सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केंद्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग- II
Power System Planning & Appraisal Division-II

सेवा में /To

As per list of Addresses

विषय: ट्रांसमिशन पर राष्ट्रीय समिति (एनसीटी) की तीसवीं बैठक की कार्यवृत्त ।

Subject: Minutes of the 30th Meeting of the National Committee on Transmission (NCT)-reg.

महोदया (Madam) / महोदय (Sir),

The 30th meeting of the National Committee on Transmission (NCT) was held on 30th May, 2025 at New Delhi. The minutes of the meeting are attached herewith.

भवदीय / Yours faithfully

25.6.2025

(बी.एस.बैरवा / B.S. Bairwa)
मुख्य अभियन्ता एवं सदस्य सचिव,(एन.सी.टी.)/
Chief Engineer & Member Secretary (NCT)

प्रतिलिपि / Copy to:

Joint Secretary (Trans), Ministry of Power, New Delhi

List of Addresses:

1.	Chairperson, Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	2.	Member (Power Systems), Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.
3.	Member (Economic & Commercial), Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	4.	Director (Trans), Ministry of Power Shram Shakti Bhawan, New Delhi-110001.
5.	Sh, Abhay Bakre, Mission Director, MNRE Atal Akshay Urja Bhawan Opposite CGO Complex gate No. 2, Lodhi Road, New Delhi – 110003	6.	Chief Operating Officer, CTUIL, Floors Nos. 5-10, Tower 1, Plot Nos. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram, Haryana - 122001.
7.	Sh. Rajnath Ram, Adviser (Energy), NITI Aayog, Parliament Street, New Delhi – 110 001.	8.	CMD, Grid Controller of India, B-9 (1st Floor), Qutub Institutional Area, Katwaria Sarai, New Delhi – 110016
9.	Sh. Ravinder Gupta Expert Member (power System)	10	Chairperson, TCC& Managing Director, JKPTCL, Office of Managing Director, Grid Station Complex, Janipur, Jammu/ PDD Complex Bemina Srinagar- 190010
11.	Member Secretary , Western Region Power Committee Plot No F-3, Opposite SEEPZ Complex, MIDC Area Marol, Andheri (East), Mumbai- 400 093	12.	Shri Shivdas.S, Chairperson (TCC) and Director (Transmission, System Operation & Planning), KSEBL Vydyuthi Bhavanam, Pattom, Thiruvananthapuram, Kerala- 695004
13.	Sh. Sabyasachi Roy, Director (Operations), WBSETCL	14.	Chairperson , North Eastern Region Power Committee Hon'ble Minister of Power, Govt. of Assam, Guwahati – 781 006

Special Invitee

1. Chief Engineer (PCD), CEA
2. CEO, RECPDCL
3. CEO, PFCCL

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Minutes of the 30th meeting of National Committee on Transmission

1 Confirmation of the minutes of the 29th meeting of National Committee on Transmission.

1.1 The minutes of the 29th meeting of NCT held on 17.04.2025 were issued on 05.05.2025 vide CEA letter Nos. CEA-PS-12-13/3/2019-PSPA-II.

1.2 CTUIL vide email dated 05.05.2025 informed that the scheme "Augmentation of 2x500 MVA (7th & 8th), 400/220 kV ICTs along with 220 kV Sectionalizer bay (1 set), 220 kV BC (1 No.) bay and 220 kV TBC (1 No.) bay at Bikaner IV PS" was allocated for implementation under RTM mode through "Bikaner A Power Transmission Limited". The company has changed its name to 'POWERGRID Bikaner IV Transmission Limited" vide MoCA certificate dated 05.03.2025. CTUIL requested to change the name of the implementing agency in the minutes of 29th NCT meeting.

1.3 Accordingly, it was agreed that the name of the implementing agency in para 3.4.4 of the minutes of 29th NCT meeting may be read as "POWERGRID Bikaner IV Transmission Limited (a 100% wholly owned subsidiary of POWERGRID)" instead of 'Bikaner A Power Transmission Limited (a 100% wholly owned subsidiary of POWERGRID)'.

1.4 With the above clarification, the minutes were confirmed.

2 Status of the transmission schemes noted/approved/recommended to MoP in the 29th meeting of NCT:

2.1 Members noted the status of transmission schemes approved/recommended in the 29th meeting of NCT as given below.

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	BPC	Award/ Gazette notification
1.	Inter-Regional Strengthening between SR Grid and ER Grid	Recommended	TBCB	PFFCL	Informed to MoP vide letter dated 05.05.2025. Gazette notified on 21.05.2025
2.	Inter-Regional Strengthening between SR Grid and WR Grid	Recommended	TBCB	RECPDCL	
3.	Augmentation of 2x500 MVA (7th & 8th), 400/220 kV ICTs along with 220 kV Sectionalizer bay (1 set), 220 kV BC (1 No.) bay and 220 kV TBC (1 No.) bay at Bikaner-IV PS	Approved	RTM	Not applicable	Informed to CTUIL vide letter dated 05.05.2025 CTUIL awarded the projects to the implementing agency on 05.05.2025
4.	OPGW laying work on 132 kV Dharamnagar	Approved	RTM	Not	

