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 चौबीसवीं बैठक की कार्यसूची – के सम्बन्ध में।

Subject: Agenda for 24th Meeting of National Committee on Transmission (NCT) – regarding.

महोदया **(Madam)** / महोदय **(Sir),**

The 24th meeting of the "National Committee on Transmission" (NCT) has been scheduled as given below:

Date: 23rd October, 2024

Time: 03:00 P.M.

Venue: Chintan, 2nd Floor, CEA, Sewa Bhawan, R.K. Puram Sector-1, New Delhi

Kindly make it convenient to attend the meeting.

10-10-2024

(बी.एस.बैरवा / B.S. Bairwa)

मुख्य अभियन्ता (इंचार्ज) एवं सदस्य सचिव,एन.सी.टी.

/Chief Engineer (I/C) & 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. Lalit Bohra, Joint Secretary Room no 602, Atal Akshay Urja Bhawan Opposite CGO Complex gate no 2, Lodhi Road, New Delhi – 110003	6.	Chief Operating Officer, CTUIL, Floors No. 5-10, Tower 1, Plot No. 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 Ex. Chief Engineer CEA		

Special Invitee

Chief Engineer (PCD), CEA

Table of Agenda

Agenda for the 24th meeting of National Committee on Transmission

1 Confirmation of the minutes of the 22nd and 23rd meeting of National Committee on Transmission.

1.1 The minutes of the 22nd meeting of NCT held on 23.08.2024 were issued on 01.09.2024 vide CEA letter No. CEA-PS-12-13/3/2019-PSPA-II. No comments have been received on the minutes.

1.2 The minutes of the 23rd meeting of NCT held on 02.09.2024 were issued on 09.09.2024 vide CEA letter No. CEA-PS-12-13/3/2019-PSPA-II. No comments have been received on the minutes.

1.3 Members may confirm the minutes.

2 Status of the transmission schemes noted/approved/recommended to MoP in the 22nd and 23rd meeting of NCT:

2.1 Status of new transmission schemes approved/recommended:

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	BPC	Award/ Gazette notification
22nd NCT Meeting					
1.	Transmission system for supply of power to Green Hydrogen/Ammonia manufacturing potential in Mundra area of Gujarat under Phase-I: Part B1 scheme (3 GW at Navinal S/s)"	Recommended	TBCB	PFCCL	Gazette Notified by MoP dated 12.09.2024
2.	Eastern Region Expansion Scheme-43 (ERES-43)	Approved	RTM	Not applicable	Informed to CTUIL vide letter dated 02.09.2024
3.	Additional Transmission System Proposed for redundant power supply to Dholera area	Approved	RTM	Not applicable	Informed to CTUIL vide letter dated 02.09.2024
4.	Transmission System for Integration of Anantapur-II REZ - Phase-I (for 4.5 GW)	Recommended	TBCB	PFCCL	Gazette Notified by MoP dated 12.09.2024
5.	Transmission system for proposed Green Hydrogen / Green Ammonia projects in Tuticorin area)	Recommended	TBCB	RECPDCL	Gazette Notified by MoP dated 12.09.2024
6.	Augmentation of	Approved	TBCB	RECPDCL	Gazette Notified

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	BPC	Award/ Gazette notification
22nd NCT Meeting					
	transformation capacity by 3x500 MVA, 400/220 kV ICTs (6th - 8th) and 1x1500 MVA,765/400 kV ICT (4th) at Bidar PS				by CEA on 25.09.2024
7.	Scheme for Requirement of Additional FOTE for redundancy at AGC locations in NER: Revised	Approved	RTM	Not applicable	Informed to CTUIL vide letter dated 02.09.2024
8.	Optical Fibre Connectivity for NLDC new building, August Kranti Marg, New Delhi	Approved	RTM	Not applicable	Informed to CTUIL vide letter dated 02.09.2024
23rd NCT Meeting					
1.	Transmission System for Integration of Kurnool-IV REZ - Phase-I (for 4.5 GW)	Recommended	TBCB	RECDPCL	Gazette Notified by MoP dated 19.09.2024

2.2 Status of transmission schemes where modifications was suggested/approved in 22nd NCT meeting:

S. No.	Scheme where modifications was suggested	Status
1.	Modification in Transmission system for evacuation of power from Luhri Stage-I HEP	Informed to RECPDCL vide letter dated 02.09.2024
2.	Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)	Informed to RECPDCL vide letter dated 02.09.2024
3.	Modification in timeframe of one of the elements in the scope of "Transmission system for offshore windzone phase-1(500 MW VGF off coast of Gujrat for subzone B-3)	Informed to CTUIL vide letter dated 02.09.2024
4.	Time extension for Communication Scheme "Requirement of additional FOTE of STM-16 capacity at Bhuj-II substation to cater connectivity of RE Gencos"	Informed to CTUIL vide letter dated 02.09.2024

3 Modifications in the earlier approved/notified transmission schemes

3.1 Revision in SCOD of 400 kV D/C Jhatikara-Dwarka line under REZ Phase-III Part-D Phase-II scheme

3.1.1 The Implementation of the 400 kV D/C (quad) Jhatikara-Dwarka line, along with two

400 kV bays each at Jhatikara and Dwarka under "Transmission system for evacuation of 20 GW REZ power from Rajasthan under phase-III, Part-D, Phase-II" was allocated to POWERGRID under RTM mode with completion deadline of 18 months vide MoP OM Ref. No. 15/3/2018-Trans-Part(5) dated 06.11.2023.

3.1.2 POWERGRID vide letter dated 29.12.2023 requested an extension of the implementation timeline to at least 24 months due to technical and execution challenges and proposed changing the conductor configuration from quad to Twin HTLS on Monopole structure.

3.1.3 Due to severe ROW issues, NCT in its 17th meeting held on 31.01.24 directed CTUIL to re-survey of the scheme through implementing agency so as to arrive at the optimum requirement of monopole/narrow base tower towers, and work out the revised estimated cost**.**

3.1.4 NCT in its 19th meeting held on 29.04.2024 approved NCT approved the scope modifications in the Jhatikara – Dwarka 400 kV D/c line under Rajasthan REZ Ph-III, Part-D- Ph-II Scheme. Tentative implementation time-frame of 18 months from MOP OM-06/11/23 was unchanged. CTUIL vide letter Ref. No. CTUIL/OM/14/19 NCT dated 29.05.2024 informed that the scope of project was revised and conductor configuration was changed to Twin HTLS, However, the implementation timeline remains unchanged.

3.1.5 POWERGRID on 06.06.2024, once again requested an extension of project timeline to at least 24 months from the fresh allocation date of 29.05.2024, instead of 18 months from original allocation date.

3.1.6 Subsequently, in a meeting chaired by Secretary (Power) on 01.07.2024, POWERGRID was advised to proceed with inviting tender based on 18 months' timeline for the implementation of Rajasthan Phase-II, Part-D, Phase-II scheme.

3.1.7 In compliance with the directives, POWERGRID floated the tender and the award is expected by November, 2024 with a project completion timeline of February 2026.

3.1.8 It is proposed to revise the SCOD for 400 kV D/C (quad) Jhatikara-Dwarka line under "Transmission system for evacuation of 20 GW REZ power from Rajasthan under phase-III, Part-D, Phase-II" scheme as February 2026.

3.1.9 Members may deliberate

3.2 Change in scope of Transmission system for evacuation of power from Rajasthan REZ Ph-V (Part-1: 4 GW) [Sirohi/Nagaur] Complex

3.2.1 Transmission system for evacuation of power from Rajasthan REZ Ph-V (Part-1:4GW) (Sirohi/Nagaur complex) was recommended in the 21st NCT meeting held on 06.08.2024. Subsequently, the scheme was approved by MoP vide Gazette dated

29.08.2024. The scheme involves 5x500 MVA, 400/220 kV ICTs along with 6 Nos. 220 kV line bays at Sirohi S/s for RE interconnection at Sirohi S/s. The scheme is currently under bidding by RECPDCL.

3.2.2 In 33rd CMETS-NR meeting held on 05.08.24, connectivity up to 2100 MW was agreed to be granted at Sirohi S/s. Out of this, 1400 MW was agreed to be granted at 220 kV level through 5 no. of 220 kV line bays and balance 700 MW was agreed to be granted at 400 kV level (1 no. bay). It is to mention that out of above 700 MW, earlier 400 MW was agreed to be granted at 220 kV level of Sirohi S/s, however due to additional application of 300 MW, considering cumulative quantum (700 MW), it was agreed to be granted at 400 kV level.

3.2.3 In the 34th CMETS-NR meeting held on 19.09.24 it was deliberated that for power evacuation requirement from Sirohi PS (beyond 2.1 GW), severe transmission constraints were observed in Western region under N-1 contingency, considering upcoming RE generation in Northern and Western region by 2028-29 timeframe. Therefore, considering the evacuation constraints towards Western Region from Sirohi complex as well as low Short Circuit Ratio at 220kV level of Sirohi PS, it is proposed to grant connectivity to subsequent applications in Sirohi complex at proposed Sirohi (HVDC) PS (Sirohi-II) for which evacuation shall be through Sirohi HVDC scheme.

3.2.4 As total connectivity granted at Sirohi S/s on 220 kV level is 1400 MW through 5 no. of 220 kV line bays (out of 6 nos.), 1 no. of 220 kV line bay which is part of the above scheme shall remain unutilised. Additionally, for RE evacuation requirement of 1400MW at 220kV level, through 4 nos. of 400/220kV ICTs (out of 5 nos.), 1 no. of 400/220kV ICT which is part of the above scheme shall remain unutilised. In view of the above, it is proposed to delete the following elements from Transmission system for evacuation of power from Rajasthan REZ Ph-V (Part- 1) (Sirohi Complex)

- 1 No. of 220 kV line bay at Sirohi S/s
- 1x500 MVA, 400/220 kV ICT at Sirohi S/s along with transformer bays

3.2.5 Further, 1 no. of 400 kV line bay was agreed to be implemented in ISTS in 33rd CMETS-NR meeting for connectivity of RE developer at Sirohi S/s. Accordingly, it is proposed to add the following transmission element as part of Transmission system for evacuation of power from Rajasthan REZ Ph-V (Part- 1) (Sirohi Complex)

- 1 no. of 400 kV line bay at Sirohi S/s for RE interconnection

3.2.6 In view of above the revised scope of Transmission system for evacuation of power from Rajasthan REZ Ph-V (Part-1: 4 GW) [Sirohi/Nagaur] Complex is proposed as under:

Sl. No.	Original scope of the transmission scheme	Revised scope of the transmission scheme
1. Transmission system for immediate Evacuation of Power from Sirohi S/s (2 GW)		

Sl. No.	Original scope of the transmission scheme	Revised scope of the transmission scheme
1	5x500 MVA, 400/220 kV ICTs at Sirohi S/s along with transformer bays • 400/220 kV 500 MVA ICTs- 5 Nos. • 400 kV ICT bays-5 Nos. • 220 kV ICT bays- 5 Nos.	**4x500 MVA, 400/220 kV ICTs at Sirohi S/s along with transformer bays** • **400/220 kV 500 MVA ICTs- 4 Nos.** • **400 kV ICT bays-4 Nos.** **220 kV ICT bays- 4 Nos.**
2	6 Nos. 220 kV line bays at Sirohi S/s for RE interconnection • 220 kV line bays – 6 Nos.	**5 Nos. 220 kV line bays at Sirohi S/s for RE interconnection** • **220 kV line bays – 5 Nos.**
3	220 kV Sectionalizer bay (1 set) along with 220 kV BC (2 Nos.) bay and 220 kV TBC (2 Nos.) bay at Sirohi S/s	• 220 kV Sectionalizer bay (1 set) • 220 kV BC (2 Nos.) bay and 220 kV TBC (2 Nos.) bay
4	-	**1 No. 400 kV line bays at Sirohi S/s for RE interconnection** • **400 kV line bay – 1 No.**
	Note: There will be no change in other elements of the transmission scheme w.r.t agreed in the 21st NCT meeting/ MoP Gazette dated 29.08.2024.	

