstcl.org
19	Himachal Pradesh SLDC			nomination awaited
20	DTL	State Transmission Utility	Director (Operation)	dir.opr@dtl.gov.in
21	HVPNL		Director (Projects)	directorprojects@hvpn.org.in
22	RRVPNL		Chief Engineer (PP&D)	ce.ppm@rvpn.co.in
23	UPPTCL		Director (Planning & Commercial)	director_comm@upptcl.org
24	PTCUL		Chief Engineer	ce_oandmk@ptcul.org
25	PSTCL		Director / Technical	dir-tech@pstcl.org
26	HPPTCL		GM (C&D)	gmcd.tcl@hpmail.in
27	IPGCL	State Generating Company	Director(Tech.)	corporate.ppcl@gmail.com
28	HPGCL		Director/Technical	dirtech@hpgcl.org.in
29	RRVUNL		Dy. Chief Engineer	dyce.elect.katpp@rrvun.com
30	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
31	UJVNL		General Manager	kkjaiswal99@gmail.com
32	HPPCL		Director (Electrical) General	dir_elect@hppcl.in gm_elect@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company		nomination awaited
34	UHBVN	State owned Distribution Company (alphabetical rotational basis/nominated by state govt.)	Managing Director	nomination awaited
35	Jaipur Vidyut Vitran Nigam Ltd.		Managing Director	nomination awaited
36	Dakshinanchal Vidyut Vitaran Nigam Ltd.		Managing Director	nomination awaited
37	UPCL		Director (P)	dpupcl29@gmail.com
38	HPSEB			nomination awaited
39	Adani Power Rajasthan Limited	IPP having more than 1000 MW installed capacity	AVP	Manoj.taunk@adani.com
40	Apraava Energy Private Limited			nomination awaited
41	Aravali Power Company Pvt. Ltd		CEO	brahmajig@ntpc.co.in
42	JSW Hydro Energy Limited		Head of Plant	kaushik.maulik@jsw.in
43	Lalitpur Power Generation Company Ltd		GM Electrical	aupadhyay.ltp@lpgcl.com
44	MEIL Anpara Energy Ltd		COO & WTD, Executive Director	arun.tholia@meilanparapower.com
45	MEJA Urja Nigam Ltd.		GM (O&M)	piyushkumar@ntpc.co.in
46	Nabha Power Limited			nomination awaited
47	Neyveli Uttar Pradesh Power Limited (NUPPL) Ghatampur			nomination awaited
48	Prayagraj Power Generation Co. Ltd.		Head – Commercial & Regulatory	Sanjay.bhargava@tatapower.com
49	Rosa Power Supply Company Ltd		VP-Technical Services	Niranjan.Jena@relianceada.com
50	Talwandi Sabo Power Ltd.		Dy. Head O&M	ravinder.thakur@vedanta.co.in
51	XL Xergi Power Pvt. Ltd.	IPP having less than 1000 MW installed capacity (alphabetical rotational basis)		nomination awaited
52	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/		nomination awaited
53	UT of Ladakh			nomination awaited
54	UT of Chandigarh			seelo-chd@nic.in
55	NVVN	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions		VIKASKUMAR04@NTPC.CO.IN
56	BRPL	Private Distribution Company in region (alphabetical rotational basis)		nomination awaited
57	NRSS-XXIX Transmission Ltd	Private transmission licensee (nominated by central govt.)		nomination awaited
58	Shree Cement Limited	Electricity Trader (nominated by central govt.)		nomination awaited
59	Adani Green Energy Limited	RE Generating Company having more than 1000 MW installed capacity		nomination awaited
60	Avaada Energy Private Limited			nomination awaited
61	Azure Power India Pvt. Limited			nomination awaited
62	NTPC Green Energy Limited			nomination awaited
63	ReNew Power Private Limited			nomination awaited
64	SJVN Green Energy			nomination awaited

Special Invitees:

1. Smt. Rishika Saran, Member Secretary, NPC, Sewa Bhawan, R. K. Puram, New Delhi-66 [Email-rishika@nic.in]
2. Shri Deepak Kumar, Member Secretary, WRPC, Plot No- F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai-40093. [Email: ms-wrpc@nic.in]

3. Shri Asit Singh, Member Secretary, SRPC, No.29, Race Course Cross Road, Bengaluru-560009. [Email: mssrpc-ka@nic.in]
4. Shri K B Jagtap, Member Secretary, ERPC,14,Golf Club Road, ERPC Building, Tollygunje,Kolkata-700033.[Email: mserpc-power@nic.in]
5. Shri Brieflee Lyngkhoi, Member Secretary, NERPC, NERPC Complex, Dong Parmaw, Lapalang, Shillong-793006. [Email: ms-nerpc@gov.in]

****

Annexure-I

Annexure-AA.I

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली संचार विकास प्रभाग
Power System Communication Development Division

सेवा में / To

As per list enclosed

विषय/ Subject: Compliance with CEA (Technical Standards for Construction of Electric Plants and Lines), 2022 - Installation of Optical Ground Wire on Transmission Lines - reg

This is to bring to the attention , the crucial requirement outlined in the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, pertaining to the installation of Optical Ground Wire (OPGW) on transmission lines of 110 kV and above voltage level.

The aforementioned CEA standard **under Chapter IV, PART-A "SUBSTATIONS AND SWITCHYARDS (66 kV AND ABOVE)" Clause 48 , sub clause (5),** mandates the provision of Optical Ground Wire, along with necessary terminal equipment, on transmission lines of voltage rating 110 kV and above for speech transmission, line protection, and data channels. Additionally, it specifies that the primary path for tele-protection should be on point-to-point Optical Ground Wire, with an alternative path on either Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths.

The use of Optical Ground Wire facilitates speech transmission, data channels and also plays a crucial role in enhancing line protection. Ensuring compliance with these standards is paramount for the efficient and reliable operation of grid.

Therefore, as directed by Chairperson, CEA in the 19th meeting of National Committee on Transmission, it is requested that all the Central and State Sector utilities prioritize the implementation of the OPGW laying across its transmission network to ensure compliance with regulatory requirements.

Transmission utilities are requested to furnish the monthly progress report pertaining to OPGW installation.

Powergrid and CTU are requested to identify all such ISTS links wherein the OPGW implementation is still to be done and take up its implementation.

Signed by Suman Kumar Maharana
Date: 22-05-2024 17:25:26

भवदीय,
(एस.के.महाराणा / **S. K. Maharana**)
मुख्य अभियन्ता /**Chief Engineer**

प्रतिलिपि/ Copy to,

(i) Member (Power System), CEA
(ii) Member Secretary, NRPC
(iii) Member Secretary, WRPC
(iv) Member Secretary, ERPC
(v) Member Secretary, SRPC
(vi) Member Secretary, NERPC

With a request to issue suitable instructions to states for expediting furnishing of requisite data

1.	**Executive Director(AM and LD&C)** Power Grid Corporation of India Ltd., Saudamini, Plot No.2, Sector-29, Gurugram-122001.
2.	**COO** Central Transmission Utility of India Ltd., Plot No. 2, Sector-29, Gurugram, Haryana-122001.

ISTS Licensees:

1.	**Chief-Business & Regulatory** Sterlite Power Transmission Ltd., F-1, The Mira Corporates Suits, Plot No. 1 &2, C-Block, 2nd Floor, Ishwar Nagar, Mathura Road, NewDelhi-110065.	**2.**	**Head Projects** Adani Transmission Ltd., Adani Corporate House, Shantigram, SG Highway, Ahmedabad-382421, Gujarat.
3.	**CFO** Essel Infraprojects Ltd., NRSS XXXVI Transmission Ltd., (Essel Infraprojects Ltd.), Sec 16A, Plot No.-19, Filn City, Gautam Budhha Nagar-201301.	**4.**	**Director** Kalpataru Power Transmission Ltd., Plot No. 101, Part-III, G.I.D.C., Sector-28, Gandhinagar-382028.
5.	**Director** Kudgi Transmission Ltd., Mount Poonamallee Road, Manapakkam, P.B. No. 979, Chennai-600089.	**6.**	**AGM (Comm. & Reg. Affairs)** Sekura Energy Pvt. Ltd., 504 & 505, 5th Floor, Windsor, Off CST Road, Kalina, Santacruz, Mumbai-400098.
7.	**Project Incharge** Raichur Sholapur Transmission Company Ltd., Patel Estate, S.V. Road, Jogeshewari(West), Mumbai-400102.		

Northern Region:

1.	**Director (Projects)** Himachal Pradesh Power Transmission Corporation Ltd., Barowalias, Khalini, Shimla- 171002.	**2.**	**Director(W&P)** Uttar Pradesh Power Transmission Company Ltd., Shakti Bhawan Extn, 3rd floor, 14, Ashok Marg, Lucknow-226 001.
3.	**Director (Technical)** Punjab State Transmission Corp.Ltd. Head Office, The Mall, Patiala - 147001, Punjab.	**4.**	**Director (Projects)** Power Transmission Corporation of Uttrakhand Ltd., Vidyut Bhawan, Near

			ISBT Crossing, Saharanpur Road, Majra, Dehradun.
5.	**Development Commissioner (Power)** Power Development Department, Grid Substation Complex, Janipur, Jammu.	**6.**	**Director (Technical)** Rajasthan Rajya Vidyut Prasaran Nigam Ltd., Vidyut Bhawan, Jaipur, Rajasthan-302005.
7.	**Director (Technical)** Haryana Vidyut Prasaran Nigam Ltd. Shakti Bhawan, Sector-6, Panchkula-134109, Haryana.	**8.**	**Chief Engineer (Operation)** Administration of Chandigarh Electricity Department, UT Secretariat Sector-9 D, Chandigarh – 161009.
9.	**Director (Operations)** Delhi Transco Ltd., Shakti Sadan, Kotla Road, New Delhi-110002.		

Eastern Region:

1.	**CMD** Damodar Valley Corporation DVC Towers, VIP Road, Kolkata-700054.	**2.**	**CMD** Odisha Power Transmission Corporation Ltd. (OPTCL), Bhoinagar Post Office, Jan path, Bhubaneshwar-751022.
3.	**CMD** Bihar State Power Transmission Company Ltd. (BSPTCL), Vidyut Bhavan, 4th floor, Bailey Road, Patna-800021.	**4.**	**CMD** Jharkhand Urja Sancharan Nigam Ltd. (JUSNL), Engineering Building, HEC, Dhurwa, Ranchi -834004.
5.	**Principal Chief Engineer cum Secretary** Power Department, Government of Sikkim, Gangtok, Sikkim.	**6.**	**Managing Director** West Bengal State Electricity Transmission Company Ltd. (WBSETCL), Vidyut Bhavan, 8th Floor, A-Block Salt Lake City, Kolkata-700091.

North Eastern Region:

1.	**Managing Director** Manipur State Power Company Ltd. (MSPCL), Electricity Complex, Patta No. 1293 under 87(2), Khwai Bazar, Keishampat, Imphal West, Manipur- 795001.	**2.**	**CMD** Tripura State Electricity Corporation Ltd., Bidyut Bhavan, Banamalipur, Agartala, Tripura.
3.	**Managing Director** Assam Electricity Grid Corporation Ltd., Bijulee Bhawan, Paltan Bazar Guwahati (Assam) - 781001.	**4.**	**Engineer-in-Chief** Power & Electricity Department, Kawlphetha Building, New Secretariat Complex, Khatla, Aizawl, Mizoram- 796001.
5.	**CMD** Meghalaya Energy Corporation Ltd., Lum Jingshai, Short Round Road, Shillong (Meghalaya) - 793001.	**6.**	**Chief Engineer (T&G)** Department of Power, Electricity House, A.G. Colony, Kohima, Nagaland- 797001.
7.	**Chief Engineer (Power)** Vidyut Bhawan, Department of Power Zero Point Tinali, Itanagar (Arunachal Pradesh)- 791111.		

Western Region:

1.	**Managing Director** Gujarat Energy Transmission Corp. Ltd., Sardar Patel Vidyut Bhawan, Race Course, Vadodara -390007.	**2.**	**Director (Operation)** Maharashtra State Electricity Transmission Co. Ltd., 4th Floor, "Prakashganga", Plot No. C-19, E- Block, Bandra – Kurla Complex, Bandra (East), Mumbai- 400051.
3.	**Managing Director,** Chhattisgarh State Power Transmission Co. Ltd., Dangania, Raipur- 492013.	**4.**	**Chairman & Managing Director** Madhya Pradesh Power Transmission Co. Ltd., Block No. 3, Shakti Bhawan, Rampur, Jabalpur-482008.
5.	**Executive Engineer** Administration of Union Territory of Dadra & Nagar Haveli and Daman & Diu Secretariat, Moti Daman -395 220.	**6.**	**The Chief Engineer** Electricity Department The Government of Goa, Panaji.

Southern region:

1.	**Director (Grid Operation)** Transmission Corp. of Telangana Ltd., Vidyut Soudha, Hyderabad – 500082.	**2.**	**Director (Transmission)** Karnataka State Power Transmission Corp. Ltd., Cauvery Bhawan, Bangalore – 560009.
3.	**Director (Trans. & System Op.)** Kerala State Electricity Board Ltd., Vidyuthi Bhawanam, Pattom, P.B. No. 1028, Thiruvananthapuram – 695004.	**4.**	**Director (Transmission Projects)** Tamil Nadu Transmission Corporation Ltd. (TANTRANSCO), 6th Floor, Eastern Wing, 800 Anna Salai, Chennai – 600002.
5.	**Superintending Engineer –I** First Floor, Electricity Department Gingy Salai, Puducherry – 605001.	**6.**	**Director (Transmission)** Transmission Corp. of Andhra Pradesh Ltd. (APTRANSCO), Vidyut Soudha, Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh – 520004.

Annexure-AA.II

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत संचार विकास प्रभाग
Power Communication Development Division
****

CEA-PS-17-24/1/2024-PCD Division/ **Date: 22-11-2024**

To,

(As per the attached list)

Subject: Facilitating Broadband expansion by allowing leasing of fiber on OPGW - regd.

This has reference to the DO letter dated 11th November 2024(No. 5-5/NBM-2024/PGCIL-OPGW) addressed to Secretary (MoP) from Department of Telecommunications, Ministry of Communications. Wherein MoP has been requested to consider laying at least 48F (48 Fibres) OPGW (Optical Ground Wire) in future transmission projects making provision for leasing of additional fibers for the use of telecom licensees i.e TSP (Telecom Service Provider)/ ISP (Internet Service Provider)/ IP (Internet Protocol)-1 etc.

During a review meeting of NER (North Eastern Region) Telecom projects, Hon'ble Minister for Communication had directed to facilitate broadband expansion by allowing leasing of fibers on OPGW of POWERGRID in place of leasing of bandwidth, so that rural areas and hinterlands can get good and reliable telecom connectivity.

In view of this, CTU (Central Transmission Utility), POWERGRID, STUs (State Transmission Utilities) and all the TSPs (Transmission Service Providers) are requested to incorporate the necessary provisions in the technical specifications of their future transmission schemes supporting the laying of at least 48F OPGW instead of 24F OPGW for the upcoming TBCB (Tariff based Competitive Bidding)/RTM (Regulated Tariff Mechanism) schemes. It is further advised that the schemes which are presently in bidding stage may also be modified accordingly by the BPCs (Bid Process Coordinators) wherever applicable.

This issues with the approval of Chairperson, CEA.

22/11/24

Chief Engineer (PCD)

(Addressed to the list below :)

S.No.	Designation	Address	E-mail
1.	COO, CTUIL	Plot No. 2, Sector – 29 Near IFFCO chowk Metro station, Gurugram – 122001	df@powergrid.in, do@powergrid.in, pcgarg@powergrid.in
2.	CMD, PGCIL	Powergrid, Saudamini, Plot No – 02, Sector – 29, Gurugram, Haryana 122001	cmd@powergridindia.com
3.	Chairman & Managing Director, PGCIL	Saudamini, Plot No. 2, Sector-29 Gurgaon-122001 (Haryana)	cmd@powergrid.in
4.	Chairman & Managing Director, APTRANSCO	Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh 520004	cmd@aptransco.gov.in
5.	Chairman, APPGCL, Andhra Pradesh	Vidyut Soudha, Gunadala Eluru Road, Vijaywada Andhra Pradesh – 520 004	chairman@apgenco.gov.in
6.	Chairman & Managing Director, TCTL	Vidyut Soudha, Khairatabad, Hyderabad – 500082	cmd@tgtransco.com
7.	Chairman & Managing Director, TSPGCL	Vidyut Soudha, 'A' Block, Khairatabad, Hyderabad – 500 082 (Telangana)	cmd@tsgenco.co.in cmdtransco@telangana.gov.in
8.	Managing Director, TANTRANSCO	10th Floor/NPKRR Malikai, No. 144 Anna Salai, Chennai-600002	mdtantransco@tnebnet.org
9.	Chairman & Managing Director, KSEBL Kerala	Board Secretariat, Vidyuthi Bhavanam Pattom, Thiruvananthapuram – 695004	cmdkseb@kseb.in
10.	Managing Director, KPTCL	1st floor, Kaveri Bhawan, K. G. Road, Bangalore-560009	md@kpclgmail.com

11.	Director (Operations), MSETCL	C-19, E-Block Prakashganga, Bandra-Kurla Complex Bandra(E), Mumbai 400 051.	dirop@mahatransco.in, sealdc8100@mahatransco.in
12.	Managing Director, MSPGCL Maharashtra	Prakashgad, Plot No. G-9, 4th Floor Bandra (E), Mumbai-400051	md@mahagenco.in
13.	Chief Engineer (Elect.), Goa Electricity	Department Vidyut Bhawan, Panji, Goa - 403001	cee-elec.goa@nic.in, elec.goa@nic.in
14.	Chairman, GUVNL Gujarat	Sardar Patel Vidyut Bhawan, Race Course, Vadodara- 390 007	md.guvnl@gebmail.com
15.	Chairman, Gujarat Urja Vikas Nigam Ltd.	Sardar Patel Vidyut Bhawan, Race Course, Vadodara- 390007	md.guvnl@gebmail.com
16.	Managing Director, GETCO	Sardar Patel Vidyut Bhawan, Race Course, Vadodara- 390 007	md.getco@gebmail.com
17.	Secretary, Dadra & Nagar Haveli Electricity Department	Dadar Nagar Secretariat, Silvassa- 396230	tapasyaraghav@gmail.com
18.	Director (Operations) , RRVPNL	Vidyut Bhawan, Jyoti Nagar Jaipur, Rajasthan	dir.oper@rvpn.co.in cmd.rvpn@gmail.com
19.	Chairman, HVPNL	Shakti Bhawan, C4, Sector No. 6 Panchkula – 134109, Haryana	chairmanpu@gmail.com
20.	Managing Director, J&KPTCL	JKPTCK ,Power complex , bemina Srinagar (J&K) janipur jammu	mdjkptcl1@gmail.com
21.	Managing Director, HPPTCL	Himfed Building, BCS, New Shimla - 171009 (H.P.)	md@hppcl@gmail.com
22.	Managing Director, HPGCL Haryana	Room No.411,3rd Floor, Urja Bhawan,C-7, Sector-6, HPGCL Panchkula	md@hpgcl.org.in