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	BPC	Award/ Gazette notification
	Dullavcherra and 132 kV Dullavcherra-Halaikandi line			applicable	

2.2 Status of transmission schemes where modifications was suggested/approved in 29th NCT meeting:

S. Nos.	Scheme where modifications was suggested	Status
1	Transmission system for proposed Green Hydrogen/Green Ammonia projects in Tuticorin area and the "Transmission system for proposed Green Hydrogen/Green Ammonia projects in Kakinada area, Madhya Pradesh (Phase-I)	Informed to BPCs vide letter dated 05.05.2025
2.	Redundant Communication for Salal (NHPC) station	Informed to CTUIL vide letter dated 05.05.2025
3.	Redundant Communication for Tuticorin GIS (PG) Substation	
4.	OPGW replacement on 132kV Kahilipara-Umiam Stg. III-Umiam Stg. I - NEHU link & OPGW on 132kV Sarusajai -Umtru line & UGFO NERLDC Guwahati to Kahilipara for backup NERLDC	
5.	OPGW replacement on 132kV Nehu-Neigrihms-Khliehriat Ckt-1 & UGFO from Tower 25 of 132kV Nehu-Mawlyndep line to NERLDC Shillong	
6.	OPGW installation on 765 kV FatehpurVaranasi S/c line and 765 kV Fatehpur-Sasaram S/c line (proposed to be LILOed at New Prayagraj)	
7.	Supply and installation of OPGW on existing 765 kV Gwalior-Satna S/c Line which is proposed to be LILOed at Karera (near Datiya) S/s under TBCB Project namely "Western Region Expansion Scheme XXXIII (WRESXXXIII): Part B"	

3 Modifications in the earlier approved/notified transmission schemes

3.1 Implementation of "Augmentation of 1x500 MVA, 400/230 kV ICT (7th) at Tuticorin-II GIS Sub-station" awarded under RTM Mode to POWERGRID

3.1.1 Representative from CTUIL stated that the transmission scheme "Augmentation of 1x500MVA, 400/230kV ICT (7th) at Tuticorin-II GIS Substation" was approved for implementation under RTM through POWERGRID by NCT in its 28th meeting held on 06.03.2025. CTUIL vide letter dated 21.03.2025 intimated to POWERGRID to process with the implementation of above scheme in line with the NCT.

He further mentioned that this transmission scheme has been approved as Associated Transmission System (ATS).CTU has granted / received applications for grant connectivity to 03 nos. of applicants considering augmentation of 1x500MVA, 400/230kV ICT (7th) at Tuticorin-II GIS Substation as ATS. Applicants are required to submit consent for

implementation of transmission schemes as ATS and followed by Conn-BG2 (towards cost of ATS) on pro-rata basis of the connectivity quantum. In case the applicant(s) fails to submit the Connectivity Bank Guarantees, the grant of connectivity is liable to be revoked and augmentation of ICT (7th) may not be required. Applicant(s) still have timeline for submission of Consent for implementation of 7th ICT as ATS and submission of Conn-BG2. CTUIL has already requested POWERGRID to keep implementation of the scheme "on Hold" till further communications from CTUIL.

3.1.2 Members noted the same.

3.2 DPR Project cost variation in "Augmentation of Transformation capacity at Bhuj-II PS (GIS)" awarded under RTM

3.2.1 Chief Engineer (PSPA-II), CEA stated that the scheme was agreed in the 16th meeting of NCT held on 30.11.2023 under TBCB route with estimated cost of Rs. 428 crores and implementation timeframe of 21 months. As single bid was received despite multiple bidding attempts by the BPC, in the 27th meeting of NCT held on 06.02.2025, NCT approved the implementation of the scheme "Augmentation of Transformation capacity at Bhuj-II PS (GIS)" under RTM mode to POWERGRID Bhuj Transmission Limited with an estimated cost of Rs. 428 Cr.

3.2.2 Representative from CTUIL mentioned that POWERGRID vide letter dated 05.05.2025 has intimated CTUIL that the DPR cost of the project "Augmentation of transformation capacity at Bhuj-II PS (GIS)" as Rs. 486.02 Cr. (December'24 price level) and requested to convey approval/ratification of NCT for the revised project cost/DPR cost in line with CERC directives and procedure issued to be followed by CTUIL for the projects costing < Rs. 100 Cr. in case variation of DPR cost is beyond 10% of CTUIL's estimated cost as per para No. 4.4. of minutes of the 26th meeting of NCT dated 30.01.2025.

3.2.3 Member (E&C), CEA stated that POWERGRID may approach CERC for any variation in the cost and NCT may not take up the matter of cost variation.

3.2.4 Chairperson, CEA mentioned that the scheme was approved by the NCT in its 27th meeting held in February'2025 without any revision of the cost provided in 16th meeting of NCT held in November'2023. CTUIL was directed to revise the tentative cost of the scheme on present price level and intimate the same to NCT.