3.2.7 The original cost of scheme is Rs 5027.61 Cr. With above modifications of scope, cost shall reduce only by Rs 40.75 Cr which is about (-) 0.81 % of original cost of package.

3.2.8 Members may deliberate

3.3 **Bid process for selection of Bidder as Transmission Service Provider (TSP) to establish "Augmentation of transformation capacity at Bhuj-II PS (GIS)".**

3.3.1 The scheme "Augmentation of transformation capacity at Bhuj-II PS (GIS)" was agreed in the 16th meeting of National Committee on Transmission held on 30.11.2023 under TBCB route with estimated cost of Rs. 428 crores and implementation timeframe of 21 months. Gazette was notified on 23.01.2024 with PFCCL as BPC.

3.3.2 The RFP for the transmission scheme was issued on March 29, 2024. RFP bid submission originally scheduled on May 31, 2024 had been extended to August 20, 2024 on request from the bidders. Out of the two bidders who purchased the RFP documents for the subject transmission scheme, only one bidder i.e. Power Grid Corporation of India Limited submitted the bid on August 20, 2024.

3.3.3 As per clause 9.6 of "Tariff based Competitive-bidding Guidelines for Transmission Service" issued by Ministry of Power (MoP) on August 10, 2021, there has to be minimum two qualified bidders for conducting the bid process. Accordingly, Bid Opening Committee (BOC) decided not to open RFP (Technical) bid and RFP bid submission were extended to August 27, 2024.

3.3.4 On August 27, 2024 also only one bidder i.e. Power Grid Corporation of India Limited submitted the bid. The BOC decided not to go ahead with the opening of RFP bid. BPC apprised the Bid Evaluation Committee (BEC) regarding the same. BEC recommended that BPC may approach the MoP for further direction on the subject bid process. PFCCL vide letter dated 04.09.2024 sought the guidance from MoP on the matter.

3.3.5 MoP vide letter dated 09.10.2024 refer the matter to National Committee on Transmission (NCT) for deliberation in the next NCT meeting and submit the recommendations to the Ministry.

3.3.6 Members may deliberate.

4 New Transmission Schemes:

4.1 Eastern Region Expansion Scheme-44 (ERES-44)

4.1.1 The Chhukha Transmission System (CTS) for importing power from Chhukha Hydro Electric Plant in Bhutan is more than 35 years old and considering the increase in conductor snapping. The matter was deliberated in 209th and 210th OCC and 51st ERPC meetings. As the system involved cross border links also, CTUIL had requested CEA for clarification regarding approval and implementation of reconductoring works.

4.1.2 A meeting was convened by CEA under the chairpersonship of Member (Power System) on 27-08-2024, wherein it was decided that matter of reconductoring of cross border lines will be separately taken up with Bhutan. However, reconductoring of the 220 kV corridor viz. Alipurduar (POWERGRID) – Falakata (WBSETCL) – Birpara (POWERGRID) – Binaguri (POWERGRID) – Siliguri (POWERGRID) – Kishanganj (POWERGRID) – Dalkhola (POWERGRID) – Gazole (WBSETCL) – Malda (POWERGRID), comprising of ISTS and intra-state sections (owned by WBSETCL) may be taken up in ISTS.

4.1.3 Accordingly, a transmission scheme **"**Eastern Region Expansion Scheme-44 (ERES-44)" with following scope is proposed (detailed agenda is enclosed at (Annexure 4.1)

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Circuit km (ckm) / Nos.	Estimated Cost (₹ Cr.)
(i)	Reconductoring of ISTS portion of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line with HTLS conductor of ampacity 1250A	54 ckm	25.03

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Circuit km (ckm) / Nos.	Estimated Cost (₹ Cr.)
(ii)	Reconductoring of ISTS portion of Falakata (WBSETCL) – Birpara (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	54 ckm	25.03
(iii)	Reconductoring of Birpara (POWERGRID) – Binaguri (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	160 ckm	74.17
(iv)	Reconductoring of Binaguri (POWERGRID) – Siliguri (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	12 ckm	5.57
(v)	Reconductoring of Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	216 ckm	100.13
(vi)	Reconductoring of Kishanganj (POWERGRID) – Dalkhola (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	62 ckm	28.75
(vii)	Reconductoring of ISTS portion of Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c line with HTLS conductor of ampacity 1250A	195 ckm	90.39
(viii)	Reconductoring of ISTS portion of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	33 ckm	15.30
(ix)	Upgradation of associated 220 kV bay equipment at Alipurduar (POWERGRID)	Replacement of Wave Traps of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line commensurate with rating of HTLS.	1.44
(x)	Upgradation of associated 220 kV bay equipment at Birpara (POWERGRID)	Replacement of Wave Traps of Falakata (WBSETCL) – Birpara (POWERGRID) and Birpara (POWERGRID) – Binaguri (POWERGRID) 220 kV D/c lines commensurate with	2.86

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Circuit km (ckm) / Nos.	Estimated Cost (₹ Cr.)
		rating of HTLS.	
(xi)	Upgradation of associated 220 kV bay equipment at Binaguri (POWERGRID)	Replacement of Wave Traps of Birpara (POWERGRID) – Binaguri (POWERGRID) and Binaguri (POWERGRID) – Siliguri (POWERGRID) 220 kV D/c lines commensurate with rating of HTLS.	2.86
(xii)	Upgradation of associated 220 kV bay equipment at Siliguri (POWERGRID)	Replacement of Wave Traps of Binaguri (POWERGRID) – Siliguri (POWERGRID) and Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c lines commensurate with rating of HTLS.	2.86
(xiii)	Upgradation of associated 220 kV bay equipment at Dalkhola (POWERGRID)	Replacement of Wave Traps of Kishanganj (POWERGRID) – Dalkhola (POWERGRID) and Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c lines commensurate with rating of HTLS.	2.86
(xiv)	Upgradation of associated 220 kV bay equipment at Malda (POWERGRID)	Replacement of Wave Traps of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line commensurate with rating of HTLS.	1.44
(xv)	Supply and installation of OPGW along with terminal equipment at both ends of Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c (HTLS) line	108 km	7.08
		Total	**385.77**

Note:

(a) WBSETCL will reconductor their following lines sections under intra-state scheme matching with

completion of ISTS scheme namely ERES-44:

- *About 4km intra-state portion of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line at Falakata end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Falakata (WBSETCL) end commensurate with rating of HTLS (1250A).*
- *About 4km intra-state portion of Birpara (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line at Falakata end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Falakata (WBSETCL) end commensurate with rating of HTLS (1250A).*
- *About 2km intra-state portion of Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c line at Gazole end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Gazole (WBSETCL) end commensurate with rating of HTLS (1250A).*
- *About 2km intra-state portion of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line at Gazole end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Gazole (WBSETCL) end commensurate with rating of HTLS (1250A).*

(b) WBSETCL will LILO the Dhalkola – Gazole 220 kV D/c line with 1250A HTLS under their intra-state scheme for establishment of 220 kV level at their existing 132/33kV Raiganj (WBSETCL) S/s.

(c) ISTS licensee and WBSETCL shall coordinate for reconductoring of their respective portion of the lines matching with completion schedule of this scheme.

4.1.4 Estimated Cost of the scheme is INR 385.77 Crore with implementation timeframe of 18 months (15 months on best effort basis) from the date of allocation of project.

4.1.5 Members may deliberate.

4.2 Transmission system for Evacuation of Power from RE Projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh-Phase III

4.2.1 Government of India has set a target for establishing 500 GW non fossil generation capacity by 2030, out of which 2.5 GW REZ potential has been identified at Rajgarh (MP).

(i). Phase-I of 1.5 GW involves establishment of Pachora PS with 3x500 MVA 400/220 kV ICTs and Pachora PS – Bhopal 400 kV D/c line which has been implementation by M/s G R Infraprojects Ltd. (Commissioned).

(ii). Phase-II (1GW) involves ICT augmentation (4th, 5th & 6th) Pachora PS along with Pachora PS – Ujjan (MPPTCL) 400 kV D/c line which is presently under implementation by M/s G R Infraprojects Ltd. with SCOD of 14.02.2026.

4.2.2 In view of applications received for cumulative capacity of 4000 MW at Pachora PS till Jul-24, it was found prudent to expand the substations to its full capacity so as to accommodate applications being received beyond 2.5 GW at Pachora PS. Out of 1508 MW applications received for Rajgarh Ph-III system, RE projects for 1321 MW have been agreed for grant with start date of Mar'27. Additional 187 MW applications received in Jul-24 are under process and shall also be granted with start date of Mar'27.