23.	Managing Director, PTCL of Uttarakhand	Vidyut Bhawan, Saharnpur Road, Near I.S.B.T. Crossing, Dehradun,Uttarakhand – 248002	md.ptcul@rediffmail.com
24.	Managing Director, UJVNL (Uttarakhand)	Maharani Bagh, G M S Road, Dehradun	mdujvnl@ujvnl.com, md@ujvnl.com
25.	Chairman& Managing Director, BSPTCL	Vidyut Bhawan, Bailey Road Patna – 800021	mdcellbsptcl@gmail.com, cmd.bsphcl@gmail.com
26.	Managing Director, BSPGCL Bihar	5th Floor, Vidyut Bhawan, Bailey Road, Patna	md.bspgcl@gmail.com
27.	Chairman & Managing Director, PSTCL Punjab	The Mall, Mall Road, Patiala – 147001	cmd@pstcl.org
28.	Chairman & Managing Director, UPPTCL	7th Floor Shakti Bhawan, 14-Ashok Marg Lucknow Lucknow- 226001	cmd@upptcl.org, chairman@upptcl.org
29.	CMD, UPRVUNL	Shakti Bhawan,14- Ashok Marg, Lucknow226001	chairmanuppcl@gmail.co m md@uprvunl.org
30.	Managing Director, MPPTCL	Shakti Bhawan, Rampur, Jabalpur(MP) - 482 008	md@mptransco.nic.in, ce.pnd@mptransco.nic.in
31.	Managing Director, MPPGCL	Shakti Bhawan, Vidyutnagar, P.O. Jabalpur- 482 008	mppgcl@mp.nic.in
32.	Chairman, Jharkhand Urja Utpadan Nigam Ltd.	Engineering Building, HEC Dhurwa, Ranchi- 834004	mdjuunl2018@gmail.com
33.	Managing Director, JUSNL Jharkhand	Engineering Buliding, HEC, Dhurwa, Ranchi – 834004	mdjusnl@gmail.com, md@jusnl.in
34.	Chairman & Managing Director, CSPHCL, Chhattisagarh	Vidyut Seva Bhawan,P.O. Sunder Nagar, Danganiya,	mdtransco@cspc.co.in, chairman@cspc.co.in

		Raipur- 492 013	
35.	Chairman & Managing Director, WBSETCL	Bidhan Nagar, Kolkata-700 091.	md@wbsetcl.in
36.	Chairman & Managing Director, WBPDCL	Bidyut Unnayan Bhaban, plot 3/C, LABlock, Sector-III Salt Lake City, Kolkata - 700	wbpdcl@wbpdcl.co.in
37.	Chairman & Managing Director, OPTCL	Janpath, Bhubaneswar-751022.	ele.bpmohapatra@optcl.co.in, ele.ssahu@optcl.co.in, dir.operation@optcl.co.in, cmd@optcl.co.in
38.	Chairman, OPGCL Odisha	Zone-A,7th Floor, Fortune Towers, Chandrasekharpur, Bhubaneswar - 751023 Odisha	energy@nic.in
39.	Managing Director, CSPGCL	Vidyut Seva Bhawan P.O. Sunder Nagar, Danganiya, Raipur- 492 013 Chhattisgarh	mdgenco@cspc.co.in
40.	Chairman, Jharkhand Urja Utpadan Nigam Ltd.	Engineering Building, HEC Dhurwa, Ranchi-834004	mdjuunl2018@gmail.com
41.	Managing Director, SPDCL Sikkim	NH– 10, Near UD&HD Dept. Gangtok East Sikkim 737101	spdcskm@gmail.com
42.	Chairman, APGCL, Assam	Bijulee Bhawan, Paltan Bazar, Guwahati,Assam.	cgm.ppd@aegcl.co.in, anjanjc.aegcl@gmail.com, gm.mpr@aegcl.co.in, rakesh.kumar@apgcl.org
43.	Managing Director, AEGCL (Assam)	Bijulee Bhawan, Paltan Bazar, Guwahati- 781 001	managing.director@aegcl.co.in, md_aegcl@yahoo.co.in

44.	The Engineer-in-Chief, Power and Electricity Dept, Govt of Mizoram	Kawlphetha Building New Secretariat Complex, Khatla, Aizawl Mizoram 796001	eincpower@gmail.com
45.	Chief Engineer (P), Manipur Electricity Dept.	South Block, Imphal, Manipur- 795 001.	md.mspcl@gmail.com, snandei@gmail.com, ed.tech.mspcl@gmail.com , ce-power@man.nic.in
46.	Chief Engineer, Nagaland Dept. of Power	Chief Engineer (D&R) Electricity House. A.G. Colony, Kohima – 797001	miaziekho77kehie@gmail .com
47.	Chairman & Managing Director, Meghalaya	Lumjingshai Short Round Road Shillong- 793001	ewnong@yahoo.com, directormeptcl@gmail.co m, cetranzemeptcl@gmail.co m
48.	Chairman, TSECL Tripura	Bidyut Bhaban, Banamalipur, Agartala, Tripura - 799001	managing.director@tsecl.i n
49.	Chief Engineer (P) Dept. of Power , Govt of Arunachal Pradesh	Itanagar, Arunachal Pradesh – 791 111	setrans26@gmail.com, tktara@hotmail.com, vidyutarunachal@rediffm ail.com, vidyutarunachal@gmail.c om, setrans26@gmail.com, tktara@hotmail.com, ee.ced@hotmail.com
50.	Commissioner-cum-Secretary(P), ANED (Andaman)	Secretariat , Andaman and Nicobar Islands, Port Blair- 744101	secyit.and@nic.in
51.	Secretary, Lakshadweep Electricity Dept.	Lakshadweep Electricity Dept. Kavaratti - 682555	lk-ktelect@nic.in
52.	Secretary, Puducherry Electricity	Department Secretariat, Puducherry- 605001	secycs.pon@nic.in, secytran@py.gov.in
53.	Chairman & Managing Director, DTL Delhi	Shakti Sadan, Kotla Marg, New Delhi – 110002	gmom1.dtl@gmail.com, dgmtoperation1.dtl@gmai l.com, md@dtl.gov.in

54.	Chairman & Managing Director, NTPC Ltd	NTPC Bhawan, Core 7, Scope Complex 7, Institutional Area Lodhi Road, New Delhi-110003	cmd@ntpc.co.in, amanna@ntpc.co.in, kamalverma@ntpc.co.in shipratyagi@ntpc.co.in
55.	Chairman & Managing Director, NHPC Ltd	Corporate Office, NHPC Office Complex, Sector 33 Faridabad- 121003, Haryana	cmd@nhpc.nic.in
56.	Chairman & Managing Director, NLC Ltd	Cuddalore District Block - 1, Neyveli Tamilnadu- 607 801	cmd@nlcindia.in
57.	Chairman & Managing Director, THDC Ltd	Pragatipuram, By Pass Road, Rishikesh 249 201	cmd@thdc.co.in
58.	Chairman & Managing Director, NPCIL	Nabhikiya Urja Bhavan, Anushaktinagar, Mumbai-400094	npciltecrectt@npcil.co.in, cmdsecretariat@npcil.co.in
59.	Chairman & Managing Director, NEEPCO Ltd.	NEEPCO Ltd., Lower New Colony, Shillong-793003	cmdneepco@neepco.co.in
60.	Chairman, BBMB (Bhakhra)	Sector -19B, Madhya Marg, Chandigarh – 160019	cman@bbmb.nic.in
61.	Chairman & Managing Director, Damodar Valley Corp.	Head Quarter DVC Towers, VIP Road Kolkata-700054	chairman@dvc.gov.in
62.	Director General, EPTA	First Floor, 6 Basant Lok, Vasant Vihar, New Delhi - 110070	Dg.epta@epta.in, epta.dg@gmail.com
63.	Chairman & Managing Director, TATA Power	NDPL House, Hudson Lines, Kingsway Camp Delhi-110 009	vrshrikhande@tatapower.com, BD@tatapower.com, nitin.kumar@tatapower.com, neeraj.srivastava@tatapower.com, piyushkumar@tatapower.com

64.	MD & CEO, Adani Transmission Ltd	3rd Floor, South Wing, Adani Corporate House, Shantigram, S. G. Highway, Ahmedabad - 382421	sameer.ganju@adani.com, Narendran.Ojha@adani.com, atlbd@adani.com, ishwar.dubey@adani.com, sunnykumar.singh@adani.com, sanjay.johari@adani.com
65.	Managing Director, Adani Power Limited	Shantigram, Near Vaishnodevi Circle, S.G. Highway, Ahmedabad-382421 Gujarat	manish.karna@adani.com
66.	Manager, AESL	Adani Power Limited, 7th Floor, Sambhav Building, Judges Bunglow Road, Bodakdev, Ahmedabad, Gujarat-380015	Praveen.tamak@adani.com
67.	Managing Director, L&T IDPL	L&T Campus, TCTC Building, First Floor, Mount Poonamallee Road, Manapakkam, Chennai – 600089.	csr@lntecc.com
68.	Chairman & Managing Director, Reliance Power	Reliance Centre, Ground Floor 19, Walchand Hirachand Marg, Ballard Estate, Mumbai 400 001	
69.	Director, Darbhanga – Motihari Transmission Co. Ltd.	6th Floor, Plot No. 19 & 20, Film City, Sector 16 –A, Noida, Uttar Pradesh – 201301	Nimish.Sheth@SEKURA.IN, Neeraj.Verma@SEKURA.IN, Vijayanand.Semletty@Sekura.in
70.	Chairman & Managing Director, SJVN Ltd	SJVN Corporate Head Quarters, Shanan Shimla-06. SHIMLA – 171006 HP	sectt.cmd@sjvn.nic.in, nandlal.sharma@sjvn.nic.in
71.	Director, G R Infra Project Ltd	2nd Floor, Novus Tower, Plot No. 18, Sector 18, Gurugram, Haryana - 122015,	modassar.a@grinfra.com, ashwin@grinfra.com, transmission@grinfra.com, akul.s@grinfra.com

72.	Dy GM, G R Infra Project Ltd	Rajgarh Transmission Limited, C/O: G R INFRAPROJECTS LIMITED, 2nd Floor, Novus Tower, Plot No. 18, Sector 18, Gurugram State - Haryana Pin Code – 122015	rajgarhtransmission@grinfra.com
73.	CMD, Megha Engineering & Infrastructures Ltd	S-2 Technocrat Industrial Estate Balanagar Hyderabad - 500 037	jsrinivaskumar@meilgroup.in
74.	Chairman & Managing Director, PPCL	Himadri, Rajghat Power House Complex, New Delhi – 110002	md.ipgpp@nic.in
75.	Director & CEO, Indian Transmission Business Sterlite Power Transmission Ltd	DLF Cyber Park, Tower B, 9th Floor, Udyog Vihar Phase -III, Sector-20 Gurugram- 122008 Ph – 0124-4562000	balaji.sivan@sterlite.com, fahim.alam@sterlitepower.in, Sterlite.bd@sterlitepower.com, chandan.dutt@sterlite.com
76.	Dy. President Kalpataru Power Transmission Ltd	101, Kalpataru Synergy, Opp. Grand Hyatt, Vakola , Santacruz (E), Mumbai 400055. India.	milind.nene@kalptarupower.com, kaushal.thakkar@kalpatarupower.com, thakkarkaushal86@yahoo.com, ajay.tripathi@kalpatarupower.com
77.	Director, Torrent Power Ltd	Electricity House, Lal Darwaja, Ahmedabad – 380001	NAMANSHAH@torrentpower.com, kaushal.thakkar@kalpatarupower.com, kashyapdesai@torrentpower.com, MAYANKGUPTA@torrentpower.com, VATSALPATEL@torrentpower.com
78.	Associate Director, Commercial & Regulatory, Sekura	503A, Windsor, Off CST Road, Kalina Mumbai-400098	Vijayanand.Semletty@Sekura.in

79.	CMD, KEC International Limited	RPG House, 463, Dr. Annie Besant Road,Worli, Mumbai – 400030	kecindia@kecrpg.com
80.	CMD, Juniper Green Transmission Private Limited	F-9 First Floor, Manish Plaza-1, Plot No. 7, MLU, Sector 10, Dwarka South West Delhi 110075	rohit.gera@junipergreenenergy.com, rohit.gera91@gmail.com
81.	CMD, ReNew Transmission Ventures Private Limited	ReNew , Commercial Block-1, Zone 6, Golf Course Road DLF City Phase-V, Gurugram-122009	mohit.jain@renewpower.in, anuj.jain@renewpower.in, amit.kumar1@renewpower.in
82.	CMD, Apraava Energy Private Limited	7th Floor, FULCRUM, Sahar Road, Andheri (East) Mumbai 400 099	sumit.sinha@apraava.com , naveen.munjal@apraava.com, roshni.shah@apraava.com
83.	Head & VP, Regulatory & Contracts	Unit No. 101, First Floor, Windsor, Village KoleKalyan, off CST Road, Vidyanagari Marg, Kalina, Santacruz (East), Mumbai – 400 098	venkatraman.inumula@indigrid.com
84.	Senior Manager (Bidding & Business Development), IndiGrid Ltd	Unit No. 101, First Floor, Windsor, Village KoleKalyan, off CST Road, Vidyanagari Marg, Kalina, Santacruz (East), Mumbai – 400 098 Maharashtra	wasim.alam1@indigrid.com
85.	Managing Director, L&T IDPL	L&T campus TCTC building , First Floor, Mount Poonamalle Road, Manapakkam, Chennai-600089, Tamil Nadu	contactus@lntidpl.com csr@lntecc.com
86.	Chief Engineer, Electric M &RE Division	Electric M &RE Division, Choglamsar, Leh-Ladakh-194101	cepladakh@gmail.com

87.	Director (BD & Commercial), Apraava Energy	Apraava Energy Private Limited (FULCRUM 7th Floor, Next to Hyatt Regency, Sahar Road, Andheri (East), Mumbai – 400 099. India.	sumit.sinha@apraava.com
88.	Manager, Megha Engineering & Infrastructures Ltd	-	**shivaprasad@meilgroup.com**
89.	Manager ReNew Transmission Ventures Pvt Ltd	Renew.Hub, Commercial Block-1, Zone-6, Golf Course Road, DLF City Phase V, Gurugram, Haryana – 122009	mohit.jain@renew.com
90.	Asst. Vice President, Sterlite Power	DLF Cyber Park, 9th Floor, B Block, Udyog Vihar Phase III, Sector 20, Gurugram – 122008, Haryana, India	yash.tandon@sterlite.com
91.	Head Environment & Corporate Affairs, Resergent Power (TATA)	NRSS - XXXVI,Tata Power B-12 & 13 Shatabdi Bhawan, Sector-4, Noida State - Uttar Pradesh - 201301	rajnishmehrotra@tatapower.com

Annexure-AA.III

सत्यमेव जयते

भारत सरकार/Government of India
विद्युत मंत्रालय/Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/Central Electricity Authority
एन.पी.सी. प्रभाग/National Power Committee Division
Ist Floor, Wing-5 ,West Block-II, RK Puram, New Delhi-66

No. CEA-GO-15-14/1/2021-NPC Division/160 Date: 15.09.2025

To
(As per distribution list)

विषय: 04.07.2025 को शिलांग, मेघालय में आयोजित एनपीसी की 16वीं बैठक का कार्यवृत्त के संबंध में।
Subject: Minutes of the 16th Meeting of NPC held on 04.07.2025 at Shillong, Meghalaya - reg.

04.07.2025 को शिलांग, मेघालय में आयोजित एनपीसी की 16वीं बैठक का कार्यवृत्त आपकी जानकारी और आवश्यक कार्रवाई के लिए संलग्न है।

The Minutes of the 16th meeting of NPC held on 04.07.2025 at Shillong, Meghalaya is enclosed herewith for your kind information and necessary action, please.

भवदीय/Yours faithfully

Encl: As above

15/09/2025

(ऋषिका शरण/Rishika Sharan)
मुख्य अभियन्ता एवं सदस्य सचिव,रा.वि.स /
Chief Engineer & Member Secretary, NPC

crore. The project is proposed to be implemented in three phases: **Phase-I** by 2030–31, **Phase-II** by 2031–32, and **Phase-III** by 2033–34. The implementation timeline includes 2~3 years for complete manufacturer readiness and 36 months for execution from the date of allocation. Route alignment analysis, including possible overlaps with wildlife/protected areas, will be undertaken using the PM Gati Shakti portal. Load flow studies indicate that power flow, bus voltages, and bus angles remain within permissible limits under both normal and contingency scenarios.

2.16.4 **CMD, GRID-INDIA** suggested that the proposed scheme of 1100 kV could be examined for other scenarios in addition to the two scenarios that were presented by CTUIL.

2.16.5 After detailed deliberations, it was agreed by all the members that CTUIL may share the proposal for the 1100 kV Ultra High-Capacity Transmission Corridor interconnecting the WR, ER, and SR grids with GRID-India for their feedback. Upon receipt of feedback from GRID-India, CTUIL may circulate the revised proposal to all RPCs for their comments, following which the agenda will be placed before the NCT for approval. Additionally, the CEA Manual on Transmission Planning Criteria (2023) shall be updated to incorporate provisions for 1100 kV systems by Power System Wing, CEA. The study for this corridor shall also consider a broader set of scenarios to ensure a comprehensive system analysis.

2.16.6 <u>Decision of the NPC</u>:

i. **CTUIL shall share the proposal of 1100 kV Ultra High-Capacity Transmission Corridor for interconnection of WR, ER and SR grids with GRID-India for their feedback.**

(<u>Action</u>: CTU and GRID India)

ii. **CTU shall share the revised proposal after receipt of the feedback from GRID-INDIA, with all RPCs for their views. Accordingly, an agenda will be placed before the NCT meeting for approval.**

(<u>Action</u>: CTU and All RPCs)

iii. **The CEA Manual on Transmission Planning Criteria, 2023, need to be updated to include provisions for 1100 kV systems.**

(<u>Action</u>: Power System Wing, CEA)

iv. **The Study shall be conducted by considering a broader set of scenarios to ensure comprehensive analysis.**

(<u>Action</u>: CTUIL and All RPCs)

2.17 <u>Installation of OPGW on the existing lines of ISTS and STU</u> (Agenda of CTUIL):

2.17.1 **Representative of CTUIL** briefed the agenda to the Committee and informed that the CEA's communications dated 22.05.2024 and 22.11.2024 mandates all

transmission lines of 110 kV and above to be provided with Optical Ground Wire (OPGW) along with necessary terminal equipment for speech transmission, line protection, and data channels, with upcoming lines specifically to be equipped with 48-fiber OPGW. However, during the planning of new transmission schemes, several existing lines are often having LILO systems at upcoming ISTS/STU substations. In the absence of OPGW on such existing lines, meeting data and voice communication requirements for the new substations becomes a challenge. Moreover, installation of OPGW under live-line conditions is time-consuming and operationally complex compared to its implementation on new lines. He mentioned that a proactive approach is needed to address this issue and enhance the reliability and redundancy of the ISTS communication network which is critical for secure and stable grid operations.