4 New Transmission Schemes:

4.1 North Eastern Region Expansion Scheme-XXIII (NERES-XXIII)

4.1.1 Representative of CTUIL stated that Pasighat (Arunachal Pradesh) – Roing (POWERGRID) – Tezu (POWERGRID) – Namsai (POWERGRID) 132 kV S/c on D/c corridor is owned by POWERGRID. Pasighat (Arunachal Pradesh) S/s is of DoP, Arunachal Pradesh and Roing, Tezu & Namsai substations are part of ISTS and owned by POWERGRID.

4.1.2 Representative of CTUIL further stated that additional industrial demand of about 100 MW (1st - 35MW and 2nd - 65MW) is expected at Niglok (Arunachal Pradesh) S/s. Niglok (Arunachal Pradesh) is connected to Napit/New Pasighat and Likbali substations of DoP, Arunachal Pradesh. POWERGRID, NERLDC and DoP, Arunachal Pradesh had mentioned that owing to hilly and difficult terrain conditions in Arunachal Pradesh, 2nd circuit stringing of Roing – Tezu – Namsai 132 kV S/c on D/c line also needs to be taken up for reliable power supply in the area. Moreover, various new HEPs are coming up in Arunachal Pradesh in these areas which require construction power as well. Thus, keeping in view upcoming industrial demand, regular demand growth in eastern Arunachal Pradesh, and to improve reliability of 132 kV system (predominantly S/c), it was agreed to take up 2nd circuit stringing of various intra-state [Gerukamukh – Likabali – Niglok – Pasighat (New)] and ISTS lines [Pasighat (Arunachal Pradesh) – Roing (POWERGRID) – Tezu (POWERGRID) – Namsai (POWERGRID)]**..**

4.1.3 CTUIL informed that the scheme was awarded to POWERGRID for implementation under RTM mode vide CTU OM dated 14-06-2024 with an estimated cost of Rs.73.47 Cr. Further, POWERGRID vide letter dated 14-01-2025, requested CTUIL for reviewing the approved project cost due to higher DPR cost (Rs. 200.15 Cr.) mainly due to RoW compensation. CTUIL has done the revised costing based on September 2024 Price level which works out to be ₹ 117.65 Cr.

4.1.4 NCT expressed concern over the time gap of 7 months' between the award of the scheme to POWERGRID and POWERGRID's letter to CTUIL informing higher project cost. NCT opined that this time gap should be minimum. It was also opined that there may not be implications of RoW as there is stringing of second circuit only on the existing line with double circuit towers.

4.1.5 After deliberations, NCT directed CTUIL to obtain clarification from POWERGRID regarding RoW compensation and verify the difference in the cost calculation. The agenda with revised cost (at latest price level) to be put before NCT in the next meeting.

4.2 **MoU between the Government of Rajasthan and Government of UAE for development of 60 GW RE Projects in the State of Rajasthan.**

4.2.1 Chief Engineer (PSPA-I), CEA stated that Government of UAE has signed a MoU with the Ministry of New and Renewable Energy, Government of India on 09.01.2024 for investment in RE capacity in India. To further this ultra-investment, a MoU was also signed between the Government of Rajasthan and Government of UAE dated 22.10.2024 for development of 60 GW RE Projects in the State of Rajasthan.

4.2.2 He further mentioned that RVPN has submitted to MNRE that additional 60 GW RE envisaged under MoU with UAE is huge quantum and cannot be consumed in the State of Rajasthan alone, hence, RVPN has requested to plan necessary transmission system for evacuation of power from 60 GW RE Projects of UAE in Rajasthan under ISTS.

4.2.3 Chairperson, CEA stated that the locations of 60 GW generation haven't been mentioned by Rajasthan. Further, as it can be evacuated only through HVDC system, it is getting difficult to identify the landing points. It was mentioned that out of 36 GW RE capacity planned to be integrated to Intra state network in Rajasthan, connectivity of around 24 GW has been granted, accordingly, development of remaining 12 GW RE capacity in Intra State may be done under this 60 GW MoU.

4.2.4 After deliberations, NCT opined that MNRE may further examine/assess the feasibility of the 60 GW generation in Rajasthan, and provide the inputs to NCT.

4.3 **Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II: 6 GW (Solar)**

4.3.1 Representative from CTUIL stated that in the 29th meeting of National committee on Transmission (NCT) held on 17.04.25, agenda for Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II: 6 GW (Solar) was deliberated and it was decided that CTUIL shall carry out a life-time cost-benefit analysis of BESS vis-à-vis proposed HVDC transmission schemes and present the same in the forthcoming NCT meeting.