4.2.3 To enable evacuation of upto 4000 MW Power from RE Projects in Rajgarh (i.e. 1500 MW beyond 2500 MW) SEZ in Madhya Pradesh, a transmission scheme **"**Transmission system for Evacuation of Power from RE Projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh-Phase III" with following scope is proposed (detailed agenda is

enclosed at (Annexure 4.2)

Sl. No.	Scope of the Transmission Scheme	Capacity
1.	Creation of New 220 kV Bus Section (3rd) with 220 kV Bus Sectionaliser and 400/220 kV, 3x500 MVA ICT augmentation (7th, 8th & 9th) at Pachora PS terminated on 220 kV Bus Section (3rd)	500 MVA 400/220 kV ICT – 3 Nos. 400 kV ICT bay – 3 Nos. 220 kV ICT bay – 3 Nos. (on Sec-III) 220 kV Bus Sectionaliser bays – 1 set 220 kV BC & TBC – 1 Nos. each
2.	4 Nos. 220 kV line bays for RE Interconnection on Bus Section (3rd)	4 Nos. on Sec-III
3.	Pachora PS – Rajgarh(PG) 400 kV D/c line (Quad ACSR/ AAAC/ AL59 Moose equivalent) along with associated bays at both ends and 50 MVAr Sw LR on each ckt at both ends	Line length: 180km. 400 kV bays: 4 Nos. (2 at Rajgarh(PG) & 2 at Pachora PS) 420 kV, Sw LRs: 4 Nos. (2 at Rajgarh(PG) & 2 at Pachora PS) Switching equipment for 400 kV line reactor – 4 Nos. (2 at Rajgarh(PG) & 2 at Pachora PS)
4.	Installation of 1x125 MVAR, 420 kV bus reactor at Pachora PS (400 kV Bus Section-II)	125 MVAr, 420 kV Bus reactor – 1 Nos. 400 kV Bus reactor bay: 1 Nos.

4.2.4 Estimated Cost of the scheme is INR 1079 Crore with implementation timeframe of 24 months from the date of allocation of project.

4.2.5 The scheme has been deliberated and agreed in the 50th meeting of WRPC held on 24.08.2024

4.2.6 Members may deliberate.

4.3 Transmission system for Evacuation of Power from RE Projects in Neemuch (1000 MW) SEZ in Madhya Pradesh-Phase II

4.3.1 Government of India has set a target for establishing 500GW non fossil generation capacity by 2030, out of which 1 GW SEZ has been identified at Neemuch for which 2x500 MVA, 400/220 kV Neemuch PS is already commissioned by POWERGRID.

4.3.2 In view of applications received for cumulative capacity of 1970 MW at Neemuch PS till Jul-24, it was found prudent to expand the substations to its full capacity so as to accommodate applications being received beyond 1 GW at Pachora PS.

4.3.3 To enable Evacuation of upto 2000MW Power from RE Projects in Neemuch (i.e. 1000 MW beyond 1000 MW) SEZ in Madhya Pradesh, a transmission scheme “Transmission system for Evacuation of Power from RE Projects in Neemuch (1000 MW) SEZ in

Madhya Pradesh-Phase II" with following scope is proposed (detailed agenda is enclosed at (Annexure 4.3)

Sl.No.	Scope of the Transmission Scheme	Capacity
1.	Creation of New 220 kV Bus Section-II at Neemuch PS with Augmentation of transformation capacity by 3x500 MVA, 400/220 kV ICTs (3rd, 4th & 5th) at Neemuch S/s along with associated bays.	500 MVA 400/220 kV ICT – 3 Nos. 400 kV ICT bay – 3 Nos. 220 kV ICT bay – 3 Nos. (on Sec-II) 220 kV Bus Sectionaliser bays – 1 set 220 kV BC & TBC – 1 Nos. each
2.	4 Nos. 220 kV Line bays at Neemuch PS for RE interconnection	220 kV Bays – 4 Nos. on Sec-II
3.	Neemuch PS – Pachora PS 400 kV 400 kV D/c line (Quad ACSR/ AAAC/ AL59 Moose equivalent) along with 50 MVAr Sw LR on each ckt at both ends	Line length: 190km. 400 kV bays: 4 Nos. (2 at Neemuch PS & 2 at Pachora PS) 420 kV, Sw LRs: 4 Nos. (2 at Neemuch PS & 2 at Pachora PS) Switching equipment for 400 kV line reactor – 4 Nos. (2 at Neemuch PS & 2 at Pachora PS)
4.	Establishment of 2x500 MVA, 400/220 kV S/s at Handiya with 2x125MVAr 420 kV Bus Reactors **Future provision (space for):** ➢ 400 kV line bays along with switchable line reactors– 6 Nos. (Sec-II) ➢ 400/220 kV ICT along with bays - 4 Nos. (1 Nos. on Sec-I & 3 Nos. on Sec-II) ➢ 400 kV Bus Reactor along with bays: 2 Nos. (Sec-II) ➢ 220 kV line bays: 8 Nos. (on Sec-II) ➢ 400 kV Sectionalization bay: 1 set ➢ 220 kV Sectionalization bay: 1 set ➢ 220 kV TBC & BC: 1 Nos.	400/220 kV ICTs: 2 Nos. 400 kV ICT Bays: 2 Nos. 220 kV ICT Bays: 2 Nos. 400 kV Line bays: 6 Nos. 220 kV line bays for MPPTCL – 8 Nos. 125 MVAr, 420 kV Bus reactor – 2 Nos. 400 kV Bus reactor bay: 2 Nos. 220 kV TBC bay – 1 Nos. 220 kV BC bay – 1 Nos.
5.	Pachora PS – Handiya 400 kV 400 kV D/c line (Quad ACSR/ AAAC/ AL59 Moose equivalent) along with associated bays at Pachora PS end and 50 MVAr Sw LR on each ckt at both ends	Line length: 190km. 400 kV bays: 2 Nos. (at Pachora PS) 420 kV, Sw LRs: 4 Nos. (2 at Handiya & 2 at Pachora PS) Switching equipment for 400 kV line reactor – 4 Nos. (2 at Handiya & 2 at Pachora PS)
6.	LILO of Khandwa(PG) – Itarsi(PG) 400 kV D/c (Twin Moose) line at Handiya S/s	LILO route length : 22 km (88 ckm) The Khandwa(PG) – Itarsi(PG) 400 kV D/c line is of Twin Moose

		configuration and LILO shall be of similar conductor configuration
7.	Installation of 1x125 MVAR, 420 kV bus reactor (2nd) at Neemuch PS	125 MVAr, 420 kV Bus reactor – 1 Nos. 400 kV Bus reactor bay: 1 Nos.
Note: TSP of Neemuch & Pachora PS shall provide space for above scope of work		

4.3.4 Estimated Cost of the scheme is INR 2393 Crore with implementation timeframe of 24 months from the date of allocation of project.

4.3.1 The scheme has been deliberated and agreed in the 50th meeting of WRPC held on 24.08.2024

4.3.2 Members may deliberate.

4.4 **North Eastern Region Expansion Scheme-XXI Part-B (NERES-XXI Part-B)**

4.4.1 The existing 132 kV Badarpur (POWERGRID) switching station was commissioned in 1999 and shall be completing 25 years in service by 2024. POWERGRID the owner of the substation has informed that they are facing issues in O&M of the switching station and to improve the reliability it would be prudent to upgrade the switching station from single main and transfer bus scheme to double main transfer bus scheme by converting from AIS to GIS.

4.4.2 Further, towards adoption of new technology in the Indian Grid, it was proposed that the upgradation could be carried out as Green GIS instead of conventional GIS owing to the following benefits:

- Green GIS is a new technology in which SF6 gas is not used and this technology is being adopted by several countries in the world.
- This would help in the reduction of usage of Green House Gas and would be a step towards achieving sustainable development targets.

4.4.3 The scheme was also discussed in the 23rd TCC & NERPC meetings held on 18th-19th Nov 2022 wherein the subject upgradation was agreed to be carried out in Green GIS.

4.4.4 The scheme was taken up for deliberations in the 15th meeting of NCT held on 25-08-2023, wherein it was decided to review the scheme subsequently.

4.4.5 The scheme was thereafter discussed in the 16th meeting of NCT held on 30-11-2023, wherein on the query of urgency, CTUIL stated that there is no immediate requirement of upgradation. In the meeting, it was decided to defer the scheme at present and take it up after additional discussions on new technology such as major benefits of Green GIS, availability of Green GIS vendors in India, additional cost implication

(conventional GIS vis-à-vis Green GIS) etc.

4.4.6 Accordingly, a transmission scheme **"**North Eastern Region Expansion Scheme-XXI Part-B (NERES-XXI Part-B)" with following scope is proposed (detailed agenda is enclosed at (Annexure 4.4)

Sl. No.	Scope of the Transmission Scheme
1.	Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system

Note: As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU officials at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and also after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.

4.4.7 Estimated Cost of the scheme is INR 110 Crore with implementation timeframe of 30 months from the date of allocation of project.

4.4.8 Members may deliberate.

4.5 Upgradation of ± 800 kV, 6000 MW Raigarh-Pugalur HVDC system for enhancement of reverse power capacity upto 6000 MW from existing 3000 MW

4.5.1 Upgradation of ± 800 kV, 6000 MW Raigarh-Pugalur HVDC system for enhancement of reverse power capacity upto 6000 MW from existing 3000 MW has been approved in 52nd SPRC meeting held on 03.08.2024. In the meeting, SRPC concluded the following:

- SRPC approved the upgradation of ±800kV, 6000 MW Raigarh - Pugalur HVDC System for enhancement of reverse power capacity up to 6000MW from existing 3000 MW at indicative cost of Rs 1000 Cr (including cost of system studies) and required AC system strengthening at Pugalur (Estimated cost of Rs 400 crores) & Raigarh (Estimated cost of Rs 1800 Crores) which was already identified and detailed in the earlier SRPC meetings.

- SRPC recommended CTUIL to take up the matter to NCT at the earliest and also recommended to ensure to take up both the DC and AC systems simultaneously & expeditiously

- SRPC recommended that PGCIL to condense the period of 48 months for upgradation of HVDC system. If HVDC upgradation is completed before AC system strengthening, SPS can be put in place to utilize the RPT HVDC links at 6000 MW in reverse direction.

4.5.2 SRPC vide letter dated 02.09.2024 recommended CTUIL to take up the matter to NCT at the earliest.

4.5.3 Members may deliberate

4.6 **Supply and Installation of additional FOTE and Ethernet cards at AGC & Critical Nodes of SR Region.**

4.6.1 As per CEA, Manual of Communication Planning in Power System Operation 2022, CTU for high availability requirements for Power System Communication, redundancy with route diversity for critical links shall be maintained. NLDC stated that additional FOTE and redundant ethernet ports are required at all AGC operated generating stations, in view of resource disjoint and criticality of AGC operation for grid operation purpose.

4.6.2 Accordingly, a communication scheme **"**Additional FOTE and ethernet cards at AGC & Critical Nodes of SR Region)" with following scope is proposed (detailed agenda is enclosed at (Annexure 4.6)

(i) Supply and installation of 3 nos. FOTE with STM 16 capacity at following locations:

SI.No.	Station Name	No of FOTE	Remark
1.	Simhadri-1	1	For AGC purpose
2.	NP KUNTA	1	Shortage of ports
3.	NLC-TPS-2 Stage 1	1	For AGC purpose
Total		**3**	

(ii) Supply and installation of 10 Nos. ethernet cards at following locations:

SI.No.	Station Name	Ethernet Cards required
1	Ramagundam -I	2
2	Ramagundam -II	
3	Ramagundam -III	
4	NTPC Vallur	2
5	NTPL Tuticorin	1
6	NTPC Kudgi	2
7	NLC - TPS 2 Exp	1
8	NLC - TPS 1 Exp	1
9	NNTPS new Neyveli	1
Total		**10**

4.6.3 Estimated Cost of the scheme is INR 1.02 Crore approx. with implementation timeframe of 12 months from the date of allocation of project.