2.17.2 He further informed that in line with the suggestions in the NCT meeting, CTUIL has identified ISTS lines lacking OPGW across various TBCB, RTM, and JV projects, and has compiled the details in **Tables I, II**, and **III** for preparation of a comprehensive augmentation scheme.

Table –I: POWERGRID Transmission lines under RTM without OPGW

S. No.	Region	Line Length (Kms)
1	NR	4091
2	WR	5200
3	SR	644
4	ER	2754
5	NER	146
	Grand Total:	**12835**

Table-II: TATA Powerlink (Joint Venture of POWERGRID & TATA Power) Transmission lines without OPGW

S. No.	Region	Line Length (Kms)
1	ER	309
2	NR	742
	Grand Total:	**1051**

Table- III: TBCB Transmission Lines (Private) without OPGW

S. No.	TSP Name	Region	Line Length (Kms)
1	Indigrid	ER	162
		WR	615
2	Adani	WR	1892
		Total:	**2669**

2.17.3 The NPC agreed that the proposal of Installation of OPGW on the existing lines of ISTS and STU may be put in next NCT meeting for deliberation.

2.17.4 Decision of the NPC:

i. The proposal for installation of OPGW on the existing lines of ISTS may be put in upcoming RPCs/NCT meeting for deliberation. STU may also put up the scheme for OPGW on existing lines in respective RPCs.

(Action: CTUIL/ All RPCs)

2.18 Sustained High Frequency in Indian power system during solar hours (Agenda of Grid India) :

2.18.1 **Representative of Grid-India** highlighted the issue of high frequency on several days in May 2025 and requested implementation of provisions of CEA Flexible Operation Regulations.

2.18.2 **Chairperson, CEA/NPC,** acknowledged the issue and highlighted the importance of implementation of Hydro-based Pumped Storage Projects (PSPs) and the incentives being extended to such projects under various policy frameworks. It was further advised that the matter may be taken up with RE-rich states for a detailed study and examination of the issue.

2.18.3 Decision of the NPC:

i. Grid-India may carry out an assessment of RE capacity addition in the coming years to understand its potential impact on grid frequency. The must run plants contributing to high frequency during solar hours may also be studied and reviewed.

(Action: Grid-India)

2.19 Frequent outages of HVDC Champa-Kurukshetra and its impact on Indian power system (Agenda of Grid India):

2.19.1 **Representative of Grid-India** shared the issue of repeated tripping in HVDC Champa – Kurukshetra line as well as stability related concerns raised by generating units in WR/ER.

2.19.2 **Chairperson, CEA/NPC,** proposed for constitution of a Committee under Member (PS), CEA, examining the issue as well as for suitable SPS design. He further advised CTUIL to plan dynamic reactive compensation devices near load centres.

2.19.3 The NPC agreed that a Committee may be constituted under the chairmanship of the Member (Power Systems), CEA, comprising representatives from NRPC, WRPC, ERPC, PGCIL, NLDC, NRLDC, ERLDC, WRLDC, PSETD Division, CEA and NPC Secretariat, to study the issue in detail and recommend appropriate mitigation measures.

Annexure-AA.IV

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

दिनांक: अगस्त, 2025

सेवा में/To,

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

विषय: 55 वीं तकनीकी समन्वय समिति (टीसीसी) और 80 वीं उत्तरी क्षेत्रीय विद्युत समिति (एनआरपीसी) बैठक का कार्यवृत।

Subject: MoM of 55th Technical Co-ordination Committee (TCC) and 80th Northern Regional Power Committee (NRPC) -reg

महोदय/महोदया,

55th meeting of Technical Co-ordination Committee (TCC) was held on 17.07.2025 (09:30 AM) and 80th meeting of Northern Regional Power Committee (NRPC) was held on 18.07.2025 (09:30 AM) at Udaipur, Rajasthan. MoM of the same is attached herewith. The same is also available on NRPC Website.

भवदीय,

21/08/2025

(ऋषिका शरण)
(Rishika Sharan)
सदस्य सचिव
Member Secretary

Copy to:

1. Sh. H Rajesh Prasad, IAS, Chairperson, NRPC and Principal Secretary to Government Power Development Department, J&K (**jkpdd9@gmail.com**)
2. Er. Raheela Wani, Chairperson, TCC and Managing Director, JKPTCL (**mdjkptcl1@gmail.com**)

- *Scheme shall be taken up in NCT for approval in RTM mode to POWERGRID*
- ***Scope:** Installation of 5 No. of STM-16 FOTE at Saharanpur (PG), Deoband (UP), Saharanpur (UP), Nanauta (UP) and Shamli (UP)*
- ***Estimated cost:** Rs. 2.10 Crs.*
- ***Implementation time frame**: 12 months from date of allocation*

A.9 Installation of OPGW on the existing lines of ISTS (Agenda by CTUIL)

TCC Deliberation

A.9.1 CTU apprised that as per, CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 mandates provision of

"Optical Ground Wire along with necessary terminal equipment shall be provided on transmission lines of voltage rating of 110 kV and above for speech transmission, line protection, and data channels"

"The primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths."

A.9.2 **Chairperson, CEA in 19th meeting of NCT** requested all the Central and State Sector utilities to prioritize implementation of the OPGW laying across it's transmission network for regulatory requirement compliance.

A.9.3 Subsequently, **CEA letter dtd. 22.05.2024**, all the lines 110kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels.

A.9.4 During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition took lot of time on exiting lines compared to new transmission lines.

A.9.5 The installation of OPGW will further enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system.

A.9.6 CTU has identified ISTS Transmission lines in Northern Region which are not having OPGW have been identified and same is attached at **Annexure-A.III** which

comprises RTM/TBCB/JV projects. Summary of transmission lines without OPGW is given below:

A.9.7	**Sr. No.**	A.9.8	**Projects**	A.9.9	**Total Transmission Length (Kms)**
A.9.10	**1**	A.9.11	RTM	A.9.12	4084
A.9.13	**2**	A.9.14	JV	A.9.15	742
A.9.16	**Grand Total**			A.9.17	4826

Tentative Estimated Cost: Rs. 265 Crs.

A.9.18 Accordingly, it's proposed that for ISTS lines CTU will formulate the schemes of implementation of OPGW on existing system on which OPGW is not available, which could be taken up as follows:

a. For TBCB projects, the scheme would be implemented by respective TSP under Change in Law / RTM

b. For RTM projects, the scheme would be implemented by respective TSP under RTM

A.9.19 MS, NRPC stated that as this is regulatory requirement, it should be should be considered with due importance. She further suggested CTU to make comprehensive scheme for installation of OPGW on the existing lines of ISTS.

A.9.20 CTUIL stated that it is seeking in principle technical approval from NRPC forum. It will prepare the detailed scheme after reviewing FOTE requirement at both end of the lines. The scheme shall be deliberated in the CTUIL CPM meetings and comprehensive schemes will be put up in the NRPC for approval.

A.9.21 Forum agreed with the proposal of CTUIL and accorded in principal approval for the same.

NRPC Deliberation

A.9.22 Forum noted the discussion held in the TCC meeting and concurred the same.

Decision of Forum

- *CTU to formulate a comprehensive scheme for implementation of OPGW on existing ISTS lines where OPGW is not available.*

- *State Sector utilities advised to prioritize implementation of the OPGW laying across its transmission network for regulatory requirement compliance.*

A.10 Regarding the non-availability of Ethernet Port at Bhakra Left Bank Power House- Purchase of new Communication Equipment (i.e. SDH Panel) for Bhakra Left Bank Power House under ULDC Scheme through PowerGrid for BBMB (agenda by BBMB)

TCC Deliberation

A.10.1 BBMB apprised that during the process of reporting pending RTUs directly to the Backup Control Centre by BBMB, it was observed that no spare Ethernet ports are available at Bhakra Left Bank Power House. Powergrid informed that the existing communication equipment requires replacement with new one as the existing Fibrehome equipment does not support additional card installations.

A.10.2 Keeping in view of the above requirement, it is requested to add this additional requirement in the existing replacement of Fibrehome equipment by PowerGrid under ULDC Scheme, so that the remaining RTU's may be directly reported to Backup Control Centre of BBMB and any additional future requirement of Ethernet ports for connecting any other equipment may also be catered to.

A.10.3 BBMB also mentioned that this matter was discussed in 26th TeST Sub Committee Meeting wherein it was decided to put up this agenda in NRPC meeting for approval. Minutes of 26th TeST Meeting:

Decisions of the Forum

- POWERGRID and BBMB may proceed bilaterally with the replacement of Fibrehome equipment, subject to mutual agreement.
- For the replacement to be considered under the ULDC Scheme, NRPC Board approval is required. BBMB was advised to present this agenda in the upcoming NRPC meeting for formal approval.

A.10.4 POWERGRID stated that the replacement work may be undertaken bilaterally, with the cost to be borne by BBMB.

A.10.5 BBMB and POWERGRID agreed.

NRPC Deliberation

A.10.6 Forum concurred the deliberation held in the TCC meeting.

Decision of Forum:

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कारपोरेशन ऑफ इण्डिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly Owned Subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CC/CTU/COMM/CPM/NR/9 **Date:** 22.09.2025

Subject: Minutes of 9th Northern Region ISTS Communication Planning Meeting (NR-CPM) held in virtual mode (MS-Teams) on 19th August 2025

Dear Sir/Madam,

Please find enclosed the Minutes of the 9th Northern Region ISTS Communication Planning Meeting (NR-CPM) held on 19th August 2025 through virtual mode.

Thanking you,

Yours faithfully,

(Nutan Mishra)
Sr. GM (CTUIL)

Minutes of 9th ISTS Communication Planning Meeting (CPM) of Northern Region held on 19.08.2025 in virtual mode.

The 9th Meeting of NR-CPM was held on 19.08.2025 through virtual mode. The list of participants is attached at **Appendix-I**.

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

A. Confirmation of minutes of 8th NR-CPM

The Meeting of the 8th NR-CPM was held on 03.02.2025 and MoM of same were issued on dtd. 25.02.2025. As no comments were received, the minutes were considered to be confirmed as circulated.

B. Agenda wise deliberation of 9th NR-CPM

Agenda 1. Installation of OPGW on the existing lines of ISTS and STU

i. CEA has intimated vide letter dtd.22.05.2024 (attached at **Annexure-I**) that all the transmission lines of 110kV and above shall have Optical Ground Wire (OPGW) along with necessary terminal equipment for speech transmission, line protection, and data channels. Further primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternate path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths. Subsequently CEA vide their letter dtd. 22.11.24 (attached at **Annexure-II**) communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater for broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity.

ii. In the present scenario of increased RE penetration, frequent system expansion and strengthening, many of the existing lines are proposed for LILO frequently during transmission planning. However, it has been observed many times during planning/execution of these LILO systems that main line is not having OPGW, which leads to issues such as compromising on the alternate path/ redundancy/ protection. Further installation of OPGW on the existing lines being LILOed leads to time mismatch. Moreover, these OPGW laying schemes take even more time than execution of planned TBCB/RTM schemes such as Live Line installation of OPGW require PTW from respective RLDCs and involve ROW for OPGW laying.

iii. As per para (ii) above, ISTS Transmission lines in Northern Region which are not having OPGW have been identified which comprises RTM/TBCB/JV projects. Summary of transmission lines without OPGW is given below:

Sr. No.	Projects	Total Transmission Length (Kms)
1.	RTM	4084
2.	JV	742
Grand Total		**4826**

Tentative Estimated Cost: Rs. 265 Crs.

iv. This agenda was put up by CTU in the 16th NPC held on 04.07.2025 and thereafter in 80th NRPC meeting held on 18.07.2025 where agenda was agreed in principle by the forum (**Minutes are awaited**).

v. CTU has again requested input from all the TSPs regarding the transmission line where OPGW is not available. However, inputs from Sterlite, Adani and Indigrid are yet to be received. Based on the input received from POWERGRID, POWERLINKS (PTL) and SEKURA, and the database available with CTU, one transmission line of PKTCL has also been considered and revised summary of OPGW lines is given below:

Sr. No.	TSP/Ownership	Total Transmission Length (Kms)
1.	POWERGRID	4142
2.	POWERLINKS (PTL)	846
3.	SEKURA	149
4.	PKTCL	67
Grand Total		**5204**

vi. Summary of FOTE requirement is given below:

Sr. No.	TSP / Ownership	Total FOTE requirement (Tentative)
1.	POWERGRID	50

vii. Detailed list of transmission lines alongwith the requirement of FOTE is studied by CTU and is attached at **Annexure-III**. Respective TSP may confirm the same. After deliberation, final scheme shall be prepared by CTU and shall be deliberated in the separate CPM for finalization.

Deliberations:

CTU explained the agenda regarding OPGW installation on all EHV transmission lines where OPGW is not available. This is in line with CEA letter dtd.22.05.2024 (attached at **Annexure-I**) where it was communicated that all the transmission lines of 110kV and above shall have Optical Ground Wire (OPGW) along with necessary terminal equipment for speech transmission, line

protection, and data channels. Further as per CEA (Technical Standards for Construction of Electrical Plants and Electric Lines), 2022:

> *"Optical Ground Wire along with necessary terminal equipment shall be provided on transmission lines of voltage rating of 110 kV and above for speech transmission, line protection, and data channels."*
>
> *"The primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths"*

This agenda was also deliberated in the 16th NPC meeting held on 04.07.2025 (Minutes awaited) where forum suggested CTU to make a comprehensive scheme regarding OPGW installation and after review in RPCs same can be put up in NCT for approval.

CTU has identified such lines where OPGW is not available based on the inputs received from TSPs and the agenda for the same was put up in the 80th NRPC meeting held on 16-17.07.2025. NRPC forum has given in-principal approval for the same and asked CTU to prepare a detailed scheme considering FOTE requirements for these OPGW links.

CTU has again collected input from all TSPs and prepared consolidated list where OPGW is not available and same is attached at **Annexure-III** which also includes FOTE requirement.

POWERGRID informed that some of the lines have multiple ownership e.g., State and POWERGRID. CTU clarified that on such lines OPGW is to be installed by the respective Transmission Line owners as per their owned portion of transmission lines. CTU requested States to identify such lines and give their confirmation to install OPGW on their respective portions in STU schemes so that final scheme can be prepared by CTU under ISTS for the lines under ISTS. UPPTCL, PSTCL and RRVPNL stated that they shall review and confirm the same within 15 days.

Powerlinks (PTL) and Indigrid enquired about the methodology that shall be adopted for installation of OPGW on lines with multiple ownership. CTU stated that similar methodology as stated above for STUs shall be adopted for lines with ownership of different TSPs i.e., respective TSP shall install OPGW on the line under their ownership.

CTU requested UPPTCL to review the lines which have multiple ownership i.e. POWERGRID and UPPTCL regarding OPGW. In case OPGW is not available on these lines than UPPTCL to install OPGW on their respective transmission line portions. UPPTCL stated that they shall update the status of the lines within 15 days to CTU.

CTU also requested PSTCL & RRVPNL to identify the portion of transmission lines with multiple ownership so that scheme can be finalized. RRVPNL & PSTCL also stated that they shall revert on the same within 15 days.

SEKURA and Powerlinks (PTL) enquired about the number of fibers to be considered in the OPGW cable which is to be installed. CTU informed that as per CEA letter dtd. 22.11.2024 (Attached at **Annexure-II**), 48 fiber OPGW shall be installed in all upcoming schemes (New as well as existing transmission lines).

CTU requested all the TSPs in the meeting to provide the details of the transmission lines without OPGW, if not included in the list attached at **Annexure-III.** These details are to be provided to CTU within 15 days.

POWERGRID, Indigrid, Adani, Sterlite, Powerlinks (PTL) all TSPs agreed to revert within 15 days.

SEKURA confirmed that they have already provided all the details to CTU.

Powerlinks (PTL) enquired regarding installation of FOTE equipment, CTU informed that as per the ownership of Bay/ Substation, FOTE to be installed by the respective Bay/Substation owner.

As per the database/ inputs from UNMS, CTU has identified the tentative requirement of FOTE for these lines and same is displayed by the CTU in the meeting, however there are some clarifications required in the FOTE quantity. For this purpose, CTU suggested that a separate meeting shall be conducted by CTU among CTU, POWERGRID and NMT. After finalization of FOTE requirement and Transmission lines as stated above, a separate CPM shall be called for this agenda purpose.

Agenda 2. Furnishing of inputs for maintaining database of fiber uses as per Fiber sharing guidelines

i. CEA has issued "Comprehensive guidelines for the usage and sharing of fiber cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications" 2025. As per clause no. 7 of said guidelines, CTU for ISTS/ STUs for In-STS shall maintain a comprehensive database of fibers of OPGW installed on transmission lines. Accordingly, it is requested that all entities provide fiber sharing information as per the format attached at **Annexure-IV**.

ii. Only Resonia (erstwhile Sterlite Power) has provided the data, and all other TSPs are requested to expedite.

iii. This agenda was also deliberated in the 28th TeST meeting held on 23.07.2025 where forum requested all the members to provide the details as per the format shared by CTU.

iv. As CTU to develop a portal for the fiber database management in the N-UNMS project as finalized in the 15th NPC and 27th NCT held on 14.11.24 and 06.02.2025 respectively. In this database, STU fibers database also to be included. STUs can also view and manage their fiber database

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कारपोरेशन ऑफ इण्डिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly Owned Subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CC/CTU/COMM/CPM/NR/10 **Date:** 30.01.2026

Subject: Minutes of 10th Northern Region ISTS Communication Planning Meeting (NR-CPM) held in virtual mode (MS-Teams) on 31st December 2025

Dear Sir/Madam,

Please find enclosed the Minutes of the 10th Northern Region ISTS Communication Planning Meeting (NR-CPM) held on 31st December 2025 through virtual mode.

Thanking you,

Yours faithfully,

(Nutan Mishra)
Sr. GM (CTUIL)

Contents

Minutes of 10th ISTS Communication Planning Meeting (CPM) of Northern Region held on 31.12.2025 in virtual mode.

The 10th Meeting of NR-CPM was held on 31.12.2025 through virtual mode. The list of participants is attached at **Appendix-A**.

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

A. Confirmation of minutes of 9th NR-CPM

The Meeting of the 9th NR-CPM was held on 19.08.2025 and MoM of same were issued on dtd. 22.09.2025. As no comments were received, the minutes were considered to be confirmed as circulated.

B. Agenda wise deliberation of 10th NR-CPM

Agenda 1. Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region

I. As per the CEA letter dtd. 22.05.2024 (attached at **Annexure-I**), all lines 110kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels. Further as CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths.