4.3.2 CTUIL carried out a cost comparison analysis of HVDC transmission system vis-à-vis 6000 MW BESS for 4 Hrs (1 Cycle per day), i.e., 24000 MWh considering the following assumptions for BESS cost estimation:

1) Recent Bid Value of GUVNL (April'25) for 500MW/2Hrs/2 Cycles per day cost of Rs 2,80,000/MW/Month (without any VGF) is taken as reference cost.
2) Useful life of BESS is considered 12 Years. '2' Replenishments during 35 Years Life (i.e., 3 life cycles).
3) After 12 Years, BESS cost is considered as 80% of recent bid value and after 24 Years, BESS cost is considered as 60% of recent bid value cost.
4) Round Turn Efficiency of 85%.
5) Degradation factor at the end of each year is 2.5%

The Cost Comparison of BESS, vis -a vis LCC and VSC HVDC is as follows:

SI. No	Technology	Capacity	Apprx. Cost (in cr.)
1	LCC HVDC	±800kV, 6000MW, Parallel Bipole along with associated EHVAC system	24,974
2	VSC HVDC	±600kV, 6000 MW, Double Bipole along with associated EHVAC system	36,044
3	BESS	24000MWh, 6000 MW for 4 Hrs	59,721*

		(1 Cycle per day)	

*Capital cost for BESS is calculated considering NPV @ 9.25% (as per CERC notified Discount rate for computation of levelized transmission charges dated April 2, 2024)

4.3.3 Grid-India shared the following observations on the cost benefit analysis of BESS carried out by CTUIL:

a. The balance of system (BoS) cost (for BESS with higher number of hours) should be considered only one-time in the monthly charges
b. The Net Present Value (NPV) of the first and second replacements of BESS has been determined by CTUIL only for the 12-year and 24-year milestones, respectively—i.e. the capital outlays at those future points have been considered. Instead, these replacement costs should be discounted back to the base valuation date (time zero) when computing their NPV.

4.3.4 Grid-India stated that as per an independent cost-benefit analysis carried out by Grid-India the capital cost of 6000 MW x 4 hour BESS (1 cycle per day, 9.25% discount rate and useful life of 12 years) comes out to be competitive with respect to the estimated cost of VSC based HVDC. The BESS would also provide arbitrage benefits to the Discom(s).

4.3.5 Grid-India further highlighted the following advantages of BESS over proposed HVDC schemes:

- The gestation period of BESS is much lower than the gestation period of HVDC systems which will facilitate faster integration of RE.
- With the rapid addition of solar generation, managing high grid frequency during solar hours is becoming increasingly challenging. Thermal generators are being backed down to technical minimum levels to the extent possible. Restriction on RE generation is also being required on certain days to control high frequency. Inadequate generation flexibility, currently, is a major challenge.
  BESS can alleviate the generation flexibility challenge and enhance grid stability. Therefore, prioritizing BESS deployment in regions like the Rajasthan RE complex offers a more cost-effective, and timely solution for integrating renewable energy into the grid.

4.3.6 On the LCC based HVDC alternative, Grid-India stated that the short circuit ratio (SCR) at Barmer-II has been observed to be low (<2.5) in the planning studies. As per CEA Connectivity Standards, the minimum SCR at point of interconnection of RE shall be greater than five. Further, CEA's Manual on Transmission Planning Criteria states that the minimum SCR at the terminals of LCC based HVDC converter stations shall be greater than three.

4.3.7 Considering that Barmer-II would be a radial station with low system strength, evacuating 6000 MW capacity via HVDC from this substation may be looked into. Stability related issues are already being faced in the Rajasthan RE complex and this system may also

witness similar stability challenges. Grid-India proposed that the RE capacity may be pooled to a nearby station with high fault level such as Chittorgarh (SCMVA at 400 kV - ~34000 MVA in current time-frame). The HVDC may then be planned from such station to a suitable location.

4.3.8 CTU stated that drawl transmission system for absorption of power from Barmer-II HVDC is already identified through 765/400kV South Kalamb S/s in Western region, which has been planned to cater to drawl requirement of Mumbai area and also for upcoming PSPs in Talegaon area. At present considering the RE potential as well as RE applications received in Rajasthan RE complex, more nos. of HVDCs (each of 6GW) are envisaged. As landing point for drawl of power from envisaged HVDCs is yet to be identified, some HVDC transmission schemes may be avoided with BESS as an alternative. However, detailed deliberation on optimal location of BESS as well as cost-benefit analysis comparing BESS and HVDC is required. Further, landing point of another HVDC from a Lakadia area to Alephata/ Pune has similarly been identified to cater to demand in the Pune area.

4.3.9 CTU stated that with proposed scheme SCR of Barmer-II PS is about 5, however in case both HVDC and RE capacity contribution considered for SCR calculation, SCR value comes out to be about 2.5. The SCR of 400kV Barmer-II PS may further improve with future interconnection planned in Barmer complex as well as with integration of SynCons, if required.

4.3.10 CTU further stated that integration of RE power to other intermediate sub stations through EHVAC system i.e. Ajmer, Chittorgarh, Beawar, Rishabdeo etc. and its further evacuation through HVDC from intermediate substations is not feasible due to space constraint in the above substations.

4.3.11 NCT opined that as this HVDC system has already been agreed by RPCs, the same may be taken up for implementation. However, looking into the huge RE potential in Rajasthan, BESS may be considered along with RE potential to be developed subsequently.