4.6.4 Members may deliberate

5 Status of the bids under process by BPCs

5.1 The BPCs (RECPDCL and PFCCL) may make presentations on status of bids under process.

6 Evaluation of functioning of National Grid.

6.1 Grid-India may make a presentation on performance of national grid.

7 Any other issues, with permission of chair

***

Annexure-4.1

Eastern Region Expansion Scheme-44 (ERES-44)

Sl. No.	Items	Details
1.	**Name of scheme**	Eastern Region Expansion Scheme-44 (ERES-44)
2.	**Scope of the scheme**	(i) Reconductoring of ISTS portion of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line with HTLS conductor of ampacity 1250A (ii) Reconductoring of ISTS portion of Falakata (WBSETCL) – Birpara (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A (iii) Reconductoring of Birpara (POWERGRID) – Binaguri (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A (iv) Reconductoring of Binaguri (POWERGRID) – Siliguri (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A (v) Reconductoring of Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A (vi) Reconductoring of Kishanganj (POWERGRID) – Dalkhola (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A (vii) Reconductoring of ISTS portion of Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c line with HTLS conductor of ampacity 1250A (viii) Reconductoring of ISTS portion of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A (ix) Upgradation of associated 220 kV bay equipment at Alipurduar (POWERGRID) (x) Upgradation of associated 220 kV bay equipment at Birpara (POWERGRID) (xi) Upgradation of associated 220 kV bay equipment at Binaguri (POWERGRID)

Sl. No.	Items	Details
		(xii) Upgradation of associated 220 kV bay equipment at Siliguri (POWERGRID) (xiii) Upgradation of associated 220 kV bay equipment at Dalkhola (POWERGRID) (xiv) Upgradation of associated 220 kV bay equipment at Malda (POWERGRID) (xv) Supply and installation of OPGW along with terminal equipment at both ends of Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c (HTLS) line Detailed scope of works is at **Appendix-E1.**
3.	**Depiction of the scheme on Transmission Grid Map**	Refer **Exhibit-E1**.
4.	**Upstream/downstream system associated with the scheme**	Nil
5.	**Objective / Justification**	A transmission network consisting of several transmission lines and substations was built for importing power from Chhukha Hydro Electric Plant in Bhutan. The network is called Chhukha Transmission System (CTS). POWERGRID vide letter dated 22-03-2024 informed that the transmission system is more than 35 years old and considering the increase in conductor snapping, the matter was deliberated in 209th and 210th OCC and 51st ERPC meetings. Thereafter, in a special meeting at ERPC on 05-02-2024, POWERGRID was advised to approach CTU to ascertain the requirement of reconductoring of various 220 kV lines. Accordingly, system studies were performed and the matter was deliberated in the 31st meeting of CMETS-ER held on 30-05-2024 wherein reconductoring of entire 220 kV D/c corridor from Alipurduar to Malda *[viz. Alipurduar (POWERGRID) – Falakata (WBSETCL) – Birpara (POWERGRID) – Binaguri (POWERGRID) – Siliguri (POWERGRID) – Kishanganj (POWERGRID) – Dalkhola (POWERGRID) – Gazole (WBSETCL) – Malda (POWERGRID)]* in Indian grid was proposed to be reconductored with HTLS conductor. Reconductoring

Sl. No.	Items	Details
		of Birpara – Chukha HEP/Malbase 220 kV lines was also agreed for reconductoring. As the system involved cross border links also, CTUIL had requested CEA for clarification regarding approval and implementation of reconductoring works. A meeting was convened by CEA under the chairpersonship of Member (Power System) on 27-08-2024, wherein it was inter alia decided to reconductor the whole 220 kV corridor viz. Alipurduar (POWERGRID) – Falakata (WBSETCL) – Birpara (POWERGRID) – Binaguri (POWERGRID) – Siliguri (POWERGRID) – Kishanganj (POWERGRID) – Dalkhola (POWERGRID) – Gazole (WBSETCL) – Malda (POWERGRID), comprising of ISTS and intra-state sections (WBSETCL) owned. CTUIL was inter alia directed to bring an agenda in the NCT meeting for reconductoring of ISTS transmission lines as new ISTS strengthening project after deliberation in appropriate forum based on cost estimate. It was also decided that detailed proposal for reconductoring of Birpara – Chukha HEP/Malbase 220 kV cross border lines shall be submitted by CTUIL to Designated Authority, CEA for further taking up with Bhutan. In view of the above, reconductoring of the 220 kV corridor with HTLS conductor was discussed and agreed in the 34th CMETS-ER held on 29-08-2024. Along with the reconductoring works, upgradation of requisite 220 kV line bay equipment at both ends of lines are also planned. Keeping in view urgent requirement of the scheme, the implementation timeframe of the scheme has been planned as 18 months (with best effort basis schedule as 15 months).
6.	**Estimated Cost**	₹ 385.77 Cr.
7.	**Impact on the total Annual Transmission Charges in % along with the existing ATC**	A. ATC (considering levelized tariff @15% of estimated cost): ₹ 57.87 Cr. B. Present ATC: ₹46377.90Cr.* C. A/B: about 0.125%

Sl. No.	Items	Details
8.	**Need of phasing, if any**	Nil
9.	**Implementation timeframe**	18 months (15 months on best effort basis)
10.	**Inclusion of any wild life/ protected area along the transmission line route**	-
11.	**Deliberations with RPC along with their comments**	Estimated cost of the ISTS scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to ERPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
12.	**System Study for evolution of the proposal**	Refer Exhibit-E2 and the explanation at Sl. No. 5 above.

**Total YTC allowed for July 2024, as per notification of transmission charges payable by DICs for billing month of September 2024 dated 25-08-2024 published on NLDC website (available @ https://posoco.in/en/download/notification_transmission-charges-for-dics_billing-month_september_2024/?wpdmdl=59046)*

Appendix-E1

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Circuit km (ckm) / Nos.	Estimated Cost (₹ Cr.)
(i)	Reconductoring of ISTS portion of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line with HTLS conductor of ampacity 1250A	54ckm	25.03
(ii)	Reconductoring of ISTS portion of Falakata (WBSETCL) – Birpara (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	54ckm	25.03
(iii)	Reconductoring of Birpara (POWERGRID) – Binaguri (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	160ckm	74.17
(iv)	Reconductoring of Binaguri	12ckm	5.57

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Circuit km (ckm) / Nos.	Estimated Cost (₹ Cr.)
	(POWERGRID) – Siliguri (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A		
(v)	Reconductoring of Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	216ckm	100.13
(vi)	Reconductoring of Kishanganj (POWERGRID) – Dalkhola (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	62ckm	28.75
(vii)	Reconductoring of ISTS portion of Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c line with HTLS conductor of ampacity 1250A	195ckm	90.39
(viii)	Reconductoring of ISTS portion of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line with HTLS conductor of ampacity 1250A	33ckm	15.30
(ix)	Upgradation of associated 220 kV bay equipment at Alipurduar (POWERGRID)	Replacement of Wave Traps of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line commensurate with rating of HTLS.	1.44
(x)	Upgradation of associated 220 kV bay equipment at Birpara (POWERGRID)	Replacement of Wave Traps of Falakata (WBSETCL) – Birpara (POWERGRID) and Birpara (POWERGRID) – Binaguri (POWERGRID) 220 kV D/c lines commensurate with rating of HTLS.	2.86
(xi)	Upgradation of associated 220 kV bay equipment at Binaguri (POWERGRID)	Replacement of Wave Traps of Birpara (POWERGRID) – Binaguri (POWERGRID) and Binaguri (POWERGRID) – Siliguri (POWERGRID) 220 kV D/c lines commensurate with	2.86

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / Circuit km (ckm) / Nos.	Estimated Cost (₹ Cr.)
		rating of HTLS.	
(xii)	Upgradation of associated 220 kV bay equipment at Siliguri (POWERGRID)	Replacement of Wave Traps of Binaguri (POWERGRID) – Siliguri (POWERGRID) and Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c lines commensurate with rating of HTLS.	2.86
(xiii)	Upgradation of associated 220 kV bay equipment at Dalkhola (POWERGRID)	Replacement of Wave Traps of Kishanganj (POWERGRID) – Dalkhola (POWERGRID) and Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c lines commensurate with rating of HTLS.	2.86
(xiv)	Upgradation of associated 220 kV bay equipment at Malda (POWERGRID)	Replacement of Wave Traps of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line commensurate with rating of HTLS.	1.44
(xv)	Supply and installation of OPGW along with terminal equipment at both ends of Siliguri (POWERGRID) – Kishanganj (POWERGRID) 220 kV D/c (HTLS) line	108km	7.08
		Total	**385.77**

Note:

(d) WBSETCL will reconductor their following lines sections under intra-state scheme matching with completion of ISTS scheme namely ERES-44:

- *About 4km intra-state portion of Alipurduar (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line at Falakata end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Falakata (WBSETCL) end commensurate with rating of HTLS (1250A).*
- *About 4km intra-state portion of Birpara (POWERGRID) – Falakata (WBSETCL) 220 kV D/c line at Falakata end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Falakata (WBSETCL) end commensurate with rating of HTLS (1250A).*
- *About 2km intra-state portion of Dalkhola (POWERGRID) – Gazole (WBSETCL) 220 kV D/c line at Gazole end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Gazole (WBSETCL) end commensurate with rating of HTLS (1250A).*

- *About 2km intra-state portion of Gazole (WBSETCL) – Malda (POWERGRID) 220 kV D/c line at Gazole end with HTLS conductor of ampacity 1250A along with necessary upgradation of associated 220 kV bay equipment at Gazole (WBSETCL) end commensurate with rating of HTLS (1250A).*

(e) WBSETCL will LILO the Dhalkola – Gazole 220 kV D/c line with 1250A HTLS under their intra-state scheme for establishment of 220 kV level at their existing 132/33kV Raiganj (WBSETCL) S/s.

(f) ISTS licensee and WBSETCL shall coordinate for reconductoring of their respective portion of the lines matching with completion schedule of this scheme.