During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition took lot of time on existing lines compared to new transmission lines. The installation of OPGW will also enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system.

Subsequently CEA vide their letter dtd. 22.11.2024 (attached at **Annexure-II**) communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater to broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity.

II. In the 16th NPC meeting held on dtd. 04.07.2025 (relevant extract of MoM attached at **Annexure-III**), proposal for installation of OPGW on the existing ISTS & STU lines were deliberated. In the meeting it was decided that a comprehensive scheme for installation of OPGW on existing ISTS lines may be put up in the upcoming TCC/RPC meetings by CTU.

III. Thereafter, the scheme for OPGW installation on the existing lines of ISTS in Northern Region was prepared by CTU based on the inputs received from all TSPs and database available with CTU. Based on these inputs, OPGW requirement was summarized for ISTS lines and given in the table below which comprises lines of JV/RTM/TBCB:

Sr. No.	Projects	Total Transmission Length (Kms)
1.	RTM	4084
2.	JV	742
Grand Total		**4826**

The tentative cost estimate of above requirement is **Rs. 265 Crs.**

Further implementation methodology was proposed for this scheme:

a. For TBCB projects, the scheme would be implemented by the respective TSP under Change in Law.

b. For RTM projects, the scheme would be implemented by respective TSP under RTM.

IV. This scheme was put up by CTU in the 55th TCC/ 80th NRPC meeting held on 17.07.2025/ 18.07.2025 (relevant extract of MoM attached at **Annexure-IV**) in line with the 16th NPC MoM. The scheme was agreed in principle by the NRPC forum, and CTU was requested to formulate a comprehensive scheme for implementation of OPGW on existing ISTS lines where OPGW is not available.

V. Accordingly, CTU has again collected inputs from all the TSPs e.g. POWERGRID, POWERLINKS (PTL), INDIGRID, ADANI and SEKURA etc. Based on these inputs Requirement of OPGW and FOTE is studied by CTU and detailed list of OPGW & FOTE transmission line is attached at **Annexure-V**.

Sr. No.	TSP/Ownership	Total Transmission Length (Kms)
1.	POWERGRID	4142
2.	POWERLINKS (PTL)	846
3.	SEKURA	149
4.	PKTCL	67
Grand Total		**5204**

VI. Based on the above inputs, a comprehensive scheme for OPGW installation is revised and the agenda for the same was put up by CTU in the 9th CPM (Communication Planning Meeting) held on 19.08.2025 of NR for deliberations.

VII. In the 9th CPM, POWERGRID informed that some of the lines in the list having multiple ownership e.g., State and POWERGRID which needs clarification in point of OPGW installation. CTU requested TSPs/ States to identify such lines and give the details (kms

wise) for such lines so that schemes can be finalized. Major portion of transmission lines having mixed ownership of STUs belong to UPPTCL, PSTCL and RRVPNL. CTU requested UPPTCL, PSTCL and RRVPNL and other TSPs to provide confirmation on the same by email so that the final scheme can be formulated along with FOTE requirement.

VIII. POWERGRID**,** UPPTCL, PSTCL and RRVPNL furnished the inputs regarding mixed ownership line portion details vide their email references as given below:

Sr. No.	Utility name	Email Reference
1.	POWERGRID	Received mail dtd. 13.11.2025
2.	UPPTCL	Received mail dtd. 07.11.2025
3.	RRVPNL	Received mail dtd. 14.11.2025
4.	PSTCL	Received mail dtd. 14.11.2025

IX. As per CERC order on Petition No. 94/MP/2021 dated 25.06.2021 *OPGW shall be installed by replacing earth wire by owner of the transmission line and FOTE to be installed by respective Substation / Bay Owner following the required procedure with the approval of the competent authority*. Similar type of methodology adopted for the schemes agreed previously in 71st NRPC, 72nd NRPC for PKTCL and Sekura schemes of OPGW.

X. Based on the above inputs scheme is revised and formulated TSP / STU wise for deliberations. Scheme consists of List of lines with Kms, Tentative No of FOTE and their locations, Tentative Cost Estimate, mode of implementation and implementation schedule.

Deliberations:

DGM, CTU explained the agenda regarding Comprehensive Scheme for installation of OPGW on all the ISTS transmission lines where OPGW is not available. He apprised the members regarding updates on this scheme after the 9th NR CPM meeting. He stated that scheme was deliberated in the 9th CPM meeting where it was noted that some ISTS lines have multiple ownership e.g. POWERGRID, UPPTCL, RRVPNL, BBMB, PSTCL, Indigrid, Powerlink. In the 9th CPM input was sought from all the members regarding the ownership details. As per inputs received from all members scheme has been updated and is attached with the agenda.

Further CTU stated that Member, PS (CEA) in the 55th TCC/ERPC meeting, suggested that a combined proposal for all the five regions' schemes to be put up in the upcoming NCT and this may be expedited. CTU also mentioned that a comprehensive OPGW scheme has already been deliberated in the NERPC & ERPC for the respective regional communication networks.

CTU stated that as few lines have mixed ownership between POWERGRID, TSPs & STUs etc, accordingly scheme needs to be formulated and also to address the related aspects. As per CERC

order on Petition No. 94/MP/2021 dated 25.06.2021 *OPGW shall be installed by replacing earth wire by owner of the transmission line and FOTE to be installed by respective Substation / Bay Owner following the required procedure with the approval of the competent authority*.

Similar type of methodology has been adopted for the schemes agreed previously in 71st NRPC, 72nd NRPC for Sekura and PKTCL schemes of OPGW. Regarding OPGW and FOTE installation in mixed ownership between different TSPs, methodology can be adopted in a similar manner as done earlier in the case of Malerkotla – Kurukshetra line (Owned by Sekura) approved under 19th NCT dtd. 29.04.2024 and PKTCL lines owned by Indigrid approved in 20th NCT dtd. 25.06.2024. Therefore, OPGW & FOTE to be installed by respective transmission element owner as per their ownership portions and also for clarity of maintenance & other related aspects.

However, during deliberations, POWERGRID and STUs (RRVPNL, UPPTCL) suggested that a combined scheme can be formed which includes POWERGRID and STU portion.

Powerlink stated that they own Bareilly-Mandola line which is LILOed at Meerut S/s. The LILO portion is owned by POWERGRID. The main line length under Powerlink is 297 kms. and under POWERGRID 56 kms. Further, they stated that for the complete portion including POWERGRID they want to install OPGW in a similar manner as approved in the Eastern Region Scheme. POWERGRID stated that they have no objection if this work is done by POWERLINK on the complete line of Bareilly-Mandola line including LILO portion at Meerut (Owned by POWERGRID).

SEKURA stated that they agree with the methodology approved for OPGW work under change in law in line with earlier scheme approved under 19th NCT dtd. 29.04.2024. Further he asked regarding the time frame of scheme, CTU stated that all the schemes shall be done in the matching time frame with main OPGW schemes to be awarded to POWERGRID which is having FOTE of most of the links. Therefore, all TSPs maintain the same time schedule. All members agreed for the same.

POWERGRID stated that it is better if time schedule can be considered 36 months from the date of allocation. CTU stated that as per the MoM of 26th NCT meeting held on 6th January 2025, time schedule for lines >200 kms can be taken as 30 months and for hilly terrain it can be taken as 36 months. CTU also stated that time schedule related matter may also be deliberated in the TeST/NRPC meeting for view of all the members.

POWERGRID and STUs enquired about the fiber sharing on such lines which have mixed ownership of different utilities and asked regarding utilization of fibers for commercial purposes. CTU stated that this scheme is for ISTS communication purpose and to strengthen the ISTS backbone communication network which caters to important data required for Grid-Operation e.g.

SCADA, PMU, VoIP, Protection etc. Fiber sharing shall be as per CEA *Comprehensive guidelines for the usage and sharing of fibre cores of Optical Ground Wire (OPGW)/ Under Ground Fiber Optic (UGFO) Cable for power system applications*. CTU also stated that all the utilities are requested to provide their fiber optic map and Power Maps for better comprehensive planning.

RRVPNL stated that some lines having complete ownership with POWERGRID e.g. RAPP B – Udaipur, Bassi – Phagi where at STU S/s end FOTE can be considered under ISTS scheme. All members agreed for this philosophy for all such type of lines.

INDIGRID stated that they are having difficulty in awarding the project due to lack of suitable bidders for Live Line installation. This delayed the projects as per their past experience.

PSTCL clarified that the lines Dehar–Panchkula, Panipat–Panchkula, Dehar–Rajpura and Bhiwani–Rajpura completely belong to BBMB/POWERGRID and are not under PSTCL's scope. CTU stated that OPGW on the lines under the ownership of BBMB shall be installed by the transmission line owner. As representative of BBMB was not present in the meeting, therefore scheme pertaining to BBMB shall be deliberated in the upcoming TeST meeting.

Utility-wise deliberations on the schemes are given below:

1) RRVPNL:

- ✓ Both Sikar and Ratangarh have no FOTE, and both stations belong to RRVPNL.
- ✓ In line Sikar-Sikar (RJ), Sikar (RJ) belongs to RRVPNL, and it requires 1 FOTE.

RRVPNL vide mail dtd 01.01.2026 furnished their inputs as per the mail following are proposed:

- ✓ No FOTE is required at Ratangarh end of Sikar-Ratangarh Link.

- ✓ FOTE at three Nos. of RRVPNL S/s are to be added in the RRVPNL scheme i.e. at Dausa, Sawai Madhopur and Lalsot S/s alongwith OPGW of 10 Km on LILO portion of main line Anta – Bassi at Lalsot.

  CTU Remark: OPGW on the main line i.e. 220 kV Bassi (PG) – Anta (NTPC) is already available and is not part of ISTS Communication Network and is also not part of this scheme, therefore, RRVPNL is advised to take care this requirement under STU scheme.

2) UPPTCL:

- ✓ OPGW is not present on Jhusi–Phulpur line getting LILOed at Machlishaher.
- ✓ For Raebareli–CG City line, OPGW is already present.
- ✓ UPPTCL apprised that no such line exists for Mau (132kV) – Ballia.

- ✓ Meerut – Shatabdi Nagar OPGW has been installed by UPPTCL on their portion, for POWERGRID Portion, POWERGRID may update.

UPPTCL vide mail dtd 05.01.2026 furnished their inputs as per the mail following are proposed:

- ✓ OPGW is already laid for Meerut - Shatabdinagar Line and No FOTE considered for Shatabdinagar.
  Jhusi - Phulpur is getting LILOed at Machlishaher. For Machlishaher – Phulpur portion OPGW is already present.

3) PSTCL:

- ✓ Lines Dehar (BBMB)–Rajpura (PSTCL), Bhiwani (BBMB)–Rajpura (PSTCL), Dehar–Panchkula (except LILO Portion) & Panipat–Panchkula (except LILO Portion) all belong to BBMB.
- ✓ Lines Kishenpur–Sarna and Sarna–Dasuya are owned by POWERGRID; only FOTE belongs to the respective entity.

PSTCL vide mail dtd 05.01.2026 furnished their inputs as per the mail following are proposed:

- ✓ No FOTE considered for Lines Dehar (BBMB)–Rajpura (PSTCL), Bhiwani (BBMB)–Rajpura (PSTCL) at PSTCL end.

4) POWERGRID

POWERGRID vide mail dtd 08.01.2026 furnished their inputs as per the mail following are proposed:

- ✓ 400kV Ballia - Mau line (13 kms) is under ownership of POWERGID and from Ballia POWERGRID. There are 2 nos. of UPPTCL lines which are 132kV Ballia PG - Bansdih and 132kV Ballia PG - Sikandarpur. Further, the transmission line mentioned at S.No. 32 i.e. 132kV Mau - Ballia may be line of UPPTCL which is from their Mau (Kasara) s/s to 132kV S/s of UPPTCL at Ballia city.
- ✓ Two more lines are added 400kV Muzaffarnagar - Roorkee and 400kV Roorkee – Rishikesh whereas original line is 400kV Muzaffarnagar - Rishikesh under PTCUL ownership and line then LILOed at Roorkee PG, LILO portion of 3.73kms pertains to POWERGRID. OPGW installation on these lines of PTCUL to be deliberated in the TeST meeting.

Summary of "Comprehensive Scheme for OPGW installation on all the ISTS transmission lines in Northern Region"

A. ISTS

S. No	TSP	OPGW (Km)	FOTE (Nos.)	Cost (Cr.)
1	POWERGRID	4168.33	63	271.83
2	POWERLINK	856.3		47.09
3	SEKURA	149		8.195
4	PKTCL	66.381		3.65
Grand Total		**5240.01**	**63**	**330.78**

B. BBMB/STU

S. No	Utility	OPGW (Km)	FOTE (Nos.)	Cost (Cr.)
1	BBMB	576.2	3	Through BBMB/STU Schemes
2	RRVPNL	124.61	6	
3	UPPTCL	135.9	4	
4	PTCUL	121.66	2	

Based on the inputs received from all the STUs/ TSPs schemes has been updated and attached at **Appendix-I.**

The scheme "Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region" (**Appendix-I**) shall be put up in upcoming NRPC TeST meeting thereafter to be put up in TCC/NRPC for review.

All members agreed for the same

Appendix-I

ISTS Schemes

Scheme-1.1: POWERGRID

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	4168.33 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, FODP, NMS, Amplifiers, Approach cable, Power supply etc.)	55+8=63 Nos.
3.	Estimated Cost	271.83 Crs.
4.	Implementation Schedule	30+6 (6 months for hilly terrain etc) = 36 months from date of allocation
5.	Implementation Mode	To be decided in NCT

List of Transmission lines where OPGW installation is proposed along FOTE locations is given table below:

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
1	NR1	220KV BASSI-BAGRU	63.954	35.353	RRVPNL (28.601)	1	0	0
2	NR1	220KV BASSI-IG NAGAR	30.351	22.478	RRVPNL (7.873)	0	0	0
3	NR1	220KV HIRAPURA-IG NAGAR	27.345	24.875	RRVPNL (2.47)	0	0	0
4	NR1	220KV HIRAPURA-SANGANER	220kV Heerapura-Mansarovar, Length: 6.74 Km 220kV Mansarovar - Sanganer,	0.7	RRVPNL (6.74) (14.137)	0	0	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
			Length: 14.137 Km	8.097				
5	NR1	220KV MEERUT-NARA	32.138	2.316	UP (29.822)	1	0	0
6	NR1	220KV MEERUT-SHTBDNGR	33.5	8.234	UP (25.266)	0	0	0
7	NR1	220KV MEERUT-SIMBHOLI	51.428	9.254	UP (42.174)	0	0	0
8	NR1	220KV RAPPB-UDAIPUR	230.297	230.297	-	1	1	1
9	NR1	220KV SIKAR-RATANGARH	76.43	2.83	RRVPNL (73.6)	0	0	0
10	NR1	220KV SIKAR-SIKAR(RJ)	3	3	-	0	1	0
11	NR1	400KV BAGPAT-DEHRADUN	165	165	-	1	1	0
12	NR1	400KV BAGPAT-SAHARANPUR	121	121	-	0	1	0
13	NR1	400KV BASSI-PHAGI (JAIPUR RRVPNL)	48.432	48.432	-	0	1	0
14	NR1	400KV BASSI-SIKAR	169.8	169.8	-	0	0	0
15	NR1	400KV HISAR-KAITHAL	113.12	113.12	-	1	1	0
16	NR1	400KV MEERUT-BAREILLY	249.518	0 (PG portion (**66 Km**) to be done by POWERLINK)	POWERLINK (183)	0	1	0
17	NR1	765KV AGRA-JHATIKALA	253.076	253.076	-	1	1	1

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
18.A	NR1	765KV BHIWANI-PHAGI(JPR) CKT-I	271.51	271.571	-	1	0	1
18.B	NR1	765KV BHIWANI-PHAGI(JPR) CKT-II (separate line)	277.3	277.3	-	0	0	0
19	NR1	765KV MOGA-BHIWANI	273	273	-	1	0	1
20	NR2	220KV Kishenpur-Sarna	103.64	103.64	-	1	1	0
22	NR2	220KV Salal-Kishanpur-III	2	2	-	1	1	0
23	NR2	220KV Sarna-Dasuya	53.07	53.07	-	0	1	0
24	NR2	400 KV Dehar (BBMB) - Rajpura (PSTCL) (LILO Portion)	131.21	14.4	BBMB	0	1	0
25	NR2	400KV Bhiwani (BBMB) - Rajpura (PSTCL) (LILO Portion)	212.51	14.4	BBMB	0	0	0
26	NR2	400 KV Dehar-Panchkula (LILO Portion)	125	9.06	BBMB	0	1	0
27	NR2	400 KV Panipat-Panchkula (LILO Portion)	155	9.06	BBMB	0	0	0
28	NR2	400kV Ludhiana - Patiala	76.215	76.215	-	1	1	0
29	NR2	400kV NALAGARH-Patiala	93.78	93.78	-	1	0	0
30	NR2	400kV Uri 1 - Uri 2	10.456	10.456	-	1	1	0
31	NR2	220KV Salal-Jammu-I	56.33	56.33	-	0	0	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
32	NR3	220kV AGRA(PG)-BHARATPUR(RRV PNL)	55.858	55.858	-	0	1	0
33	NR3	220kV AGRA(PG)-SIKANDARA(UP)	55.858	55.858	-	0	1	0
34	NR3	220KV ALLD-JHUSI(UP)	28.079	21.879	UP (6.2)	1	0	0
35	NR3	220KV AUR-SIKANDARA	182.176	182.176	-	1	0	0
36	NR3	220KV JHUSI(UP)-PHULPUR(UP)	220KV JHUSI(UP)-Machhlishahar (UP), Length: 72.56 220KV Machhlishahar (UP) - PHULPUR(UP), Length: 50.072	16.686 0.2	UP (56) (49.4)	0	0	0
37	NR3	220KV KANPUR(PG) - RANIYA(UP)-1	1.683	1.683	-	1	1	0
37	NR3	220KV KNP-MAINPURI	10.4	10.4	-	0	1	0
39	NR3	220KV KNP-NAUBASTA	14.86	14.86	-	0	1	0
40	NR3	220KV KNP-PANKI-II	14.86	14.86	-	0	1	0
41	NR3	220KV KNP-UNCHR-III	144.63	144.63	-	0	1	0
42	NR3	220KV RAIBRLY-CG CITY(UP)	2	2	-	1	1	0
43	NR3	400KV AGRA-BHIWADI	208.98	208.98	-	0	1	0
44	NR3	400KV BALIA-MAU 400kV	13	13	-	0	1	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
45	NR3	400KV LUCKNOW-UNNAO	73.286	73.826	-	1	1	0
46	NR3	400KV SINGRAULI-FATEHPUR	330.953	330.953	-	1	1	1
47	NR3	765KV ALIGARH-JHATIKARA	158	158	-	1	0	0
48	NR3	765KV KANPUR(GIS)-ALIGARH	327	327	-	1	0	1
49	NR2	400kV NALAGARH-BANALA-I	112.78	46.399	PKTCL (66.381)	0	1	0
50	NR1	400kV Muzaffarnagar – Roorkee (LILO portion)	69.28	3.73	65.55 (PTCUL)	0	1	0
51	NR1	400kV Roorkee - Rishikesh (LILO portion)	52.38	3.73	48.65 (PTCUL)	0	0	0
52	NR1	400kV Malerkotla – Amritsar	149	0	-	1	1	0
53	NR3	400kV Muzaffarpur-Gorakhpur	260	0	-	1	1	1
54	NR3	400kV Lucknow-Gorakhpur	245	0	-	0	0	1
55	NR3	400 kV Meerut - Mandola	101.8	0 (**54.3 Km** of PG portion to be laid by POWERLINK)	47.5 (POWERLINK)	0	1	0
Total OPGW Length (PG Ownership): 4168.33 Km						**Total FOTE 55+8= 63**		

- 55 No. of FOTE at ISTS S/s for OPGW on POWERGRID Lines and 8 No. of FOTE at ISTS S/s for OPGW of POWERLINK and INDIGRID. Total 63 FOTE at ISTS stations.