4.3.12 After deliberations, the transmission scheme “Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II: 6 GW (Solar) (LCC Configuration)” was recommended to be implemented under TBCB mode as follows:

Sl. No.	**Name of the scheme and tentative implementation timeframe**	**Estimated Cost (₹ Crore)**	**Remarks**
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5 :6 GW) [Barmer Complex] Barmer-II: 6 GW (Solar) (LCC Configuration) Tentative implementation timeframe: 54 months from allocation of project (Pole-1: 48 months, Pole-2: 54 months	24,974	Recommended for implementation under TBCB by RECPDCL

4.3.13 Detailed scope of the scheme is given below:

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	Establishment of 400/220kV, 6x500MVA S/s at suitable location near Barmer (Barmer-II Substation) along with 2x125 MVAr bus reactor **Future provisions (excl. scope of present scheme):** ➢ 400 kV line bays along with switchable line reactor –6 ➢ 400 kV line bays –4 Nos. ➢ 400 kV Bus Reactor along with bays: 1 No. ➢ 400/220 kV ICT along with bays-4 Nos. ➢ 400 kV Sectionalization bays: 2 sets ➢ 220 kV line bays for connectivity of RE Applications -5 Nos. ➢ 220kV Sectionalization bay: 2 sets ➢ 220 kV BC (2 Nos.) & TBC (2 Nos.) ➢ 2 Nos. of Syncon units* at 400kV level along with 2 nos. of 400kV bays ➢ STATCOM (2x±300 MVAr, 4x125 MVAr MSC, 2x125 MVAr MSR) along with 400 kV bays (2 Nos.) *****1 No. of SynCon unit comprises dynamic support of +300MVAr/-200MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum)) (Value of inertia (MW-secs) shall be provided in RfP document)**	Barmer-II PS - AIS • 400/220 kV 500 MVA ICTs- 6 Nos. • 400 kV ICT bays- 6 Nos. • 220 kV ICT bays- 6 Nos. • 125 MVAr Bus Reactor-2 Nos. • 400 kV Bus reactor bays- 2 Nos. • 400kv line bays– 4 Nos. (for RE interconnection) • 220KV line bays – 7 Nos. (for RE connectivity) • 220kV Sectionalization bay: 1 set • 220 kV BC (2 Nos.) & TBC (2 Nos.) • 400kV sectionaliser bay- 1 Set
2	LILO of both ckts of 400 kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS	Line Length ~ 10 km (LILO length ~ 10 km) • 400 kV line bays-4 Nos. (at Barmer-II PS end)
3	400 kV Barmer-II PS - Barmer-I PS D/c line (Quad)	Line Length – (~30 km) • 400 kV line bays at Barmer-II PS – 2 Nos. • 400 kV line bays at Barmer-I PS S/s – 2 Nos.
4	Establishment of 6000 MW, ± 800 kV Barmer-II (HVDC) [LCC] terminal station (4x1500 MW) at a suitable location near Barmer-II substation	HVDC terminal station (± 800 kV, 3000 MW (Bipole configuration)- 2nos.) ➢ 400/33 kV, 2x50 MVA transformers for exclusively supplying auxiliary

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
		power to HVDC terminal. ➢
5	Establishment of 6000 MW, ± 800kV South Kalamb S/s (HVDC) [LCC] terminal station (4x1500 MW) at a suitable location near South of Kalamb	HVDC terminal station (± 800 kV, 3000 MW (Bipole configuration)- 2 Nos.)
6	±800 kV HVDC Bipole line (Hexa lapwing) between Barmer-II (HVDC) & South Kalamb (HVDC) (with parallel Dedicated Metallic Return) (capable to evacuate 6000MW) [with 100% reverse power capability]	Line Length – (~900 km)
7	Augmentation of South Kalamb S/s# by 4x1500MVA, 765/400kV ICTs (3 on 400kV & 765kV Section-II & 1 No. on 400kV & 765kV Section-I) along with 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-II. The Section-II will be established under a different network expansion scheme in WR as per details given below* (2x1500 MW HVDC Bipole-I to be terminated on 400 kV Sec-I & 2x1500 MW HVDC Bipole-II to be terminated on 400 kV Sec-II of South Kalamb S/s & 765kV bus sectionalizer to be kept normally closed & 400kV bus sectionalizer to be kept normally open)	• 765/400 kV 1500 MVA ICTs- 4 Nos. • 765 kV ICT bays- 4 Nos. • 400 kV ICT bays- 4 Nos. • 330 MVAr Bus Reactor-2 Nos. (at bus section-II) • 765 kV Bus reactor bays- 2 Nos. (at bus section-II) • 125 MVAr Bus Reactor-2 Nos. (at bus section-II) • 400 kV Bus reactor bays- 2 Nos. (at bus section-II)
8	2 Nos. of Syncon units at 400kV level of Barmer-II PS (1 No. of SynCon unit comprises dynamic support of +300MVAr/-200MVAr (Minimum) & Short circuit contribution at PCC of 1200MVA (Minimum)) (Value of inertia (MW-secs) shall be provided in RfP document) **	• Syncon units – 2 Nos. • 400 kv line bays – 2 Nos.