Exhibit-E1

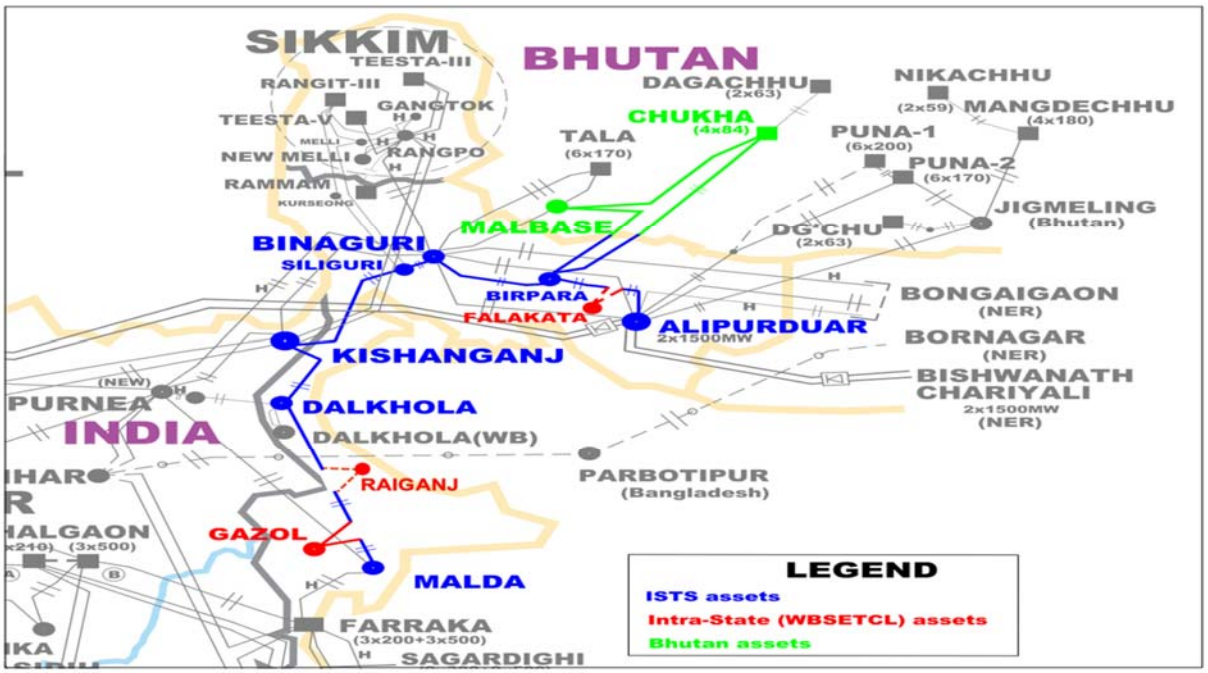


Exhibit-E2

Study Results: Reconductoring of some lines of Chukha Transmission System

Sl.No.	From Bus Name	To Bus Name	LINE	No of circuits	Loadabiltiy	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Scenario 9	Max Flow in ERLDC case
1	Malda	Gazol	220 D/c	2	198	-101	-140	-120	-130	-116	-201	-68	40	-24	400
	With N-1			1	198						-176				
2	Binaguri	Sliguri	220 D/c	2	198	494	558	449	492	585	478	219	251	176	420
	With N-1			1	198	451	509	410	450	534	437	200	229		
3	Sliguri	Kishanganj	220 D/c	2	198	362	487	407	342	515	433	149	179	137	360
	With N-1			1	198	218	295	246	206	311	262				
4	Binaguri	Birpara	220 D/c	2	198	-167	-225	-191	-157	-246	-220	-64	-50	-49	300
	With N-1			1	198		-148			-165	-147				
5	Birpara	Falakata	220 D/c	2	198	1	20	3	7	-6	-30	9	118	45	-300
	With N-1			1	198										
6	Falakata	Alipurduar	220 D/c	2	198	-221	-150	-120	-234	-178	-158	-99	-6	-36	-300
	With N-1			1	198	-175			-186						
7	Dalkola	Gazol	220 D/c	2	198	364	330	253	421	305	332	202	128	133	-240
	With N-1			1	198	235	213	158	272	197	215	131			
8	Dalkola	Kishanganj	220 D/c	2	198	-508	-495	-390	-552	-489	-458	-259	-231	-196	290
	With N-1			1	198	-375	-365	-262	-408	-360	-337	-189	-169		
9	Birpara	Malabase	220 S/c	1	198	-133	-130	-94	-142	-125	-89	-63	-110	-62	195
	Birpara	Chukha	220 D/c	2	198	-248	-284	-218	-253	-281	-219	-110	-193	-115	190
	With N-1			2	198	-367	-397	-300	-381	-390	-295	-167	-291	-168	

Annexure-4.2

Transmission system for Evacuation of Power from RE Projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh-Phase III

The Government of India has set a target for establishing 500GW non fossil generation capacity by 2030, out of which 2.5GW REZ potential has been identified at Rajgarh (MP).

1. Phase-I of 1.5 GW involves establishment of Pachora PS with 3x500 MVA 400/220 kV ICTs and Pachora PS – Bhopal 400 kV D/c line which has been implementation by M/s G R Infraprojects Ltd. (Commissioned)
2. Phase-II (1GW) involves ICT augmentation (4th, 5th & 6th) Pachora PS along with Pachora PS – Ujjan (MPPTCL) 400 kV D/c line which is presently under implementation by M/s G R Infraprojects Ltd. with SCOD of 14.02.2026.

In view of applications received for cumulative capacity of 4000MW at Pachora PS till Jul-24, it was found prudent to expand the substations to its full capacity so as to accommodate applications being received beyond 2.5GW at Pachora PS. Out of 1508MW applications received for Rajgarh Ph-III system, RE projects for 1321MW have been agreed for grant with start date of Mar-27. Additional 187MW applications received in Jul-24 are under process and shall also be granted with start date of Mar-27. The present scheme shall enable Evacuation of upto 4000MW Power from RE Projects in Rajgarh (i.e. 1500 MW beyond 2500MW) SEZ in Madhya Pradesh. 50th WRPC held on 24.08.2024 has recommended the proposal for implementation.

Details of the scheme are given below:

<table>
<tr><th>Sl. No.</th><th>Items</th><th>Details</th></tr>
<tr><td>1.</td><td>Name of Scheme</td><td>Transmission system for Evacuation of Power from RE Projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh-Phase III</td></tr>
<tr><td>2.</td><td>Scope of the scheme</td><td>
<table>
<tr><th>Sl. No.</th><th>Scope of the Transmission Scheme</th><th>Capacity</th></tr>
<tr><td>1.</td><td>Creation of New 220 kV Bus Section (3rd) with 220 kV Bus Sectionaliser and 400/220 kV, 3x500 MVA ICT augmentation (7th, 8th & 9th) at Pachora PS terminated on 220 kV Bus Section (3rd)</td><td>500 MVA 400/220 kV ICT – 3 No.
400 kV ICT bay – 3 No.
220 kV ICT bay – 3 No. (on Sec-III)
220 kV Bus Sectionaliser bays – 1 set</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Sl. No.</th><th>Items</th><th>Details</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td></td><td>220 kV BC & TBC – 1 No. each</td></tr>
<tr><td>2.</td><td>4 nos. 220 kV line bays for RE Interconnection on Bus Section (3rd)</td><td>4 Nos. on Sec-III</td></tr>
<tr><td>3.</td><td>Pachora PS – Rajgarh(PG) 400 kV D/c line (Quad ACSR/ AAAC/ AL59 Moose equivalent) along with associated bays at both ends and 50 MVAr Sw LR on each ckt at both ends</td><td>Line length: 180km.

400 kV bays: 4 nos. (2 at Rajgarh(PG) & 2 at Pachora PS)

420 kV, Sw LRs: 4 nos. (2 at Rajgarh(PG) & 2 at Pachora PS)

Switching equipment for 400 kV line reactor – 4 Nos. (2 at Rajgarh(PG) & 2 at Pachora PS)</td></tr>
<tr><td>4.</td><td>Installation of 1x125 MVAR, 420 kV bus reactor at Pachora PS (400 kV Bus Section-II)</td><td>125 MVAr, 420 kV Bus reactor – 1 No.

400 kV Bus reactor bay: 1 No.</td></tr>
</table>
</td></tr>
<tr><td>3.</td><td>Depiction of the scheme on Transmission Grid Map</td><td>Attached at Exhibit-W1</td></tr>
<tr><td>4.</td><td>Upstream/downstream system associated with the scheme</td><td>Pachora PS is an existing S/s of GR Infraprojects which is connected with Bhopal (BDPTCL) S/s at 400 kV level (implemented under Rajgarh Ph-I scheme). Interconnection with Ujjain (MP) S/s is under implementation by M/s GR Infraprojects under Rajgarh Phase-II scheme.

Out of 1508MW applications received for Rajgarh Ph-III</td></tr>
</table>

Sl. No.	Items	Details
		system, RE projects for 1321MW have been agreed for grant with start date of Mar-27. Additional 187MW applications received in Jul-24 are under process and shall also be granted with start date of Mar-27.
5.	**Objective / Justification**	The Government of India has set a target for establishing 500GW non fossil generation capacity by 2030, out of which 2.5GW REZ potential has been identified at Rajgarh (MP). 1. Phase-I of 1.5 GW involves establishment of Pachora PS with 3x500 MVA 400/220 kV ICTs and Pachora PS – Bhopal 400 kV D/c line which has been implementation by M/s G R Infraprojects Ltd. (Commissioned). 2. Phase-II (1GW) involves ICT augmentation (4th, 5th & 6th) Pachora PS along with Pachora PS – Ujjan (MPPTCL) 400 kV D/c line which is presently under implementation by M/s G R Infraprojects Ltd. with SCOD of 14.02.2026. In view of applications received for cumulative capacity of 4000MW at Pachora PS till Jul-24, it was found prudent to expand the substations to its full capacity so as to accommodate applications being received beyond 2.5GW at Pachora PS. The present scheme shall enable Evacuation of upto 4000MW Power from RE Projects in Rajgarh (i.e. 1500 MW beyond 2500MW) SEZ in Madhya Pradesh.
6.	**Estimated Cost**	**Rs. 1079 Cr.**
7.	**Impact on the total Annual Transmission charges (ATC) in % along with the existing ATC**	A. ATC (considering levelized tariff @15% of estimated cost): about ₹161.85 Crs. B. Present ATC: ₹46203.11 Crore * **C.** A/B: about 0.35%
8.	**Need of phasing, if any**	Not Applicable
9.	**Implementation timeframe**	24 months from allocation of project
10.	**Inclusion of any**	Route of the line may infringe Kharmor Sardarpur WLS or its

Sl. No.	Items	Details
	wildlife/protected area along the transmission line route	buffer zone in the state of MP. However, for details of forest/protected areas survey is required to be done.
11.	**Deliberations with RPC along with their comments**	50th WRPC held on 24.08.2024 has recommended the proposal for implementation. (MOM awaited).
12.	**System Study for evolution of the proposal**	Studies discussed and agreed in following meetings: • 27th CMETS-WR meeting held on 01.04.24 • Joint Study meeting amongst CEA, CTU, GRID-INDIA and various stakeholders in Western Region held on 21.06.2024 • Joint Study meeting amongst CEA, CTU, GRID-INDIA, MPPTCL & RUMSL on 16.07.2024 • 31st CMETS-WR meeting held on 02.08.24 Load flow results is attached at **Exhibit-W2**

**Total YTC allowed for Mar'24, as per notification of transmission charges payable by DICs for Billing Month of May, 2024 dated 25.04.2024 published on NLDC website (available at https://posoco.in/transmission-pricing/notification-of-transmission-charges-for-the-dics/).*

Annexure-4.3

Transmission system for Evacuation of Power from RE Projects in Neemuch (1000 MW) SEZ in Madhya Pradesh-Phase II

Agenda in brief:

The Government of India has set a target for establishing 500GW non fossil generation capacity by 2030, out of which 1GW SEZ has been identified at Neemuch for which 2x500 MVA, 400/220 kV Neemuch PS is already commissioned by POWERGRID.