ISTS Scheme-1.2: POWERLINK

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	735.7 Kms. + 120.5 Kms. (PG portion to be done by POWERLINK) **Total OPGW = 856.3 Km**
2.	Estimated Cost	47.09 Crs.
3.	Implementation Schedule	Matching with Scheme 1.1
4.	Implementation Mode	To be decided in NCT

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below

Sr. No.	Line Name	Total Line Length	Total Line Length under POWERLINK	Shared/Multiple ownership with Utility
1.	400kV Muzaffarpur-Gorakhpur	260	260	-
2.	400kV Lucknow-Gorakhpur	245	245	-
3.	400kV Bareilly-Meerut	249.58	183.2	POWERGRID (66.18Km)
4.	400 kV Meerut -Mandola	101.8	47.5	POWERGRID (54.3 Km)

*POWERGRID agreed to the proposal of POWERLINK that OPGW installation on POWERGRID portion in 400kV Bareilly-Meerut (66.18 Km) and 400 kV Meerut -Mandola (54.3 Km) to be done by POWERLINK

Scheme-1.3: PKTCL (INDIGRID)

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	66.38 Kms.
2.	Estimated Cost	3.65 Crs.
3.	Implementation Schedule	Matching with Scheme 1.1
4.	Implementation Mode	To be decided in NCT

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below:

Sr. No.	Line Name	Total Line Length	Line Ownership Under PKTCL	Shared/Multiple ownership with Utility
1.	400kV Nalagarh-Banala-I	112.78	66.381	POWEREGRID (46.4 Km)

Scheme-1.4: NRSS XXXI (B) Transmission Ltd

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	149 Kms.
2.	Estimated Cost	8.19 Crs.
3.	Implementation Schedule	Matching with Scheme 1.1
4.	Implementation Mode	To be decided in NCT

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below

Sr. No.	Line Name	Total Line Length	Line Ownership Under SEKURA	Shared/Multiple ownership with Utility
1.	400kV Malerkotla – Amritsar C1	149	149	-

STU/BBMB Schemes

Scheme-2.1: BBMB

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	575.8 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, Amplifiers, FODP approach cable, Power supply etc.)	3 Nos.
3.	Implementation Schedule	Matching with Scheme-1.1

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below

Sr. No.	Line Name	Total Line Length	Line Ownership Under BBMB	Shared/Multiple ownership with Utility	FOTE Requirement	
					END A	END B
1.	Dehar (BBMB) - Rajpura (PSTCL) (except LILO Portion)	131.2	116.35	POWERGRID	1	0
2.	Bhiwani (BBMB) - Rajpura (PSTCL) (except LILO Portion)	212.5	198.11	POWERGRID	1	0
3.	Dehar-Panchkula (except LILO Portion)	125	115.866	POWERGRID	0	0
4.	Panipat-Panchkula (except LILO Portion)	155	145.866	POWERGRID	1	0

Scheme-2.2: RRVPNL

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	124.61 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, FODP, Amplifiers, approach cable, Power supply etc.)	6
3.	Implementation Schedule	Matching with Scheme-1.1

List of Transmission lines where OPGW installation is proposed alongwith FOTE locations is given below:

Sr. No.	Line Name	Total Line Length(km)	Line Ownership Under RRVPNL (km)	Shared/Multiple ownership with Utility	FOTE Requirement	
					END A	END B
1.	BASSI(PG)-IG NAGAR	30.351	7.873	POWERGRID (22.478 Km)	0	1
2.	HIRAPURA (220KV GSS)-IG NAGAR	27.345	2.47	POWERGRID (24.875 Km)	1	0
3.	HIRAPURA (400KV GSS)-SANGANER	220kV Heerapura-Mansarovar, Length: 6.74 Km 220kV Mansarovar - Sanganer, Length: 14.137 Km	6.04 6.04	POWERGRID (0.7 Km) (8.097 Km)	1	1
4.	BASSI(PG)-BAGRU	63.954	28.601	POWERGRID (35.353 Km)	0	1
5.	220KV SIKAR-RATANGARH	76.43	73.6	POWERGRID (2.83 Km)	1	0

Scheme-2.3: UPPTCL

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	135.896 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, Amplifiers, FODP approach cable, Power supply etc.)	4
3.	Implementation Schedule	Matching with Scheme-1.1

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below:

Sr. No.	Line Name	Total Line Length		Line length under ownership of UPPTCL	Shared/Multiple ownership with Utility	FOTE Requirement	
						END A	END B
1.	MEERUT-NARA	32.138		29.822	POWERGRID (2.31 Km)	0	1
3.	MEERUT-SIMBHOLI	52.2		44	POWERGRID (9.254 Km)	0	1
4.	ALLD-JHUSI(UP)	28.07		6.2	POWERGRID (21.879 Km)	0	1
5.	220KV JHUSI(UP)-PHULPUR(UP)	220KV JHUSI(UP)-Machhlishahar (UP):73	122.63	55.874	POWERGRID (16.686 Km)	0	1
		220KV Machhlishahar (UP) - PHULPUR(UP): 50			(0.572Km)		

Scheme-2.4: PTCUL

Summary of Scheme

Sr. No.	Items	Details
1.	Total OPGW (48F)	121 Kms.
2.	FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, Amplifiers, FODP approach cable, Power supply etc.)	2
3.	Implementation Schedule	Matching with Scheme 1.1

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below

Sr. No.	Line Name	Total Line Length	Line Ownership Under SEKURA	Shared/Multiple ownership with Utility	FOTE Requirement	
					END A	END B
1.	400kV Muzaffarnagar - Roorkee (except LILO portion)	69.28	65.55	POWERGRID (3.73)	1	0
2.	400kV Roorkee -Rishikesh (except LILO portion)	52.38	65.65	POWERGRID (3.73)	0	1

Outlook

FW: 30th Test agenda and word file of comprehensive OPGW scheme

From Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>
Date Thu 09-Apr-26 12:55 PM
To Tanay Jaiswal {तनय जायसवाल} <tanay@powergrid.in>

3 attachments (43 KB)
Non-OPGW Lines not mentioned in CTU TeST_NR-3.xlsx; Non-OPGW Lines not mentioned in CTU TeST_NR-1.xlsx; Non-OPGW Lines not mentioned in CTU TeST_NR-2.xlsx;

डेटा वर्गीकरण : प्रतिबंधित/RESTRICTED

From: Subodh Kumar Suman {सुबोध कुमार सुमन} <sksuman@powergrid.in>
Sent: 27 March 2026 12:52
To: Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>
Cc: Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>; Anjan Kumar Das {अंजन कुमार दास} <anjandas@powergrid.in>; Navodit Hyanki {नवोदित हयांकी} <navodit@powergrid.in>
Subject: Re: 30th Test agenda and word file of comprehensive OPGW scheme

डेटा वर्गीकरण : प्रतिबंधित/RESTRICTED

Dear Sir,

Please find attached list of NR lines not having OPGW and also not included in the Agenda points.

For your review please. Kindly put remarks.

Thanks & Regards

सुबोध सुमन / Subodh Suman
अभियंता / Engineer
ग्रि. स्व. एवं सं. / GA&C
पावरग्रिड / POWERGRID

From: Prakhar Pathak {प्रखर पाठक} <prakharpathak321@powergrid.in>
Sent: Monday, March 23, 2026 12:22 PM
To: Navodit Hyanki {नवोदित हयांकी} <navodit@powergrid.in>; Subodh Kumar Suman {सुबोध कुमार सुमन} <sksuman@powergrid.in>
Cc: Anjan Kumar Das {अंजन कुमार दास} <anjandas@powergrid.in>; Nutan Mishra {नूतन मिश्रा} <nutan@powergrid.in>; Tej Prakash Verma {तेजप्रकाश वर्मा} <tejprakash@powergrid.in>; Ankita Singh {} <ankitasingh03@powergrid.in>; NR-SR Communication <nrsr@powergrid.in>
Subject: 30th Test agenda and word file of comprehensive OPGW scheme

Dear Sir

As discussed, please find attached 30th TeST meeting agenda of NRPC alongwith word file of Comprehensive OPGW scheme for your review.

Regards

Prakhar Pathak

CTU

https://www.bharatelectricitysummit.com/

Annexure-VI

सत्यमेव जयते

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

Annexure-AA.VIII

Dated: 22nd May, 2025

सेवा में/ To,

संलग्न सूची के अनुसार/ As per list attached

विषय: दूरसंचार, स्काडा और टेलीमेटरी उपसमिति की 27 वीं बैठक।
Subject: 27th meeting of Telecommunication, SCADA& Telemetry Sub Committee-reg.

उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार,स्काडा और टेलीमेटरी (टेस्ट) उप-समिति की 27 वीं बैठक दिनांक **21**.04.2025 को 10:30 बजे **सम्मेलन कक्ष**, एन.आर.पी.सी, **नई दिल्ली** में आयोजित की गई। बैठक में कार्यवृत इस पत्र क साथ संलग्न है । यह उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट (Northern Regional Power Committee) पर भी उपलब्ध हैं ।

27th meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC was held on 21.04.2025 at 10:30 am in conference room, NRPC, New Delhi. Minutes of the meeting are enclosed herewith. The same are available on NRPC website at Northern Regional Power Committee.

भवदीय
Yours faithfully,

Signed by Anzum Parwej
Date: 22-05-2025 17:28:39

(अंजुम परवेज)/ (Anzum Parwej)
अधीक्षण अभियंता /Superintending Engineer

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- -110016, फोन: 011-26553023, ई-मेल: sec-nrpc@nic.in, वेबसाईट: www.nrpc.gov.in
18-A, S. Jeet Singh Marg, Katwaria Sarai, New Delhi-110016, Phone: 011-26553023, e- mail: sec-nrpc@nic.in, Website: www.nrpc.gov.in

16. Issues being faced during OPGW installation and Diamond creation works specially in RE Pocket / Whole Rajasthan Area (Agenda by POWERGRID)

16.1. POWERGRID apprised that during installation of OPGW in live line condition (under Non-Auto Mode), work permits are being denied by NRLDC, resulting delay in completion of works. Further, works in night hours specially in LIVE LINE conditions suffers a lot. Hardly 2 to 3 hours of working window was available to workers and this is also a safety concern specially in LIVE LINE works.

16.2. Further, POWERGRID mentioned that OPGW installations are being carried out by Power Transmission Utilities for establishment of their communication system for Grid operation purpose. At power line crossings, OPGW diamonds are being created to ensure adequate clearance and prevent line tripping at the crossings. However, now-a-days shutdowns are approved in night hours, especially in RE pockets. Poor visibility in remote areas, increases risks to manpower and complicates precise measurements of clearance with risk of potential line tripping at the time of charging or during bad weather conditions whereas in daytime work permits could address these issues, leveraging natural light for improved visibility and safety.

16.3. NRLDC mentioned that permit has been issued as per prevailing grid condition on daily basis.

16.4. MS, NRPC stated that solar hours need to be avoided and early morning and evenings may be considered for work permit.

Decision of the forum:

- Optimization of work permits should be undertaken, taking into consideration the prevailing grid conditions, to facilitate the installation of OPGW. However, solar generation hours should be avoided while scheduling the work, to minimize the impact on renewable energy generation and overall grid stability.

17. Issues being faced by NMT Team at UNMS Control Centre (Agenda by POWERGRID)

17.1. Representative from POWERGRID informed that U-NMS project, implemented by POWERGRID in the Northern Region through M/s Sterlite, has been in place for over a year since its commissioning. However, since then, a significant number of new equipment installation/replacements have taken place, making it challenging to track whether these nodes and devices have been updated in the U-NMS system. In this context, all constituents are requested to nominate a nodal officer to help address and resolve this issue.

17.2. CTUIL may take up the issue of integration of Network Equipment of IPPs and TBCB assets with respective utility.

17.3. DTL is requested to arrange to rectify their AC system, so that UNMS servers can be powered on.

17.4. PTCUL is requested to provide uninterrupted power supply (UPS) for UNMS system, so that system can be powered on and services can be utilised.

17.5. CTUIL informed that they will examine the case for upgradation of equipment where bandwidth is being choked specially in STM-4 routes. System generated report from UNMS system is attached where B.W. Utilization over 75%.

Source Node	Source Port	Destination Node	Destination Port	Layer Rate	B.W. Utilization (%)
Allahabad_PG	STM4-1-2-4	varanshi 765	STM4-1-7-1	STM-4	86.51
LUCKNOW400_ SDH-01	STM4-1-1-1	Sohwal	STM4-1-1-5	STM-4	88.89
BAGPAT	STM4-1-2-2	Meerut01	STM4-1-111-1	STM-4	80.95
Saharanpur	STM4-1-3-1	Dehradun PG	STM4-1-1-1	STM-4	77.78
Patiala_PG	STM4-1-2-3	SLDC_CHD.	STM4-1-111-1	STM-4	88.89
Bhiwani	STM4-1-2-2	Bhiwani 2	STM4-1-3-1	STM-4	82.94
SLDC_Panipat	STM4-1-3-5	BBMB_ DADRI_HR	STM4-1-2-3	STM-4	77.38
SHAHJAHANPUR	STM4-1-3-1	LUCKNOW400_ SDH-01	STM4-1-3-5	STM-4	85.71
Gagal	STM4-1-3-1	HAMIRPUR 2	STM4-1-3-1	STM-4	87.7
Ludhiana_PG	STM4-1-1-1	PG_MALERKOTLA	STM4-1-2-1	STM-4	80.95
Jalandahr-PG	STM4-1-1-5	Rep Jalandhar	STM4-1-2-2	STM-4	85.71
Jalandahr-PG	STM4-1-3-1	HAMIRPUR PG	STM4-1-3-1	STM-4	78.97
HAMIRPUR 2	STM4-1-2-3	HAMIRPUR PG	STM4-1-2-3	STM-4	80.16
Ballabhgarh02	STM16-1-2-1	Tuglakabad 400	STM16-1-2-1	STM-16	82.84

Decision of the forum:

- MS, NRPC mentioned that UNMS system has been implemented after the approval of all stakeholders considering the benefits that this scheme provides, therefore all states may provide necessary infra in their respective scope to efficiently operate the UNMS.
- All constituents to nominate a nodal officer to help track whether all nodes and devices have been updated in the U-NMS system and resolve the issues.

18. SDH equipment of FIBCOM make installed under Package-IV(a) & IV(c) at different locations in Himachal Pradesh are maloperating during transmission of real-time data. (Agenda by HPSEBL)

18.1. HPSEB apprised that SDH equipment of FIBCOM make installed under Package-IV(a) & IV(c) at different locations in Himachal Pradesh are maloperating during transmission of real-time data. The issue has already been taken up time and again with the FIBCOM Engineer posted at Shimla, however, the issues always remain unresolved.

18.2. POWERGRID stated that the issue appears to be related to earthing; however, the reason it is occurring specifically in FIBCOM equipment requires further analysis. It was suggested that a third-party assessment may be conducted to analyze the earthing issue.

18.3. MS, NRPC stated that POWERGRID should take up the issue with the vendor.

Decision of the forum:

- POWERGRID to resolve the issue at the earliest.

सत्यमेव जयते

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

Dated: 28th August, 2025

सेवा में/ To,

संलग्न सूची के अनुसार/ As per list attached

विषय: दूरसंचार, स्काडा और टेलीमेटरी उपसमिति की 28 वीं बैठक।
Subject: 28th meeting of Telecommunication, SCADA& Telemetry Sub Committee-reg.

उत्तर क्षेत्रीय विद्युत समिति की दूरसंचार,स्काडा और टेलीमेटरी (टेस्ट) उप-समिति की 28 वीं बैठक दिनांक **23**.07.2025 को 11:00 बजे **सम्मेलन कक्ष**, एन.आर.पी.सी, **नई दिल्ली** में आयोजित की गई। बैठक में कार्यवृत इस पत्र क साथ संलग्न है । यह उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट (Northern Regional Power Committee) पर भी उपलब्ध हैं ।

28th meeting of Telecommunication, SCADA & Telemetry (TeST) Sub-committee of NRPC was held on 23.07.2025 at 11:00 am in conference room, NRPC, New Delhi. Minutes of the meeting are enclosed herewith. The same are available on NRPC website at Northern Regional Power Committee.

भवदीय

Signed by Anzum Parwej
Date: 28-08-2025 16:28:18

(अंजुम परवेज)/ (Anzum Parwej)
अधीक्षण अभियंता /Superintending Engineer

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- -110016, फोन: 011-26553023, ई-मेल: sec-nrpc@nic.in, वेबसाईट: www.nrpc.gov.in
18-A, S. Jeet Singh Marg, Katwaria Sarai, New Delhi-110016, Phone: 011-26553023, e- mail: sec-nrpc@nic.in, Website: www.nrpc.gov.in

AA11 Issues being faced by NMT Team at UNMS Control Centre (Agenda by POWERGRID)

AA.11.1 Subject agenda raised by UNMS team during 27th TeST meeting regarding integration of balance Network Elements (15-20%) and challenges to get the updated / current data or status of NEs pending for integration with UNMS, due to inadequate support from States/IPPs/ISTS. Accordingly, during 27th TeST, it was deliberated for nomination of nodal officers from all the constituents to help, coordinate and resolve the issue.

AA.11.2 Representative from POWERGRID / UNMS team again mentioned regarding the inadequate support and requested all States/IPPs/ISTS licensees to share details of nodal officers for day-to-day coordination and integration. Further, requested for escalation matrix for ISTS nodes for intimation and resolution of outage issues.

AA.11.3 NMT team has also raised issues w.r.t upgradation of software version of existing ECI NMS / Nodes (at DTL) due to lack spares, power supply issue at Kashipur, PTCUL and integration of JKPTCL communication system.

AA.11.4 Representatives of DTL & JKPTCL were not present in the meeting and representative of PTCUL mentioned for arrangement of uninterrupted power supply within 03 months for UNMS system at Kashipur.