#South Kalamb S/s establishment with 2x1500 MVA, 765/400 kV ICTs with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor alongwith LILO of Pune-III – Boisar-II 765 kV D/c line (presently under bidding stage).

** Network Expansion Scheme: Creation of New 765kV & 400kV Bus Sections-II & III through 765 kV Sectionalization bay: 2 sets & 400 kV Sectionalization bay: 2 sets alongwith 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-III is being proposed along with ICT augmentation (3x1500MVA, 765/400kV ICTs) at Bus Section -III at both 765kV & 400kV levels alongwith downstream 400kV lines at bus section-III from South Kalamb S/s with implementation timeframe of 24 months from effective date. [400kV Sectionaliser between Sections-I & II & between sections-II & III to be normally open.*

Further, 765kV sectionaliser between Sections-I & II & between II & III shall be kept normally closed. The 400kV sectionalisers can be closed under contingency conditions.].

***The above are as per discussions with OEMs and the under-excitation limit is as considered by the committee formed under Chairmanship of Member Secretary, NRPC along with members from CEA, NLDC, NRLDC, NTPC, BHEL, CTU and STUs to do futuristic analysis for requirement of Synchronous Condensers based on the inertia considerations for Northern Region*

4.3.14 NCT further directed CTUIL to:

(i). Prepare specifications to enable technology agnostic bidding of HVDC systems in future, and present the same to NCT.

(ii). Carry out detailed cost-benefit analysis comparing BESS and HVDC alternatives, including the modalities for bidding out BESS projects and present the same to NCT.

5 Communication schemes:

5.1 OPGW installation on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) which is proposed to be LILO at 400 kV GSS Kumher (RRVPN)

5.1.1 Representative of CTUIL stated that LILO of existing 400 kV Sikar-Agra D/c line is proposed at 400 kV GSS Kumher (RRVPN) under Intra-State by RVPNL. On the LILO portion RVPNL is installing OPGW, however on main line i.e. 400kV Sikar – Agra D/c OPGW is not available as per the inputs received from POWERGRID

5.1.2 He further stated that to meet data, voice & protection requirements between Agra, Sikar & Kumher Substations after LILO, OPGW needs to be installed over the 400 kV Sikar-Agra D/c line (386 Km) which is proposed to be LILO at 400 kV GSS Kumher (RVPN).

5.1.3 After deliberations, the communication scheme “OPGW installation (48F) on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) which is proposed to be LILO at 400 kV GSS Kumher (RRVPN)” was approved for implementation under RTM route as mentioned below:

5.1.4 Summary of the scheme is given below:

Sl. No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crore)	Remarks
1.	OPGW installation (48F) on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) which is proposed to be LILO at 400 kV GSS Kumher (RRVPN) Tentative implementation timeframe: Matching time frame with transmission scheme of “LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section”	26.49	Approved under RTM through POWERGRID

5.1.5 Detailed scope of the scheme is given below:

Sl. No.	Scope of the scheme
1	Supply and Installation of 48 Fiber OPGW on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) **(386 km)** including Repeater which is proposed to be LILO at 400 kV GSS Kumher (RRVPN) including FOTE at Sikar S/s (PG) & Agra S/s (PG). **Total OPGW - 386 kms.** **Total FOTE – 2 Nos.** **Repeater- 1 No.**

5.2 **OPGW installation on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) which is proposed to be LILO at RRVPNLs 220 kV GSS Begun (Chittorgarh)**

5.2.1 Representative of CTUIL stated that LILO of both circuits of 220 kV D/c Chittorgarh-RAPP-B lines has been proposed for creation of 220 kV GSS Begun (Chittorgarh) under Intra-State scheme by RVPNL. On the LILO portion RVPNL is installing OPGW, however as per the inputs received from POWERGRID, OPGW is not available on 220 kV Chittorgarh-RAPP B D/c Line

5.2.2 He further stated that to meet data, voice & protection requirements between Chittorgarh, RAPP-B & Begun Substations after LILO, OPGW needs to be installed over the 220 kV Chittorgarh-RAPP B D/c line (130 kms) which is proposed to be LILO at 220 kV GSS Begun (Chittorgarh) of RRVPNL.

5.2.3 After deliberations, the communication scheme "OPGW installation (48F) on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) which is proposed to be LILO at RRVPNLs 220 kV GSS Begun (Chittorgarh)" was approved for implementation under RTM route as mentioned below:

5.2.4 Summary of the scheme is given below:

Sl. No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crore)	Remarks
1.	OPGW installation (48F) on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line (owned by PG) which is proposed to be LILO at RRVPNL's 220 kV GSS Begun (Chittorgarh) Tentative implementation timeframe: Matching time frame with transmission scheme of "LILO of 220 kV Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)"	8.55	Approved under RTM through POWERGRID

5.2.5 Detailed scope of the scheme is given below:

Sl. No.	Scope of the scheme
1	Supply and Installation of 48 Fiber OPGW on existing 220 kV Chittorgarh (RRVPNL)-RAPP B (NPCIL) D/c Line (owned by PG) (**130 kms.**) which is proposed to be LILO at RVPNs 220 kV GSS Begun (Chittorgarh) including FOTE at Chittorgarh S/s (RRVPNL) & RAPP B station (NPCIL). **Total OPGW - 130 kms.** **Total FOTE – 2 Nos.**