In view of applications received for cumulative capacity of 1970MW at Neemuch PS till Jul-24, it was found prudent to expand the substations to its full capacity so as to accommodate applications being received beyond 1GW at Pachora PS. Out of 1020MW applications received for Neemuch Ph-II system, RE projects for 820MW have been agreed for grant with start date of Mar-27. Additional 200MW application received in Jul-24 is under process and shall be granted with start date of Sep-27 (as requested by applicant). The present scheme shall enable Evacuation of upto 2000MW Power from RE Projects in Neemuch (i.e. 1000 MW beyond 1000MW) SEZ in Madhya Pradesh. 50th WRPC held on 24.08.2024 has recommended the proposal for implementation.

Details of the scheme are given below:

<table>
<tr><th>SI. No.</th><th>Items</th><th colspan="3">Details</th></tr>
<tr><td>1.</td><td>Name of Scheme</td><td colspan="3">Transmission system for Evacuation of Power from RE Projects in Neemuch (1000 MW) SEZ in Madhya Pradesh-Phase II</td></tr>
<tr><td rowspan="3">2.</td><td rowspan="3">Scope of the scheme</td><td>Sl. No.</td><td>Scope of the Transmission Scheme</td><td>Capacity</td></tr>
<tr><td>1.</td><td>Creation of New 220 kV Bus Section-II at Neemuch PS with Augmentation of transformation capacity by 3x500 MVA, 400/220 kV ICTs (3rd, 4th & 5th) at Neemuch S/s along with associated bays.</td><td>500 MVA 400/220 kV ICT – 3 No.
400 kV ICT bay – 3 No.
220 kV ICT bay – 3 No. (on Sec-II)
220 kV Bus Sectionaliser bays – 1 set
220 kV BC & TBC – 1 No. each</td></tr>
<tr><td>2.</td><td>4 Nos. 220 kV Line bays at</td><td>220 kV Bays – 4 Nos.</td></tr>
</table>

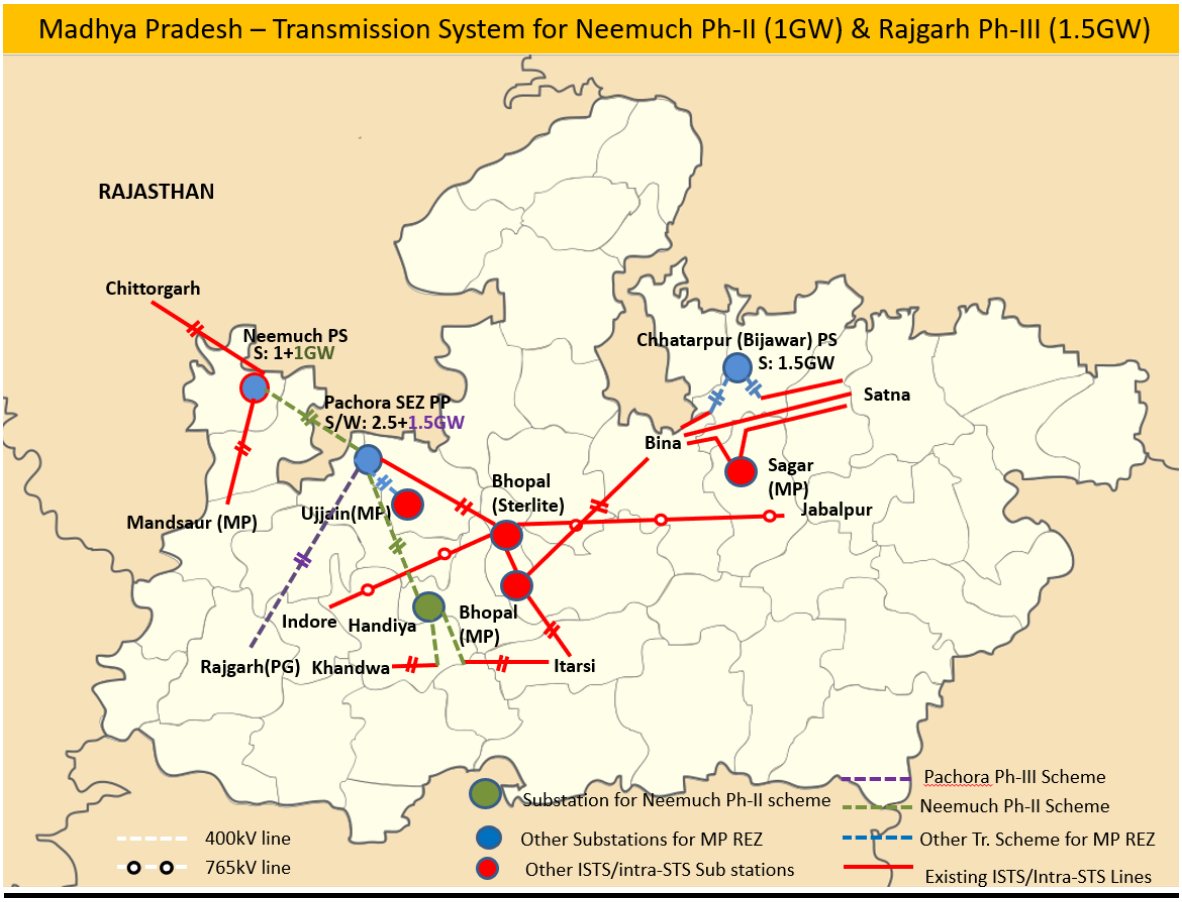
SI. No.	Items	Details		
			Neemuch PS for RE interconnection	on Sec-II
		3.	Neemuch PS – Pachora PS 400 kV 400 kV D/c line (Quad ACSR/ AAAC/ AL59 Moose equivalent) along with 50 MVAr Sw LR on each ckt at both ends	Line length: 190km. 400 kV bays: 4 nos. (2 at Neemuch PS & 2 at Pachora PS) 420 kV, Sw LRs: 4 nos. (2 at Neemuch PS & 2 at Pachora PS) Switching equipment for 400 kV line reactor – 4 Nos. (2 at Neemuch PS & 2 at Pachora PS)
		4.	Establishment of 2x500 MVA, 400/220 kV S/s at Handiya with 2x125MVAr 420 kV Bus Reactors **Future provision (space for):** ➢ 400 kV line bays along with switchable line reactors– 6 Nos. (Sec-II) ➢ 400/220 kV ICT along with bays - 4 Nos. (1 No. on Sec-I & 3 Nos. on Sec-II) ➢ 400 kV Bus Reactor along with bays: 2 Nos. (Sec-II) ➢ 220 kV line bays: 8 No. (on Sec-II) ➢ 400 kV Sectionalization bay: 1 set ➢ 220 kV Sectionalization bay: 1 set	400/220 kV ICTs: 2 Nos. 400 kV ICT Bays: 2 Nos. 220 kV ICT Bays: 2 Nos. 400 kV Line bays: 6 Nos. 220 kV line bays for MPPTCL – 8 Nos. 125 MVAr, 420 kV Bus reactor – 2 Nos 400 kV Bus reactor bay: 2 Nos. 220 kV TBC bay – 1 no. 220 kV BC bay – 1 no.

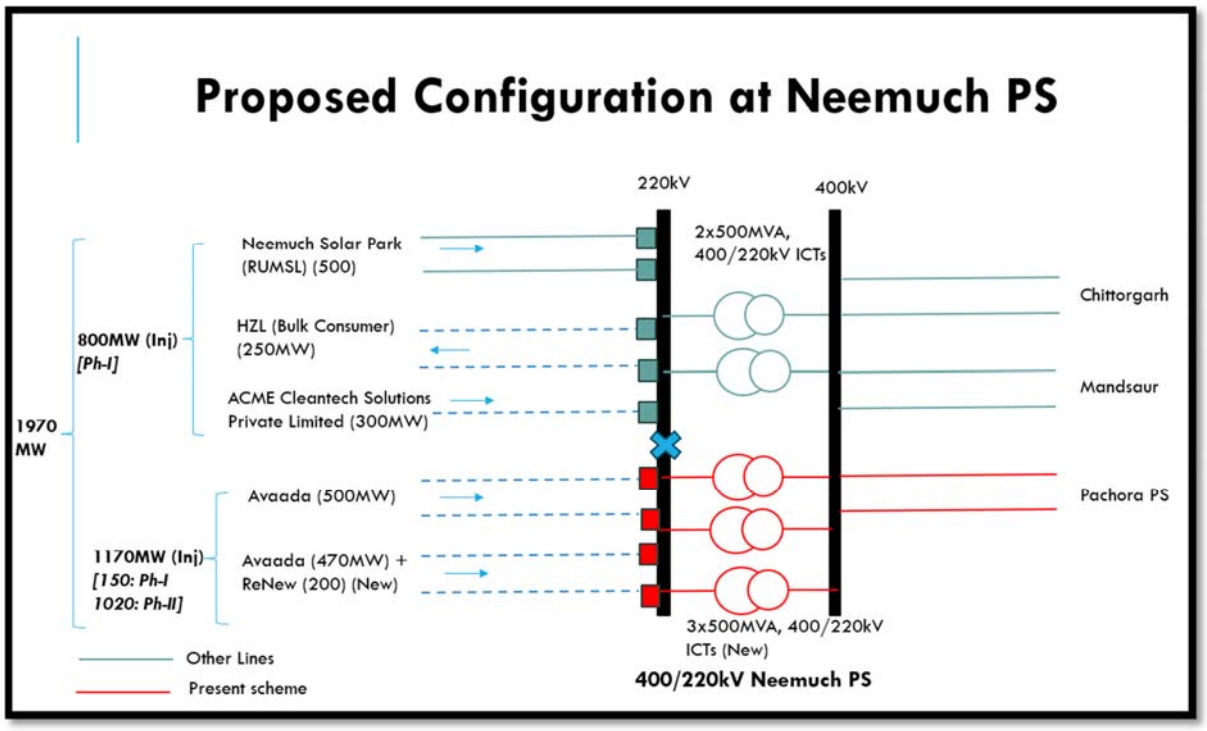
SI. No.	Items	Details		
			➢ 220 kV TBC & BC: 1 No.	
		5.	Pachora PS – Handiya 400 kV 400 kV D/c line (Quad ACSR/ AAAC/ AL59 Moose equivalent) along with associated bays at Pachora PS end and 50 MVAr Sw LR on each ckt at both ends	Line length: 190km. 400 kV bays: 2 nos. (at Pachora PS) 420 kV, Sw LRs: 4 nos. (2 at Handiya & 2 at Pachora PS) Switching equipment for 400 kV line reactor – 4 Nos. (2 at Handiya & 2 at Pachora PS)
		6.	LILO of Khandwa(PG) – Itarsi(PG) 400 kV D/c (Twin Moose) line at Handiya S/s	LILO route length : 22 km (88 ckm) The Khandwa(PG) – Itarsi(PG) 400 kV D/c line is of Twin Moose configuration and LILO shall be of similar conductor configuration
		7.	Installation of 1x125 MVAR, 420 kV bus reactor (2nd) at Neemuch PS	125 MVAr, 420 kV Bus reactor – 1 No. 400 kV Bus reactor bay: 1 No.
		Note: TSP of Neemuch & Pachora PS shall provide space for above scope of work		
3.	**Depiction of the scheme on Transmission Grid Map**	Attached at **Exhibit-W1**		
4.	**Upstream/downstream system associated with the scheme**	Neemuch PS is an existing S/s of M/s Neemuch Transmission Ltd. (POWERGRID) which is connected with Chittorgarh(PG) & Mandsaur(MP) S/s at 400 kV level (implemented under Neemuch 1GW scheme). *Out of 1020MW applications received for Neemuch Ph-II*		