AA.11.5 CTUIL informed that they are examining the case for upgradation of equipment where bandwidth is being choked specially in STM-4 routes. System generated report from UNMS system is attached where B.W. utilization over 75%.

Sr. No.	Source Node	Source Port	Destination Node	Destination Port	Layer Rate	Utilization (%)
1	Sohawal	STM4-1-2-3	Ballia_400	STM4-1-4-3	STM-4	92.06
2	PG_KURUKSHETRA	STM4-1-3-1	Abdullapur PG	STM4-1-3-1	STM-4	90.08
3	Ballabhgarh03	STM16-1-4-3	BHIWADI_SDH-02	STM16-1-2-3	STM-16	92.26
4	KOTPUTLI	STM16-1-2-3	BHIWADI_SDH-02	STM16-1-2-4	STM-16	78.97
5	BAREILLY	XS A:SAMQ o Port 2	SHAHJAHANPUR	XS B:SAMQ oPort 2	STM-4	99.6
6	Jallandhar-PG	STM4-1-2-3	Ludhiana_PG	STM4-1-3-1	STM-4	94.84
7	Kunihar LDC_HP	STM4-1-1-1	Gagal	STM4-1-2-3	STM-4	75
8	Abdullapur PG	STM4-1-1-1	Dehradun PG	STM4-1-3-1	STM-4	90.87
9	BAREILLY_400	STM4-1-1-1	SHAHJAHANPUR	STM4-1-1-1	STM-4	96.03

- **Decision of the forum:**

All constituents are again requested to nominate nodal officer for day-to-day operational activities, integration of all nodes (pending / upcoming) with UNMS and providing escalation matrix for intimation and resolution of outage issues.

AA12 Frequent 48V DC Power Supply issues at State Nodes (Agenda by POWERGRID)

AA.12.1 Representative from POWERGRID informed regarding the integrated nature of ULDC communication network involving Centre Sector as well as State Constituent's transmission lines/sub-stations and challenges in maintaining the communication network

Annexure-AA.IX

Annexure-VI

Nodes for which bandwidth congestion discussed in 27th TeST meeting							
Sl. No.	**Source Node**	**Source Port**	**Destination Node**	**Destination Port**	**Layer Rate**	**B.W. Utilization (%)**	**CTUIL Remarks BW Utilization (%)**
1	Allahabad_PG	STM4-1-2-4	VARANASI_765	STM4-1-7-1	STM-4	86.51	87.3
2	LUCKNOW400_SDH-01	STM4-1-1-1	Sohwal	STM4-1-1-5	STM-4	88.89	90.87
3	BAGPAT	STM4-1-2-2	Meerut01	STM4-1-111-1	STM-4	80.95	69.44
4	Saharanpur	STM4-1-3-1	Dehradun PG	STM4-1-1-1	STM-4	77.78	80.16
5	Patiala_PG	STM4-1-2-3	SLDC_CHD.	STM4-1-111-1	STM-4	88.89	96.03
6	Bhiwani	STM4-1-2-2	Bhiwani 2	STM4-1-3-1	STM-4	82.94	55.16
7	SLDC_Panipat	STM4-1-3-5	BBMB_DADRI_HR	STM4-1-2-3	STM-4	77.38	66.67
8	SHAHJAHANPUR	STM4-1-3-1	LUCKNOW400_SDH-01	STM4-1-3-5	STM-4	85.71	91.27
9	Gagal	STM4-1-3-1	HAMIRPUR 2	STM4-1-3-1	STM-4	87.7	95.24
10	Ludhiana_PG	STM4-1-1-1	MALERKOTLA_PG	STM4-1-2-1	STM-4	80.95	81.75
11	Jalandahr-PG	STM4-1-1-5	Rep Jalandhar	STM4-1-2-2	STM-4	85.71	84.92
12	Jalandahr-PG	STM4-1-3-1	HAMIRPUR PG	STM4-1-3-1	STM-4	78.97	84.92
13	HAMIRPUR 2	STM4-1-2-3	HAMIRPUR PG	STM4-1-2-3	STM-4	80.16	82.14
14	Ballabhgarh02	STM16-1-2-1	Tuglakabad 400	STM16-1-2-1	STM-16	82.84	87.1
Nodes for which bandwidth congestion discussed in 28th TeST meeting							
Sl. No.	**Source Node**	**Source Port**	**Destination Node**	**Destination Port**	**Layer Rate**	**B.W. Utilization (%)**	**CTUIL Remarks BW Utilization (%)**
15	Sohwal	STM4-1-2-3	Ballia_400	STM4-1-4-3	STM-4	92.06	94.05
16	PG_KURUKSHETRA	STM4-1-3-1	Abdullapur PG	STM4-1-3-1	STM-4	90.08	91.67
17	Ballabhgarh03	STM16-1-4-3	BHIWADI_SDH-02	STM16-1-2-3	STM-16	92.26	95.04
18	KOTPUTLI	STM16-1-2-3	BHIWADI_SDH-02	STM16-1-2-4	STM-16	78.97	76.79
19	BAREILLY	XS A:SAMQ oPort 2	SHAHJAHANPUR	XS B:SAMQ oPort 2	STM-4	99.6	99.6
20	Jalandahr-PG	STM4-1-2-3	Ludhiana_PG	STM4-1-3-1	STM-4	94.84	95.63
21	Kunihar LDC_HP	STM4-1-1-1	Gagal	STM4-1-2-3	STM-4	75	79.76
22	Abdullapur PG	STM4-1-1-1	Dehradun PG	STM4-1-3-1	STM-4	90.87	91.67
23	BAREILLY_400	STM4-1-1-1	SHAHJAHANPUR	STM4-1-1-1	STM-4	96.03	96.43

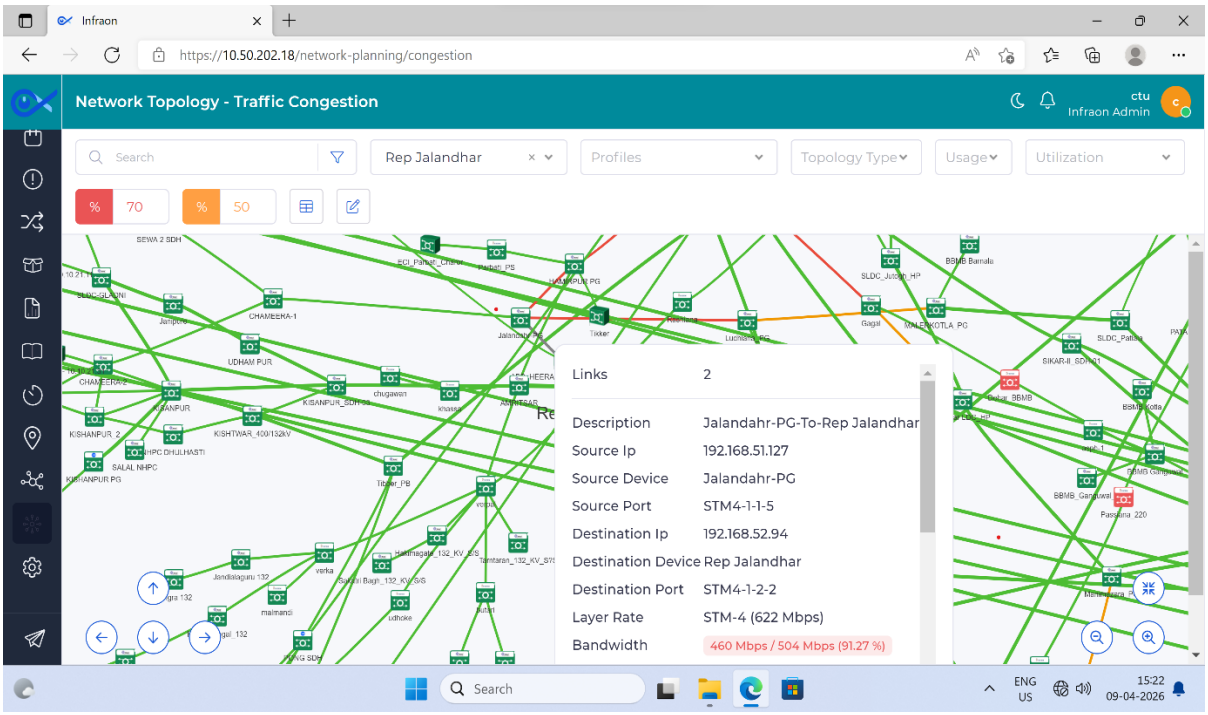
Annexure- AA.X

Nodes for which bandwidth congestion discussed in 27th TeST meeting															Remark
Sr.No.	Source Node	Source Port	FOTE Requirement at Source node	Destination Node	Destination Port	FOTE requirement at Destination Node	layer Rate	Distance (Km)	B.W.Utilization (%)	Ctuil Remarks BW Utilization(%)	Proposed FOTE capacity	Quantity Required	Estimated Unit Cost Per SDH Equipment(lakh)	Estimated Cost(Lakh)	
1	Allahabad_PG	STM4-1-2-4	0	Varanasi_765	STM4-1-7-1	0	STM-4	99	86.51	87.3	STM-64	0	74	0	**catering interregional data transfer**
2	LUCKNOW400_SDH-01	STM4-1-1-1	0	Sohwal	STM4-1-1-5	1	STM-4	98	88.89	90.87	STM-16	1	62	62	
3	BAGPAT	STM4-1-2-2	0	Meerut01	STM4-1-111-1	1	STM-4	71	80.95	69.44	STM-16	1	62	62	
4	Saharanpur	STM4-1-3-1	0	Dehradun PG	STM4-1-1-1	0	STM-4		77.78	80.16	STM-16	0	62	0	One FOTE approve din 33rd NCT at Saharanpur PG
5	Patiala PG	STM4-1-2-3	0	SLDC_CHD.	STM4-1-111-1	0	STM-4		88.89	96.03	STM-16	0	62	0	One FOTE approve din 19th NCT at SLDC BBMB (Chandigarh)
6	Bhiwani	STM4-1-2-2	0	Bhiwani 2	STM4-1-3-1	1	STM-4		82.94	55.16	STM-16	1	62	62	
7	SLDC_Panipat	STM4-1-3-5	0	BBMB_DADRI_HR	STM4-1-2-3	1	STM-4		77.38	66.67	STM-16	1	62	62	One FOTE approve din 19th NCT at SLDC Panipat
8	SHAHJAHANPUR	STM4-1-3-1	1	LUCKNOW400_SDH-01	STM4-1-3-5	0	STM-4	170	85.71	91.27	STM-16	1	62	62	Already considered ar Sr No 2
9	Gagal	STM4-1-3-1	1	HAMIRPUR 2	STM4-1-3-1	1	STM-4		87.7	95.24	STM-16	2	62	124	
10	Ludhiana_PG	STM4-1-1-1	0	MALERKOTLA_PG	STM4-1-2-1	0	STM-4	36	80.95	81.75	STM-16	0	62	0	One FOTE approve din 19th NCT at Malerkotla PG
11	Jalandahr-PG	STM4-1-1-5	0	Rep Jalandhar	STM4-1-2-2	1	STM-4		85.71	84.92	STM-16	1	62	62	One FOTE approve din 11th NCT at Jalandhar PG
12	Jalandahr-PG	STM4-1-3-1	0	HAMIRPUR PG	STM4-1-3-1	1	STM-4	135	78.97	84.92	STM-16	1	62	62	One FOTE approve din 11th NCT at Jalandhar PG
13	HAMIRPUR 2	STM4-1-2-3	0	HAMIRPUR PG	STM4-1-2-3	0	STM-4		80.16	82.14	STM-16	0	62	0	Already considered ar Sr No 12
14	Ballabhgarh02	STM16-1-2-1	0	Tuglakabad 400	STM16-1-2-1	1	STM-16	40	82.84	87.1	STM-64	1	74	74	One FOTE approve din 16th NCT at Ballabhgarh **proximity to NRLDC**
Nodes for which bandwidth congestion discussed in 28th TeST meeting															
Sr.No.	Source Node	Source Port	FOTE at Source node	Destination Node	Destination Port	FOTE at destination Node	layer Rate		B.W.Utilization (%)	Ctuil Remarks BW Utilization(%)					
15	Sohwal	STM4-1-2-3	0	Ballia_400	STM4-1-4-3	0	STM-4	229	92.06	94.05	STM-16	0	62	0	
16	PG_KURUKSHETRA	STM4-1-3-1	0	Abdullapur PG	STM4-1-3-1	1	STM-4	52	90.08	91.67	STM-16	1	62	62	One FOTE approve din 19th NCT at Kurukshetra PG
17	Ballabhgarh03	STM16-1-4-3	0	BHIWADI_SDH-02	STM16-1-2-3	0	STM-16		92.26	95.04	STM-64	0	74	0	One FOTE approve din 16th NCT at Ballabhgarh
18	KOTPUTLI	STM16-1-2-3	1	BHIWADI_SDH-02	STM16-1-2-4	0	STM-16	132	78.97	76.79	STM-64	1	74	74	Already considered ar Sr No 17
19	BAREILLY	XS A:SAMQ oPort 2	0	SHAHJAHANPUR	XS B:SAMQ oPort 2	0	STM-4	116	99.6	99.6	STM-16	0	62	0	Already considered in Sr.no.8
20	Jalandahr-PG	STM4-1-2-3	0	Ludhiana_PG	STM4-1-3-1	0	STM-4	85	94.84	95.63	STM-16	0	62	0	One FOTE approve din 11th NCT at Jalandhar PG, Already considered in Sr.no. 10
21	Kunihar LDC_HP	STM4-1-1-1	1	Gagal	STM4-1-2-3	0	STM-4		75	79.76	STM-16	1	62	62	Already considered in sr.no.9
22	Abdullapur PG	STM4-1-1-1	0	Dehradun PG	STM4-1-3-1	0	STM-4	89	90.87	91.67	STM-16	0	62	0	Already considered in sr.no.16 & 4
23	BAREILLY_400	STM4-1-1-1	0	SHAHJAHANPUR	STM4-1-1-1	0	STM-4	116	96.03	96.43	STM-16	0	62	0	Already considered in sr.no.8
		Considered in Comprehensive scheme		Considered in FOTE scheme		Considered in other schemes		To be reviewed in upcoming interregional scheme		**Total FOTE: 13 (2 No. STM-64 and 1 No. of STM-16)**			**Total Estimated Cost(lakhs)**	**830**	

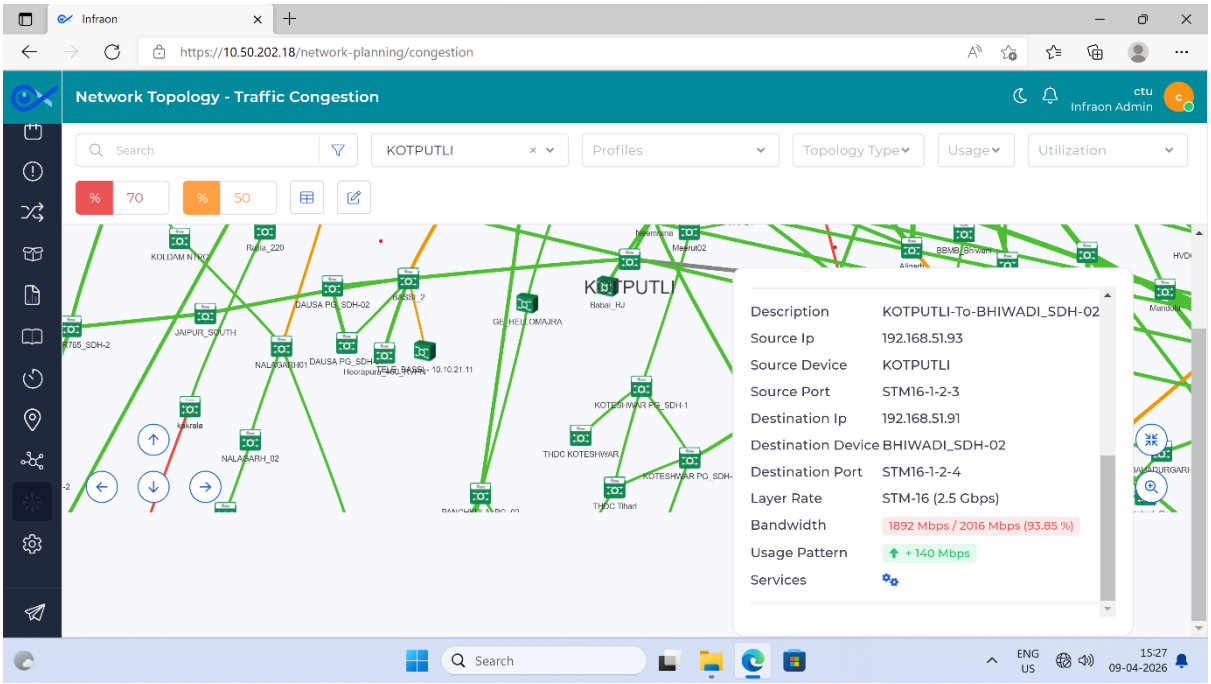
Annexure-XI

UNMS generated bandwidth congestion details:

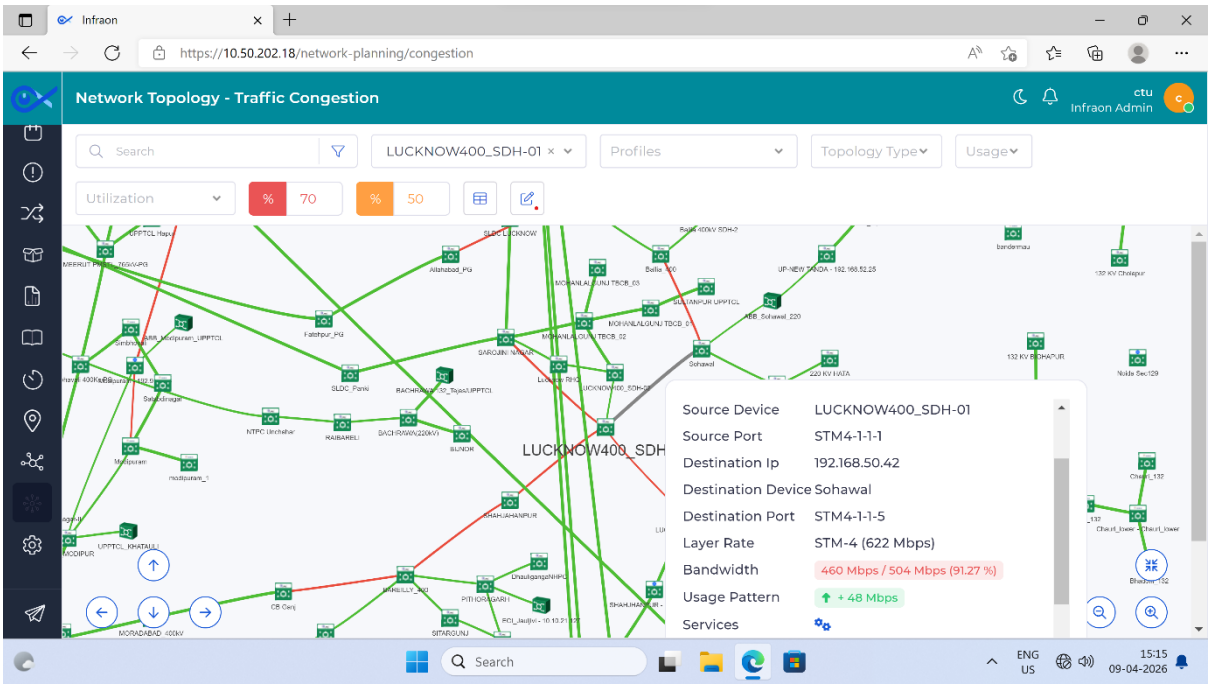
1. Jalandhar to Rep Jalandhar



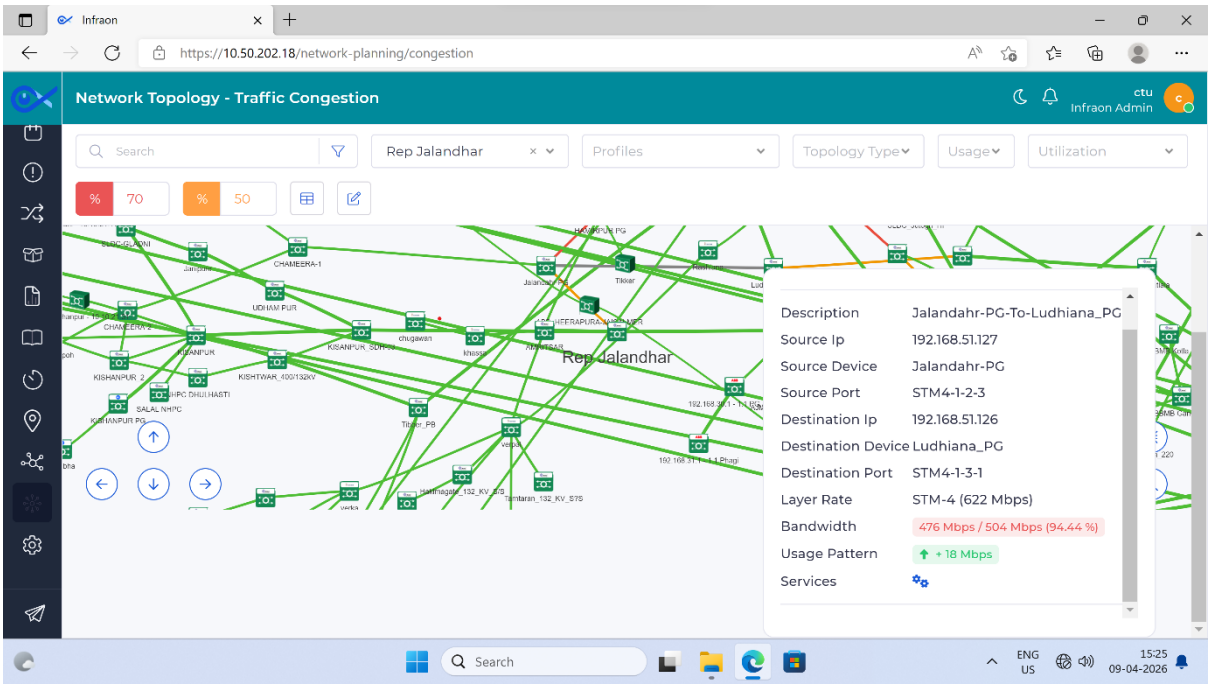
2. Kotputli to Bhiwdi



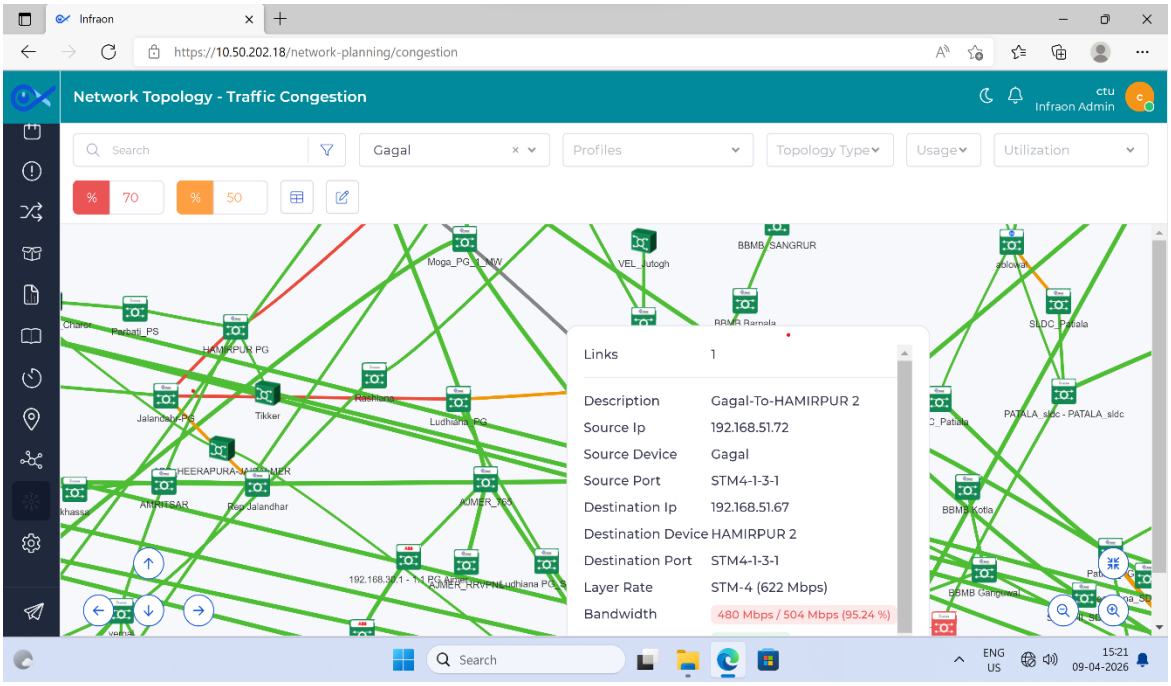
3. Lucknow to Sohawal



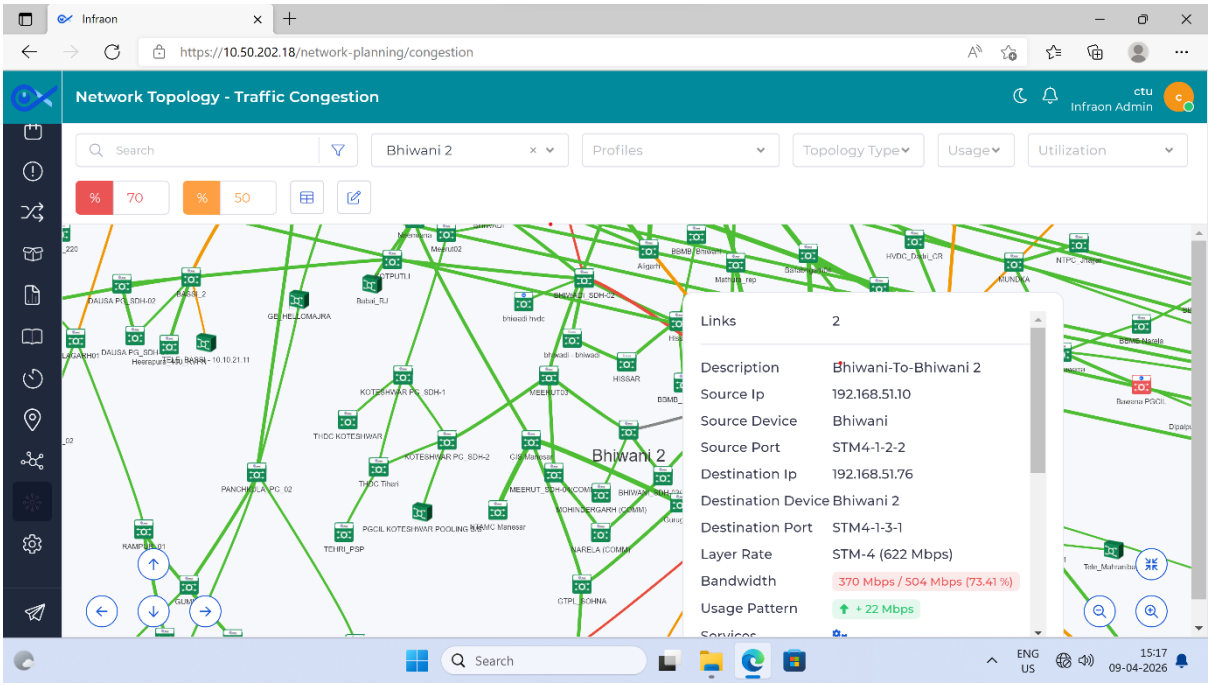
4. Jalandhar to Ludhiana



5. **Gagal to Hamirpur**



6. **Bhiwani to Bhiwani**



Annexure AA.XII

Plant Characteristics for 250 MW /1000 MWh BESS Capacity

Particulars	**Kanpur, Bikaner III and Bhadla-III S/s**
Types of ESS (Integrated):	Integrated
Technology of ESS (Li-ion, Sodium-Sulphur or Lead-Acid)	Li-ion
Number of battery Racks /Modules	Design specific
Number of Battery Cell	Design specific
Voltage capacity of battery Cell (DC Volt)	Design specific
Operation Mode (Bi-directional or uni-directional at interface point with Grid	Bi-directional
Rated Capacity (MW)	250 MW
Maximum Continuous rating of ESS (MW)	250 MW
Energy Capacity (MWh)	1000 MWh
Voltage Output (AC)	33 kV
Voltage Output (DC)	Design specific
Power Factor	(-1) leading to (+1) lagging
Round Trip Efficiency	85%
Response Time	Design specific
State of Charge (SoC)	Design specific
Cycle life	6500 Nos.
C-Rate (Charging/Discharging)	0.25 C
Black Start Capability	Yes
Efficiency or Utilization Factor (%)	Depends upon application & usage

Particulars	**Unit**	**Normative Value**
1	2	3
B. Integrated ESS		
Round Trip Efficiency (RTEess)	%	85
Number of Cycles per day	%	1
Total annual cycles		6500
Availability of ESS (NAPAF)	%	90
Auxiliary Energy Consumption of ESS	%	5
Depth of Discharge (DoD)		Design specific
Useful life of ESS	Years	15

Appendix-I

ISTS Schemes

Scheme-1.1: ISTS scheme for RTM Projects (POWERGRID)

Sr. No.	Items	Details
1.	Name of Scheme	Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region- **Scheme 1.1**
2.	Scope of the scheme	(i) Supply & installation of OPGW (48F) on transmission lines mentioned in **Table A** **Total OPGW (Km): 5392.33** (ii) Supply & installation of FOTE (STM-16 with minimum 5 MSP) (including associated system e.g. Repeaters and its shelter, FODP, NMS, Amplifiers, Approach cable, Power supply etc.) **Total FOTE (No.): 68**
3.	Objective / Justification	I. As per the CEA letter dtd. 22.05.2024, all lines 110 kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels. Further as CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths. During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition takes lot of time on exiting lines compared to new transmission lines. The installation of OPGW will also enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system.

		Subsequently CEA vide their letter dtd. 22.11.2024, communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater to broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity. II. Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region was formulated in the 9th and 10th Communication Planning Meeting of Northern Region after getting inputs from all the TSPs and STUs. Some of the lines in the scheme have multiple ownership e.g., State, POWERLINK and POWERGRID. Further some lines are falls under TBCB as well as RTM projects under ISTS. III. As per ownership of transmission lines and substations The scheme is bifurcated owner wise e.g. TSPs (POWERGRID, POWERLINK, SEKURA & PKTCL) and other utility / STU wise (BBMB, RRVPNL, UPPTCL and PTCUL). IV. This scheme for STUs scope is also identified, however same to be implemented by respective STUs in matching timeframe ISTS scheme. ➢ Under the proposed scheme-1.1, Lines & Substations are in the ownership of POWERGRID. ➢ FOTE at STU locations for which complete Transmission Line is under ISTS is also considered under this scheme as agreed in 10th CPM meeting.
4.	Estimated Cost	**342.2 crore (approx.)**
5.	Implementation Schedule	**36 months from date of allocation (considering hilly terrain)**
6.	Implementing Agency	POWERGRID
7.	Implementation Mode	RTM
8.	Deliberations in different meetings	a. Deliberated in 16th NPC held on 04.07.2025. b. 55th TCC/ 80th NRPC meeting held on 17.07.2025/ 18.07.2025. c. 9th & 10th CPM of NR held on 19.08.2025 & 31.12.2025 respectively.

Table A: List of Transmission lines where OPGW installation is proposed along FOTE locations is given table below:

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
1	NR1	220KV BASSI-BAGRU	63.954	35.353	RRVPNL (28.601)	1	0	0
2	NR1	220KV BASSI-IG NAGAR	30.351	22.478	RRVPNL (7.873)	0	0	0
3	NR1	220KV HIRAPURA-IG NAGAR	27.345	24.875	RRVPNL (2.47)	0	0	0
4	NR1	220KV HIRAPURA-SANGANER	220kV Heerapura-Mansarovar, Length: 6.74 Km 220kV Mansarovar - Sanganer, Length: 14.137 Km	0.7 8.097	RRVPNL (6.74) (14.137)	0	0	0
5	NR1	220KV MEERUT-NARA	32.138	2.316	UP (29.822)	1	0	0
6	NR1	220KV MEERUT-SHTBDNGR	33.5	8.234	UP (25.266)	0	0	0
7	NR1	220KV MEERUT-SIMBHOLI	51.428	9.254	UP (42.174)	0	0	0
8	NR1	220KV RAPPB-UDAIPUR	230.297	230.297	-	1	1	1
9	NR1	220KV SIKAR-RATANGARH	76.43	2.83	RRVPNL (73.6)	0	0	0
10	NR1	220KV SIKAR-SIKAR(RJ)	3	3	-	0	1	0
11	NR1	400KV BAGPAT-DEHRADUN	165	165	-	1	1	0
12	NR1	400KV BAGPAT-SAHARANPUR	121	121	-	0	1	0
13	NR1	400KV BASSI-PHAGI (JAIPUR RRVPNL)	48.432	48.432	-	0	1	0
14	NR1	400KV BASSI-SIKAR	169.8	169.8	-	0	0	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
15	NR1	400KV HISAR-KAITHAL	113.12	113.12	-	1	1	0
16	NR1	400KV MEERUT-BAREILLY	249.518	0 (PG portion (**66 Km**) to be done by POWERLINK)	POWERLINK (183)	0	1	0
17	NR1	765KV AGRA-JHATIKALA	253.076	253.076	-	1	1	1
18.A	NR1	765KV BHIWANI-PHAGI(JPR) CKT-I	271.51	271.571	-	1	0	1
18.B	NR1	765KV BHIWANI-PHAGI(JPR) CKT-II (separate line)	277.3	277.3	-	0	0	0
19	NR1	765KV MOGA-BHIWANI	273	273	-	1	0	1
20	NR2	220KV Kishenpur-Sarna	103.64	103.64	-	1	1	0
22	NR2	220KV Salal-Kishanpur-III	2	2	-	1	1	0
23	NR2	220KV Sarna-Dasuya	53.07	53.07	-	0	1	0
24	NR2	400 KV Dehar (BBMB) - Rajpura (PSTCL) (LILO Portion)	131.21	14.4	BBMB	0	1	0
25	NR2	400KV Bhiwani (BBMB) - Rajpura (PSTCL) (LILO Portion)	212.51	14.4	BBMB	0	0	0
26	NR2	400 KV Dehar-Panchkula (LILO Portion)	125	9.06	BBMB	0	1	0
27	NR2	400 KV Panipat-Panchkula (LILO Portion)	155	9.06	BBMB	0	0	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
28	NR2	400kV Ludhiana - Patiala	76.215	76.215	-	1	1	0
29	NR2	400kV NALAGARH-Patiala	93.78	93.78	-	1	0	0
30	NR2	400kV Uri 1 - Uri 2	10.456	10.456	-	1	1	0
31	NR2	220KV Salal-Jammu-I	56.33	56.33	-	0	0	0
32	NR3	220kV AGRA(PG)-BHARATPUR(RRVPNL)	55.858	55.858	-	0	1	0
33	NR3	220kV AGRA(PG)-SIKANDARA(UP)	55.858	55.858	-	0	1	0
34	NR3	220KV ALLD-JHUSI(UP)	28.079	21.879	UP (6.2)	1	0	0
35	NR3	220KV AUR-SIKANDARA	182.176	182.176	-	1	0	0
36	NR3	220KV JHUSI(UP)-PHULPUR(UP)	220KV JHUSI(UP)-Machhlishahar (UP), Length: 72.56 220KV Machhlishahar (UP) - PHULPUR(UP), Length: 50.072	16.686 0.2	UP (56) (49.4)	0	0	0
37	NR3	220KV KANPUR(PG) - RANIYA(UP)-1	1.683	1.683	-	1	1	0
37	NR3	220KV KNP-MAINPURI	10.4	10.4	-	0	1	0
39	NR3	220KV KNP-NAUBASTA	14.86	14.86	-	0	1	0
40	NR3	220KV KNP-PANKI-II	14.86	14.86	-	0	1	0
41	NR3	220KV KNP-UNCHR-III	144.63	144.63	-	0	1	0
42	NR3	220KV RAIBRLY-	2	2	-	1	1	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
		CG CITY(UP)						
43	NR3	400KV AGRA-BHIWADI	208.98	208.98	-	0	*1	0
44	NR3	400KV BALIA-MAU 400kV	13	13	-	1	1	0
45	NR3	400KV LUCKNOW-UNNAO	73.286	73.826	-	1	1	0
46	NR3	400KV SINGRAULI-FATEHPUR	330.953	330.953	-	1	1	1
47	NR3	765KV ALIGARH-JHATIKARA	158	158	-	1	0	0
48	NR3	765KV KANPUR(GIS)-ALIGARH	327	327	-	1	0	1
49	NR2	400kV NALAGARH-BANALA-I	112.78	46.399	PKTCL (66.381)	0	1	0
50	NR1	400kV Muzaffarnagar – Roorkee (LILO portion)	71	3.73	67.27 (PTCUL)	0	1	0
51	NR1	400kV Roorkee - Rishikesh (LILO portion)	50	3.73	46.27 (PTCUL)	0	0	0
52	NR1	400kV Malerkotla – Amritsar	149	0	-	1	1	0
53	NR3	400kV Muzaffarpur-Gorakhpur	260	0	-	1	1	1
54	NR3	400kV Lucknow-Gorakhpur	245	0	-	0	0	1
55	NR3	400 kV Meerut - Mandola	101.8	0 (**54.3 Km** of PG portion to be laid by POWERLINK)	47.5 (POWERLINK)	0	1	0