5.3 **Transmission system Replacement of Coriant make FOTE at Alusteng, Drass, Kargil, Khalsti, Leh S/s**

5.3.1 The agenda was withdrawn by CTUIL.

5.4 **Scheme for laying of OPGW on ISTS lines in Eastern Region**

5.4.1 Representative of CTUIL stated that, OPGW on below mentioned lines have been installed & commissioned by POWERGRID during the period 2004- 2005. The links were commissioned by POWERGRID telecom dept (PDT).

a) 400kV Prayagraj (Allahabad)–Sasaram (214.42 km)
b) 400kV Farakka –Sagardighi II -Jeerat (304.16 km)
c) 400kV Indravati-Rengali-Talcher (377.31 km)
d) 400kV Malda - Purnea & 400kV Purnea -Binaguri (367.36 km)
e) 400kV Binagauri-Bongaigaon (239.81 km)

These links are being utilized for sensitive and critical grid management data to RLDC/NLDC from sub-stations and SLDCs

5.4.2 Representative from CTUIL informed that the concerned OPGW lines have been in service for over 15 years and are experiencing frequent interruptions, necessitating their replacement. It was further mentioned that to ensure continuity of data communication and avoid service disruptions during the replacement process, the new OPGW is proposed to be laid by replacing the earth wire on the second peak of the tower. After implementation of the above scheme the present ULDC and POWERTEL traffic shall be shifted on newly laid OPGW. The existing OPGW link shall continue to serve as earth wire and any utilization of the fibers of existing OPGW shall be done with prior intimation to CEA and CTU.

5.4.3 Chairperson, CEA enquired about the methodology adopted for determining the replacement of OPGW lines. He further asked whether Grid-India has observed any disruption of due to communication link failure.

5.4.4 Grid-India clarified that due to automatic rerouting of data through alternate communication links, service disruptions may not be evident, and not all OPGW failures may be detectable at their end.

5.4.5 Chairperson, CEA stated that CTUIL has recently commissioned the Unified Network Management System (UNMS), which should provide comprehensive visibility into such communication links. He directed CTUIL to monitor link-loss events and assess the continued usability of the existing fibre. He further stated that some mechanism for ascertaining the requirement for replacement of OPGW after completion of its useful life needs to be formulated. He further suggested that international best practices may be adopted while doing performance checks of these communication links.

5.4.6 After deliberations, NCT directed CTUIL to carry out detailed study as mentioned above and bring comprehensive agenda in the NCT.

6 Status of the bids under process by BPCs

6.1 The BPCs (RECPDCL and PFCCL) have made presentations on the status of under bidding schemes. Summary of the same is given below:

S.No.	Region(s)	RECPDCL	PFCCL
1.	LoI issued and SPV to be transferred	01	03
2.	Bids Under Evaluation	00	02
3.	RfP issued and bids to be submitted	05	07
4.	RfP yet to be issued	02	01
5.	RfP bid submission on hold	01	00
	TOTAL	**09**	**13**

6.2 Members noted the status of the schemes under bidding.

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Summary of the deliberations of the 30th meeting of NCT held on 30th May, 2025

I. Modification in the earlier approved/notified transmission schemes:

1. DPR Project cost variation in "Augmentation of Transformation capacity at Bhuj-II PS (GIS)" awarded under RTM

Member (E&C), CEA stated that POWERGRID may approach CERC for any variation in the cost and NCT may not take up the matter of cost variation.

Chairperson, CEA mentioned that the scheme was approved by the NCT in its 27th meeting held in February'2025 without any revision of the cost provided in 16th meeting of NCT held in November'2023. CTUIL was directed to revise the tentative cost of the scheme on present price level and intimate the same to NCT

II. ISTS Transmission schemes, costing greater than ₹ 500 Crore, recommended by NCT to MoP under TBCB:

The ISTS transmission schemes recommended by NCT to MoP are given below:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	BPC	Estimated Cost (₹ Crs.)
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5: 6 GW) [Barmer Complex] Barmer-II: 6 GW (Solar) (LCC Configuration)	TBCB	54 months from allocation of project (Pole-1: 48 months, Pole-2: 54 months	RECPDCL	24,974

The broad scope of the above ISTS schemes to be notified in Gazette of India is as given below:

Sl. No.	Name of Scheme & Tentative implementation timeframe	Broad Scope	Bid Process Coordinator
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-5: 6 GW) [Barmer Complex] Barmer-II: 6 GW (Solar) (LCC Configuration) **Implementation Timeframe:** 54 months from allocation of project (Pole-1: 48 months, Pole-2: 54 months	i. Establishment of 400/220kV, 6x500MVA S/s at suitable location near Barmer (Barmer-II Substation) along with 2x125 MVAr bus reactor ii. LILO of both ckts of 400 kV Fatehgarh-IV PS - Barmer-I PS at Barmer-II PS iii. 400 kV Barmer-II PS - Barmer-I PS D/c line (Quad) iv. Establishment of 6000 MW, ± 800 kV Barmer-II (HVDC) [LCC]	RECPDCL

			terminal station (4x1500 MW) at a suitable location near Barmer-II substation v. Establishment of 6000 MW, ± 800kV South Kalamb S/s (HVDC) [LCC] terminal station (4x1500 MW) at a suitable location near South of Kalamb vi. ±800 kV HVDC Bipole line (Hexa lapwing) between Barmer-II (HVDC) & South Kalamb (HVDC) (with parallel Dedicated Metallic Return) (capable to evacuate 6000MW) [with 100% reverse power capability] vii. Augmentation of South Kalamb S/s# by 4x1500MVA, 765/400kV ICTs (3 on 400kV & 765kV Section-II & 1 No. on 400kV & 765kV Section-I) along with 2x330 MVAR, 765 kV bus reactor & 2x125 MVAR, 420 kV bus reactor on Section-II. viii. 2 Nos. of Syncon units at 400 kV level of Barmer-II PS **(Detailed scope as approved by 30th NCT and subsequent amendments thereof)**	

III. Communication schemes approved by NCT

Sl. No.	Name of Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Implementing Agency	Estimated Cost (Rs. Crs)
1.	OPGW installation (48F) on existing 400 kV Sikar (PG) – Agra (PG) D/c line (owned by PG) which is proposed to be LILO at 400 kV GSS Kumher (RRVPN)	RTM	Matching time frame with transmission scheme of "LILO of one circuit of 400kV Sikar – Agra D/c (Quad Moose) line at 400 kV GSS Kumher (6.5 ckm) along with 80 MVAR, 420 kV switchable line reactor at Kumher end of Sikar – Kumher 400 kV section"	POWER GRID	26.49
2.	OPGW installation (48F) on existing 220 kV Chittorgarh (RVPN)-RAPP B (NPCIL) D/c Line	RTM	Matching time frame with transmission scheme of "LILO of 220 kV	POWER GRID	8.55

	(owned by PG) which is proposed to be LILO at RRVPNLs 220 kV GSS Begun (Chittorgarh)		Chittorgarh-RAPP B D/c Lines at RVPNs proposed 220 kV GSS Begun (Chittorgarh)"		

Annexure-I

List of participants of the 30th meeting of NCT

CEA:

1. Sh. Ghanshyam Prasad, Chairperson, CEA & Chairman, NCT
2. Sh. Ajay Talegaonkar, Member (E&C)
3. Sh. A. Balan, Member (PS)
4. Sh. Ishan Sharan, Chief Engineer (PSPA-I)
5. Sh. S.K. Maharana, Chief Engineer (PCD)
6. Sh. B. S. Bairwa, Chief Engineer (PSPA-II)
7. Sh. Rahul Raj, Director (PSPA-II)
8. Sh. Farooque Iqbal, Director (PSPA-II)
9. Sh. Pranay Garg, Deputy Director (PSPA-II)
10. Sh. Nitin Deswal, Deputy Director (PSPA-I)
11. Sh. Manish Kumar Verma, Assistant Director (PSPA-II)

MoP:

1. Sh. Om Kant Shukla, Director (Trans.)

RPCs:

1. Sh. K.B. Jagtap, MS (NERPC)
2. Sh. V. K. Singh, MS (NRPC)
3. Smt. Raheela Wani, MD, JKPTCL
4. Sh. P D Lone, SE, WRPC
5. Sh. N.S. Mondal, MS (ERPC)
6. Director (Transmission), KSEBL

MNRE:

1. Sh. Abhay Bakre, Mission Director (NGHM)

SECI:

1. Sh. Vineet Kumar, DGM
2. Sh. R. K. Agarwal, Consultant

NITI AYOG:

1. Sh. Manoj Kumar Upadhyay, Dy. Adviser

CTUIL:

1. Sh. Ashok Pal, COO
2. Ms. Manju Gupta, Dy. COO
3. Sh. K.K. Sarkar, Sr. GM
4. Sh. Shiv Kumar Gupta, Sr. DGM
5. Sh. P.S. Das, Sr. GM
6. Ms. Nutan Mishra, Sr. GM
7. Sh. Sandeep Kumawat, DGM
8. Sh. VMS Prakash Y, DGM
9. Sh. Ajay Dahiya, DGM

10. Sh. Malla Mahendra, Chief Manager
11. Sh. Pratyush Singh, Chief Manager

GRID India:

1. Sh. S.C. Saxena, CMD
2. Sh. Rajiv Porwal, Director (SO)
3. Sh. Vivek Pandey, CGM (SO)
4. Sh. Priyam Jain, Chief Manager (SO)

RECPDCL

1. Sh. Anil Kumar Parela, Chief Manager

PFCCL

1. Sh. Naveen Phougat, GM
2. Sh. Deepak Kumar, Dy. Manager

Expert Member

1. Sh. Ravinder Gupta, Ex Chief Engineer, CEA