S. No	Region	Line Name	Total line length(km)	Powergrid Portion(km)	Shared/Multiple ownership with Utility	FOTE Requirement		Repeater
						End A	End B	
56	NR1	220kV Meerut-(Mataur PG)-Modipuram (UP)-ckt 1	9	2.31	UP	0	0	0
57	NR1	220kV Meerut-(Mataur PG)-Modipuram (UP)-ckt 2	12.22	9.25	UP	0	0	0
58	NR1	400kV Hisar-Bhiwadi (Ckt-2 & 3)	144.079	144.079	-	0	0	0
59	NR1	400kV Hisar-Bhiwani (Ckt-2 & 3)	56.7	56.7	-	0	0	0
60	NR2	220kV Jallandhar-Dasuya (PSTCL)	49.79	49.79	-	0	0	0
61	NR3	765kV Balia – Lucknow	319.532	319.532		0	1	1
62	NR3	400kV Allahabad-Kanpur 2	224	219.183		1	0	0
63	NR3	400kV Fatehpur-Panki	113	113		0	0	0
64	NR3	400kV Bareilly-Moradabad (UP)	92.789	92.789		0	0	0
65	NR3	LILO of 400kV Bareilly - Moradabad at Rampur (PG)	2.71	2.71	-	0	1 (Rampur)	0
66	NR3	400kV Singrauli (NTPC)-Allahabad-3	214.851	214.851	-	0	0	0
Total OPGW Length (PG Ownership): 5392.33 Km						**Total FOTE 60+8= 68**		

- 60 No. of FOTE at ISTS S/s for OPGW on POWERGRID Lines and 8 No. of FOTE at ISTS S/s for OPGW of POWERLINK and INDIGRID. Total 68 FOTE at ISTS stations.
- * STM-64 FOTE is considered at Bhiwadi S/s

Scheme-1.2: ISTS scheme for RTM Projects (POWERLINK)

Sr. No.	Items	Details
1.	Name of Scheme	Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region – **Scheme 1.2**
2.	Scope of the scheme	Supply & installation of OPGW (48F) on transmission lines mentioned in **Table B** along with approach Cable, FODP etc. **OPGW (Km):** 735.7 Kms. + 120.5 Kms. (PG portion to be done by POWERLINK) **Total OPGW = 856.3 Km**
3.	Objective / Justification	I. As per the CEA letter dtd. 22.05.2024, all lines 110 kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels. Further as CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths. During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition takes lot of time on exiting lines compared to new transmission lines. The installation of OPGW will also enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system. Subsequently CEA vide their letter dtd. 22.11.2024, communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater to broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity. II. Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region was formulated in the 9th and 10th Communication Planning Meeting of Northern Region after getting inputs from all the TSPs and STUs. Some of the lines in the scheme have multiple ownership e.g.,

		State, POWERLINK and POWERGRID. Further some lines are falls under TBCB as well as RTM projects under ISTS. III. POWERLINK Lines having mixed ownership with POWERGRID, However in the 10th CPM, POWERLINK requested that POWERGRID portion OPGW also to be laid by POWERLINK as agreed in ER Scheme. POWERGRID agreed to the proposal of POWERLINK that OPGW installation on POWERGRID portion in 400kV Bareilly-Meerut (66.18 Km) and 400 kV Meerut -Mandola (54.3 Km) to be done by POWERLINK. IV. As per ownership of transmission lines and substations The scheme is bifurcated owner wise e.g. TSPs (POWERGRID, POWERLINK, SEKURA & PKTCL) and other utility / STU wise (BBMB, RRVPNL, UPPTCL and PTCUL). V. Implementation schedule of this scheme is considered as *36 months i.e. matching with scheme 1.1*, because FOTE at the end stations are considered in scheme 1.1 in line with CERC order on Petition no. 94/MP/2021(end stations ownership is of POWERGRID). VI. This scheme for STUs scope is also identified, however same to be implemented by respective STUs in matching timeframe ISTS scheme.
4.	Estimated Cost	**47.09 crore (approx.)**
5.	Implementation Schedule	36 months from date of allocation *Matching with Scheme 1.1, which includes FOTE for the entire NR scheme.
6.	Implementing Agency	POWERLINK
7.	Implementation Mode	RTM
8.	Deliberations in different meetings	a. Deliberated in 16th NPC held on 04.07.2025. b. 55th TCC/ 80th NRPC meeting held on 17.07.2025/ 18.07.2025. c. 9th & 10th CPM of NR held on 19.08.2025 & 31.12.2025 respectively.

Table B: List of transmission lines where OPGW installation is proposed along FOTE locations are given in Table below

Sr. No.	Line Name	Total Line Length (Km)	Total Line Length under POWERLINK (Km)	Shared/Multiple ownership with Utility
1.	400kV Muzaffarpur-Gorakhpur	260	260	-
2.	400kV Lucknow-Gorakhpur	245	245	-
3.	400kV Bareilly-Meerut	249.58	183.2	POWERGRID (66.18Km)
4.	400 kV Meerut -Mandola	101.8	47.5	POWERGRID (54.3 Km)

Scheme-1.3: ISTS scheme for RTM Projects (PKTCL)

Sr. No.	Items	Details
1.	Name of Scheme	Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region – **Scheme 1.3**
2.	Scope of the scheme	Supply & installation of OPGW (48F) on 400kV Nalagarh-Banala-I transmission lines along with approach Cable, FODP etc. **Total OPGW to be installed = 66.38 Km (PKTCL ownership)** Total Line Length: 112.78 Km.
3.	Objective / Justification	I. As per the CEA letter dtd. 22.05.2024, all lines 110 kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels. Further as CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths. During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition takes lot of time on exiting lines compared to new transmission lines. The installation of OPGW will also enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system. Subsequently CEA vide their letter dtd. 22.11.2024, communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater to broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity. II. Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region was formulated in the 9th and 10th Communication Planning Meeting of Northern Region after getting inputs from all the TSPs and STUs. Some of the lines in the scheme have multiple ownership e.g., State, POWERLINK and POWERGRID. Further some lines are falls under TBCB as well as RTM projects under ISTS.

		III. As per ownership of transmission lines and substations The scheme is bifurcated owner wise e.g. TSPs (POWERGRID, POWERLINK, SEKURA & PKTCL) and other utility / STU wise (BBMB, RRVPNL, UPPTCL and PTCUL). IV. The implementation schedule of this scheme is considered as 36 months i.e. matching with scheme 1.1, because FOTE at the end stations are considered in scheme 1.1 in line with CERC order on Petition no. 94/MP/2021 (end stations ownership is of POWERGRID). V. This scheme for STUs scope is also identified, however same to be implemented by respective STUs in matching timeframe ISTS scheme.
4.	Estimated Cost	**3.65 crore (approx.)**
5.	Implementation Schedule	36 months from date of allocation *Matching with Scheme 1.1, which includes FOTE for the entire NR scheme.
6.	Implementation Agency	PKTCL
7.	Implementing Agency	RTM
8.	Deliberations in different meetings	a. Deliberated in 16th NPC held on 04.07.2025. b. 55th TCC/ 80th NRPC meeting held on 17.07.2025/ 18.07.2025. c. 9th & 10th CPM of NR held on 19.08.2025 & 31.12.2025 respectively.

Scheme-1.4: ISTS scheme for TBCB Projects (NRSS XXXI (B) Transmission Ltd)

Sr. No.	Items	Details
1.	Name of Scheme	Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region – **Scheme 1.4**
2.	Scope of the scheme	Supply & installation of OPGW (48F) on 400kV Malerkotla – Amritsar transmission line along with approach Cable, FODP etc. **Total OPGW = 149 Km**
3.	Objective /Justification	I. As per the CEA letter dtd. 22.05.2024, all lines 110 kV and above shall have Optical Ground Wire along with necessary terminal equipment for speech transmission, line protection, and data channels. Further as CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths. II. During planning of new Transmission Schemes many existing lines get LILOed at upcoming S/s (ISTS/STU). In view of non-availability of OPGW on the existing lines data and voice requirement for new S/s become critical. Further installation of OPGW in live line condition takes lot of time on exiting lines compared to new transmission lines. The installation of OPGW will also enable seamless data transmission from IEMs to the upcoming 5-minute Automatic Meter Reading (AMR) system. Subsequently CEA vide their letter dtd. 22.11.2024, communicated that all the upcoming lines shall be provided with 48 Fiber OPGW to cater to broadband and internet requirements in the rural areas and hinterlands to provide reliable Telecom connectivity. III. Comprehensive Scheme for OPGW installation on the existing lines of ISTS in Northern Region was formulated in the 9th and 10th Communication Planning Meeting of Northern Region after getting inputs from all the TSPs and STUs. Some of the lines in the scheme have multiple ownership e.g., State, POWERLINK and POWERGRID. Further some lines are falls under TBCB as well as RTM projects under ISTS. IV. As per ownership of transmission lines and substations

		The scheme is bifurcated owner wise e.g. TSPs (POWERGRID, POWERLINK, SEKURA & PKTCL) and other utility / STU wise (BBMB, RRVPNL, UPPTCL and PTCUL). V. Implementation schedule of this scheme is considered as *36 months i.e. matching with scheme 1.1*, because FOTE at the end stations are considered in scheme 1.1 in line with CERC order on Petition no. 94/MP/2021(end stations ownership is of POWERGRID). VI. This scheme for STUs scope is also identified, however same to be implemented by respective STUs in matching timeframe ISTS scheme.
4.	Estimated Cost	**8.19 crore (approx.)**
5.	Implementation Schedule	36 months from date of allocation *Matching with Scheme 1.1, which includes FOTE for the entire NR scheme.
6.	Implementing Agency	NRSS XXXI (B) Transmission Ltd
7.	Implementation Mode	RTM
8.	Deliberations in different meetings	a. Deliberated in 16th NPC held on 04.07.2025. b. 55th TCC/ 80th NRPC meeting held on 17.07.2025/ 18.07.2025. c. 9th & 10th CPM of NR held on 19.08.2025 & 31.12.2025 respectively.

Appendix-II

STU/BBMB Schemes

Scheme-2.1: BBMB

Sr. No.	Items	Details
1.	Total OPGW (48F)	576.19 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, Amplifiers, FODP approach cable, Power supply etc.)	3 Nos.
3.	Implementation Mode	Through BBMB Scheme
4.	Implementation Schedule	Matching with Scheme-1.1

List of transmission lines where OPGW installation is proposed along with FOTE locations is given below

Sr. No.	Line Name	Total Line Length (km)	Line Ownership Under BBMB(km)	*Shared/Multiple ownership with Utility*	*FOTE Requirement*	
					END A	*END B*
1.	Dehar (BBMB) - Rajpura (PSTCL) (except LILO Portion)	131.2	116.35	POWERGRID	1	0
2.	Bhiwani (BBMB) - Rajpura (PSTCL) (except LILO Portion)	212.5	198.11	POWERGRID	1	0
3.	Dehar-Panchkula (except LILO Portion)	125	115.866	POWERGRID	0	0
4.	Panipat-Panchkula (except LILO Portion)	155	145.866	POWERGRID	1	0

Scheme-2.2: RRVPNL

Sr. No.	Items	Details
1.	Total OPGW (48F)	124.61 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, FODP, Amplifiers, approach cable, Power supply etc.)	6
3.	Implementation Mode	Through STU Schemes
4.	Implementation Schedule	Matching with Scheme-1.1

List of Transmission lines where OPGW installation is proposed alongwith FOTE locations is given below:

Sr. No.	Line Name	Total Line Length(km)	Line Ownership Under RRVPNL (km)	Shared/Multiple ownership with Utility	FOTE Requirement	
					END A	END B
1.	BASSI(PG)-IG NAGAR	30.351	7.873	POWERGRID (22.478 Km)	0	1
2.	HIRAPURA (220KV GSS)-IG NAGAR	27.345	2.47	POWERGRID (24.875 Km)	1	0
3.	HIRAPURA (400KV GSS)-SANGANER	220kV Heerapura-Mansarovar, Length: 6.74 Km 220kV Mansarovar - Sanganer, Length: 14.137 Km	6.04 6.04	POWERGRID (0.7 Km) (8.097 Km)	1	1
4.	BASSI(PG)-BAGRU	63.954	28.601	POWERGRID (35.353 Km)	0	1
5.	220KV SIKAR-RATANGARH	76.43	73.6	POWERGRID (2.83 Km)	1	0

Scheme-2.3: UPPTCL

Sr. No.	Items	Details
1.	Total OPGW (48F)	221.736 Kms.
2.	Total No of FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, Amplifiers, FODP approach cable, Power supply etc.)	9
3.	Implementation Mode	Through STU Schemes
4.	Implementation Schedule	Matching with Scheme-1.1

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below:

Sr. No.	Line Name	Total Line Length(km)		Line length under ownership of UPPTCL (Km)	Shared/Multiple ownership with Utility	FOTE Requirement	
						END A	END B
1.	Meerut-Nara	32.138		29.822	POWERGRID (2.31 Km)	0	1
2.	Meerut-Simbholi	52.2		44	POWERGRID (9.254)	0	1
3.	ALLD-Jhusi(UP)	28.07		6.2	POWERGRID (21.879)	0	1
4.	220KV Jhusi(UP)-Phulpur(UP)	220KV Jhusi(UP)-Machhlishahar (UP):73	122.63	55.874	POWERGRID (16.686)	0	1
		220KV Machhlishahar (UP) - Phulpur(UP): 50			(0.572)		
5.	400kV Muzaffarnagar - Roorkee (except LILO portion)	71		0	PTCUL and POWERGRID	1	0
6	220kV Meerut (Mataur PG)-Modipuram (UP) – Ckt-1	9		6.68	POWERGRID (2.316)	0	1
7	220kV Meerut (Mataur PG)-Modipuram (UP)-ckt-2	12.22		2.96	POWERGRID (9.254)	0	0

8	LILO of 220kV Auraiya(NT)-Sikandra at Saifai(UP)	220kV Auraiya (NT)-Saifai (UP) Length-61.146km and 220kV Saifai (UP)-Sikandra (UP) Length-123.191Km	15.1 15.1	-	0	1 (Saifai)
9	LILO of 400kV Lucknow-Unnao (UP) at Jehta (UP)	400kV Jehta-Lucknow Length:70.41 km and 400kV Jehta-Unnao Length: 14.93km	17 12	-	1 (Jehta)	0
10	LILO of 400kV Varanasi-Biharshariff at Sahupuri	400kV Sahupuri-Varanasi Length:76.4 km	17	POWERGRID	0	0
11	400kV Bareilly-Moradabad (UP)	92.789 km	0	-	0	1

Scheme-2.4: PTCUL

Sr. No.	Items	Details
1.	Total OPGW (48F)	113.54 Kms.
2.	FOTE (STM-16 with minimum 5 MSP) (including Repeaters and its shelter, Amplifiers, FODP approach cable, Power supply etc.)	1
3.	Implementation Mode	Through STU Schemes
4.	Implementation Schedule	Matching with Scheme 1.1

List of transmission lines where OPGW installation is proposed along FOTE locations is given in Table below

Sr. No.	Line Name	Total Line Length (Km)	Line Ownership Under PTCUL (Km)	Shared/Multiple ownership with Utility	FOTE Requirement	
					END A	END B
1.	400kV Muzaffarnagar - Roorkee (except LILO portion)	71	67.27	POWERGRID (3.73)	0	0
2.	400kV Roorkee -Rishikesh (except LILO portion)	50	46.27	POWERGRID (3.73)	0	1

Appendix-III

Sr. No.	Items	Details
1.	Name of Scheme	Replacement/Upgradation of FOTE at ISTS Locations due to Bandwidth congestion in Northern Region
2.	Scope of the scheme	Supply and installation of 13 No. of FOTE (11 no. of STM-16 and 2 No. of STM-64) **Total No of FOTE : 13** (STM-16 & STM-64 with minimum 5 MSP) (including associated system e.g. Repeaters and its shelter, FODP, NMS, Amplifiers, Approach cable, Power supply etc.) Location of FOTE is mentioned in **Table C**.
3	Objective / Justification	i. In 27th TeST Meeting held on 21.04.2025 and 28th TeST meeting held on 23.07.2025. NMT brought out bandwidth congestion in some of the FOTE of NR which requires upgradation/replacement. System generated report from UNMS system is attached where Bandwidth Utilization is over 75%. CTU has studied these nodes for bandwidth congestion from UNMS. Considering critical grid operations, these FOTEs experiencing high bandwidth congestion and may be upgraded/replaced. ii. This agenda was further deliberated in the 10th NR CPM (Communication Planning Meeting) regarding upgradation existing bandwidth congestion in critical links of NR. At Allahabad & Varanasi node, requirement of STM-64 FOTE (with minimum 5 MSP) was deliberated in view of inter-regional data transfer towards Main & Backup NLDC and Main and Backup RLDCs. POWERGRID and NMT suggested that upgrading to STM-64 for Allahabad-Varanasi link also requires nearby nodes to be upgraded to STM-64 for utilization of STM-64 bandwidth. It is proposed that to provide congestion free corridor between NLDC/NRLDC – ERLDC/Backup NLDC, STM-64 based path can be created, which cater critical interregional data between ER- NR such as ICCP, AGC etc.

		iii. Further the requirement of STM-64 FOTE upgradation at Tughlakabad, Bhiwadi & Kotputli S/s has been agreed in 10th CPM. FOTE at Tughlakabad, Kotputli S/s are considered in this scheme and FOTE at Bhiwadi S/s is considered in Comprehensive OPGW scheme.
4.	Estimated Cost	**8.30 Crs.**
5.	Implementation Schedule	**24 Months from date of allocation**
6.	Implementing Agency	**POWERGRID**
7.	Implementing mode	**RTM**
8.	Deliberations in different meetings	a. 27th TeST Meeting held on 21.04.2025 and 28th TeST meeting held on 23.07.2025. b. 10th NR CPM held on 31.12.2025

Table C- List of Stations where FOTE is to be Upgraded

S. No.	Substation Name	Proposed FOTE(STM-16/64)
1.	Sohwal	STM 16(5 MSP)
2.	Merrut01	STM 16(5 MSP)
3.	Bhiwani 2	STM 16(5 MSP)
4.	BBMB_DADRI_HR	STM 16(5 MSP)
5.	Shahjhanpur	STM 16(5 MSP)
6.	Gagal	STM 16(5 MSP)
7.	Hamirpur 2	STM 16(5 MSP)
8.	Rep Jalandhar	STM 16(5 MSP)
9.	Hamirpur PG	STM 16(5 MSP)
10.	Tughlakabad 400	**STM 64(5 MSP)**
11.	Abdullapur PG	STM 16(5 MSP)
12.	KOTPUTLI	**STM 64(5 MSP)**
13.	Kunihar LDC_HP	STM 16(5 MSP)
Total No. of FOTE		**13**