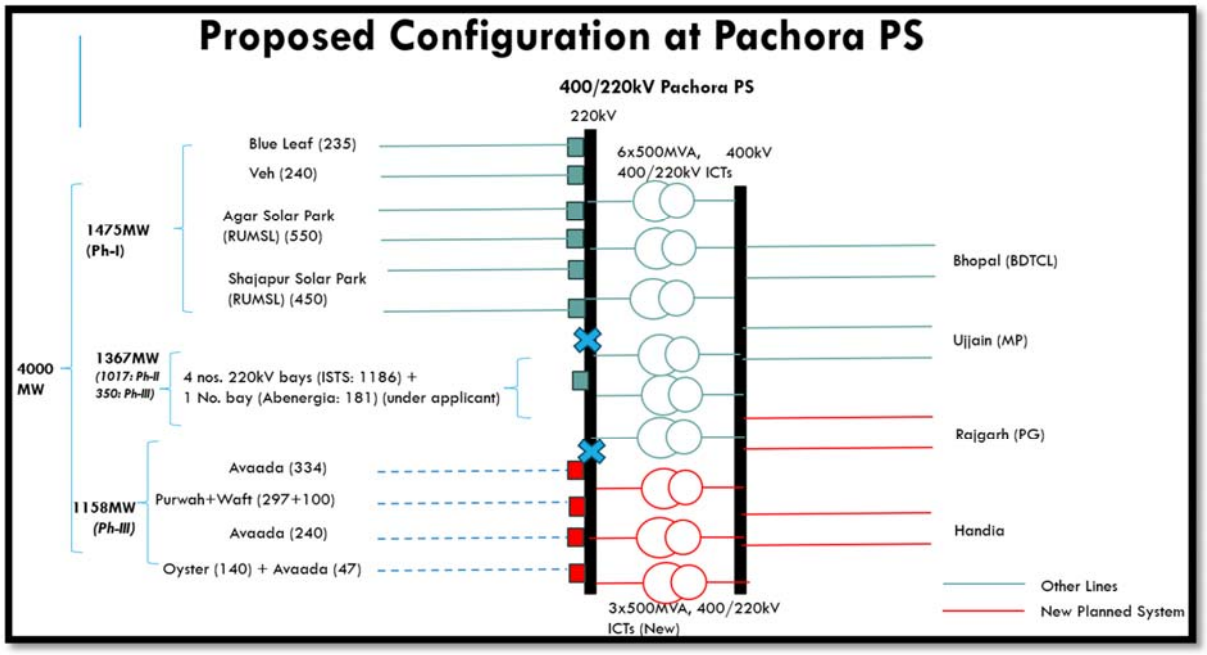
SI. No.	Items	Details
		system, RE projects for 820MW have been agreed for grant with start date of Mar-27. Additional 200MW application received in Jul-24 is under process and shall be granted with start date of Sep-27 (as requested by applicant).
5.	**Objective / Justification**	The Government of India has set a target for establishing 500GW non fossil generation capacity by 2030, out of which 1GW SEZ has been identified at Neemuch for which 2x500 MVA, 400/220 kV Neemuch PS is already commissioned by POWERGRID. In view of applications received for cumulative capacity of 1970MW at Neemuch PS till Jul-24, it was found prudent to expand the substations to its full capacity so as to accommodate applications being received beyond 1GW at Pachora PS. The present scheme shall enable Evacuation of upto 2000MW Power from RE Projects in Neemuch (i.e. 1000 MW beyond 1000MW) SEZ in Madhya Pradesh.
6.	**Estimated Cost**	**Rs. 2393 Cr.**
7.	**Impact on the total Annual Transmission charges (ATC) in % along with the existing ATC**	A. ATC (considering levelized tariff @15% of estimated cost): about ₹358.95 Crs. B. Present ATC: ₹46203.11 Crore * **C.** A/B: about 0.777%
8.	**Need of phasing, if any**	Not Applicable
9.	**Implementation timeframe**	24 months from allocation of project
10.	**Inclusion of any wildlife/protected area along the transmission line route**	**Neemuch PS – Pachora PS 400 kV 400 kV D/c line(BEE line):** The line may pass through Bhensrodgarh WLS & Gandi Sagar WLS or its buffer zone in state of Madhya Pradesh. However, for details of forest/protected areas, survey is required to be done. **Pachora PS – Handiya (PG) 400 kV 400 kV D/c line(BEE line):** The line may pass through Kheoni WLS or its buffer zone in state of Madhya Pradesh. However, for details of forest/protected areas, survey is required to be done.
11.	**Deliberations with**	50th WRPC held on 24.08.2024 has recommended the

SI. No.	Items	Details
	RPC along with their comments	proposal for implementation. (MOM awaited)
12.	**System Study for evolution of the proposal**	Studies discussed and agreed in following meetings: • 27th CMETS-WR meeting held on 01.04.24 • Joint Study meeting amongst CEA, CTU, GRID-INDIA and various stakeholders in Western Region held on 21.06.2024 • Joint Study meeting amongst CEA, CTU, GRID-INDIA, MPPTCL & RUMSL on 16.07.2024 • 31st CMETS-WR meeting held on 02.08.24 (Minutes of meeting awaited) Load flow results is attached at **Exhibit-W2**

Exhibit-W1


Madhya Pradesh – Transmission System for Neemuch Ph-II (1GW) & Rajgarh Ph-III (1.5GW)
RAJASTHAN
Chittorgarh
Neemuch PS
S: 1+1GW
Pachora SEZ PP
S/W: 2.5+1.5GW
Mandsaur (MP)
Ujjain(MP)
Indore
Handiya
Bhopal
(MP)
Rajgarh(PG)
Khandwa
Itarsi
Bhopal
(Sterlite)
Chhatarpur (Bijawar) PS
S: 1.5GW
Satna
Bina
Sagar
(MP)
Jabalpur
Substation for Neemuch Ph-II scheme
Other Substations for MP REZ
Other ISTS/intra-STS Sub stations
400kV line
765kV line
Pachora Ph-III Scheme
Neemuch Ph-II Scheme
Other Tr. Scheme for MP REZ
Existing ISTS/Intra-STS Lines


Proposed Configuration at Neemuch PS
220kV
400kV
2x500MVA, 400/220kV ICTs
Neemuch Solar Park (RUMSL) (500)
HZL (Bulk Consumer) (250MW)
ACME Cleantech Solutions Private Limited (300MW)
800MW (Inj) [Ph-I]
1970 MW
Avaada (500MW)
Avaada (470MW) + ReNew (200) (New)
1170MW (Inj) [150: Ph-I 1020: Ph-II]
Chittorgarh
Mandsaur
Pachora PS
3x500MVA, 400/220kV ICTs (New)
400/220kV Neemuch PS
Other Lines
Present scheme


Proposed Configuration at Pachora PS
400/220kV Pachora PS
220kV
400kV
6x500MVA, 400/220kV ICTs
Blue Leaf (235)
Veh (240)
Agar Solar Park (RUMSL) (550)
Shajapur Solar Park (RUMSL) (450)
1475MW (Ph-I)
4000 MW
1367MW (1017: Ph-II 350: Ph-III)
4 nos. 220kV bays (ISTS: 1186) + 1 No. bay (Abenergia: 181) (under applicant)
Avaada (334)
Purwah+Waft (297+100)
Avaada (240)
Oyster (140) + Avaada (47)
1158MW (Ph-III)
Bhopal (BDTCL)
Ujjain (MP)
Rajgarh (PG)
Handia
3x500MVA, 400/220kV ICTs (New)
Other Lines
New Planned System

Annexure 4.4

North Eastern Region Expansion Scheme-XXI Part-B

Sl. No.	Items	Details
1.	**Name of scheme**	North Eastern Region Expansion Scheme-XXI Part-B (NERES-XXI Part-B)
2.	**Scope of the scheme**	Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system ***Note:*** *As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU officials at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and also after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.* Detailed scope of works is enclosed at **Appendix-E2**.
3.	**Depiction of the scheme on Transmission Grid Map**	Refer **Exhibit-E3**.
4.	**Upstream/downstream system associated with the scheme**	Nil
5.	**Objective / Justification**	The existing 132kV Badarpur (POWERGRID) switching station was commissioned in 1999 and shall be completing 25 years in service by 2024. POWERGRID the owner of the substation has informed that they are facing issues in O&M of the switching station and to improve the reliability it would be prudent to upgrade the switching station from single main and transfer bus scheme to double main transfer bus scheme by converting from AIS to GIS. Further, towards adoption of new technology in the Indian Grid, it was proposed that the upgradation could be carried out as Green GIS instead of conventional GIS owing to the following benefits:

Sl. No.	Items	Details
		• Green GIS is a new technology in which SF_6 gas is not used and this technology is being adopted by several countries in the world. • This would help in the reduction of usage of Green House Gas and would be a step towards achieving sustainable development targets. The scheme was also discussed in the 23rd TCC & NERPC meetings held on 18th-19th Nov 2022 wherein the subject upgradation was agreed to be carried out in Green GIS. The proposal was deliberated in 16th CMETS-NER held on 24-02-2023 wherein following was decided to be implemented in ISTS: • Upgradation of Single Main and Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station Upon finalization of the above scope a committee comprising of officials from CTU and POWERGRID visited Badarpur substation for finalization of the implementation modalities of the above agreed scope of works. The committee submitted a report wherein it is suggested the scope of works may be refined as per the actual site conditions. Accordingly, the proposal was once again discussed in the 20th CMETS-NER meeting held on 23rd June 2023 and revised scope of works (as mentioned below) under subject scheme was agreed with an implementation schedule of 30 months keeping in view implementation of new technology of Green GIS in ISTS: • Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system ***Note:*** *As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and even after*

Sl. No.	Items	Details
		commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS. The scheme was taken up for deliberations in the 15th meeting of NCT held on 25-08-2023, wherein it was recorded that *"…life of sub-stations is generally about 35 years and hence, the reasons for replacement/upgradation of switching station after 25 years needs to be ascertained. After detailed deliberations, it was decided to review the scheme subsequently."*. Accordingly, the subject scheme was inter alia deliberated in a meeting held on 20-10-2023 under the chairmanship of Member (PS), CEA, wherein following was noted/recorded: (i) In case of Bus fault or Maintenance on Bus related components (Bus Isolator, insulator cleaning etc.), complete station suffers outage which will not only require load shedding and generation back-down but may likely to cause grid incidence in the area. Thus, it was proposed that the bus scheme needs to be upgraded from Single Main and Transfer scheme to Double Main Scheme for Reliability of power supply point of view. (ii) Due to space constraints, upgradation of the bus scheme has been proposed with GIS. Due to conversion in GIS, space for future bay extension can also be created. In addition to existing 8 nos. of bays at Badarpur S/s, 2 nos. more bays can be accommodated considering the constraints for line entry corridor. (iii) Green initiative needs to be taken on pilot basis, as it is alternative to SF_6 gas, which has very high global warming potential. It was also recorded that various vendors have confirmed long term availability of gas used in Green GIS. After detailed analysis and deliberations it was inter alia agreed to upgrade Badarpur (POWERGRID) 132kV switching station from Single Main and Transfer Bus scheme to Double Main Bus scheme by converting from AIS to Green GIS as a pilot project. The scheme was thereafter discussed in the 16th meeting of NCT held on 30-11-2023, wherein it was decided to

Sl. No.	Items	Details
		defer the scheme at present and take it up after additional discussions on new technology such as major benefits of Green GIS, availability of Green GIS vendors in India, additional cost implication (conventional GIS vis-à-vis Green GIS) etc. CTU vide email dated 15-03-2024 had shared the presentation on Green GIS (received from POWERGRID) to CEA. CTU vide letter dated 30-04-2024 and email dated 10-07-2024 had requested CEA to kindly convene a meeting among all concerned to decide the further course of action for the subject scheme. It is understood that now the scheme is proposed to be deliberated in the forthcoming meeting of NCT.
6.	**Estimated Cost**	INR 110 Cr. ***Note:*** *CTU has done the cost estimation on quotation basis for the first time in India for new technology based on Green GIS. The practice for such type of cost estimate being followed by POWERGRID Cost-Engg. dept. was discussed with them, and it was gathered from them that the lowest budgetary quote is considered for estimating the cost of such scheme. Accordingly, the cost estimate for this scheme has been worked out as per the said assumption i.e. lowest budgetary quote has been considered.*
7.	**Impact on the total Annual Transmission Charges in % along with the existing ATC**	D. ATC (considering levelized tariff @15% of estimated cost): ₹16.5 Cr. E. Present ATC: ₹46377.90 Cr.* F. A/B: 0.0356%
8.	**Need of phasing, if any**	Nil
9.	**Implementation timeframe**	30 months from date of allocation
10.	**Inclusion of any wildlife/ protected area along the transmission line route**	No
11.	**Deliberations with RPC along with their comments**	Estimated cost of the ISTS scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to ERPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt (5) dated 28-10-2021 regarding

Sl. No.	Items	Details
		reconstitution of NCT.
12.	**System Study for evolution of the proposal**	Refer justification at Sl. No. 5 above.

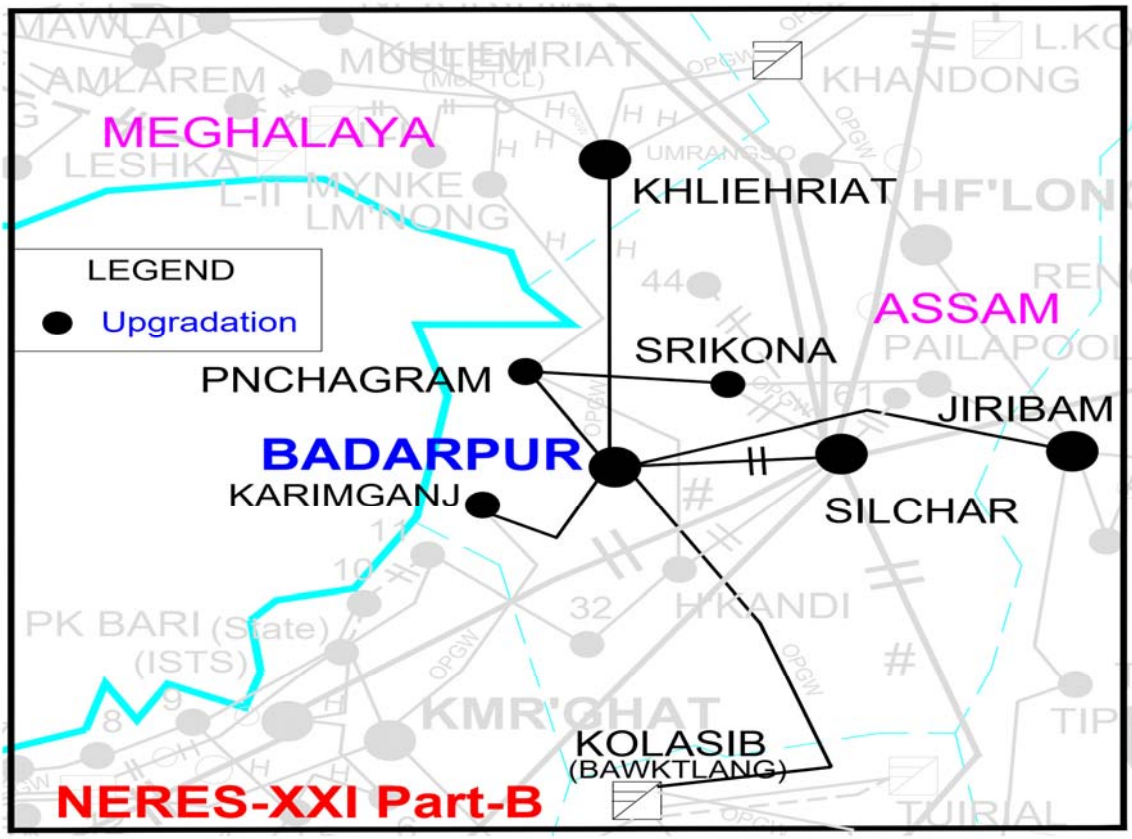
** Total YTC allowed for July 2024, as per notification of transmission charges payable by DICs for billing month of September 2024 dated 25-08-2024 published on NLDC website*

Appendix-E2

Sl. No.	Scope of the Transmission Scheme	Capacity/ km	Estimated Cost (₹ Cr.)
1.	Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur (POWERGRID) switching station along with upgradation of necessary Control, Protection, Communication, Automation & LT auxiliary system ***Note:*** *As the Green GIS is being introduced for first time in ISTS in the Indian network, the ISTS transmission licensee shall involve CTU officials at various stages of implementation such as detailed engineering, design, testing, commissioning etc., and also after commissioning, so as to assess the environmental impact, operational performance, ageing characteristics etc. of the Green GIS.*	-	[#]110
	Total		[#]**110**

[#]*CTU has done the cost estimation on quotation basis for the first time in India for new technology based on Green GIS. The practice for such type of cost estimate being followed by POWERGRID Cost-Engg. dept. was discussed with them, and it was gathered from them that the lowest budgetary quote is considered for estimating the cost of such scheme. Accordingly, the cost estimate for this scheme has been worked out as per the said assumption i.e. lowest budgetary quote has been consider*

Exhibit E3


MEGHALAYA
KHLIEHRIAT
LEGEND
Upgradation
ASSAM
SRIKONA
PNCHAGRAM
JIRIBAM
BADARPUR
KARIMGANJ
SILCHAR
KOLASIB
(BAWKTLANG)
NERES-XXI Part-B

Annexure-4.6

Supply and Installation of additional FOTE and ethernet cards at AGC & Critical Nodes of SR Region.

<table>
<tr><th>Sl. No.</th><th>Items</th><th>Details</th></tr>
<tr><td>1.</td><td>Name of Scheme</td><td>Additional FOTE and ethernet cards at AGC & Critical Nodes of SR Region.</td></tr>
<tr><td>2.</td><td>Scope of the scheme</td><td>(i) Supply and installation of 3 nos. FOTE with STM 16 capacity at following locations:
<table>
<tr><th>SI. No.</th><th>Station Name</th><th>No of FOTE</th><th>Remark</th></tr>
<tr><td>1.</td><td>Simhadri-1</td><td>1</td><td>For AGC purpose</td></tr>
<tr><td>2.</td><td>NP KUNTA</td><td>1</td><td>Shortage of ports</td></tr>
<tr><td>3.</td><td>NLC-TPS-2 Stage 1</td><td>1</td><td>For AGC purpose</td></tr>
<tr><td colspan="2">Total</td><td colspan="2">3</td></tr>
</table>
(ii) Supply and installation of 10 Nos. ethernet cards at following locations:
<table>
<tr><th>SI. No.</th><th>Station Name</th><th>Ethernet Cards required</th></tr>
<tr><td>1</td><td>Ramagundam -I</td><td rowspan="3">2</td></tr>
<tr><td>2</td><td>Ramagundam -II</td></tr>
<tr><td>3</td><td>Ramagundam -III</td></tr>
<tr><td>4</td><td>NTPC Vallur</td><td>2</td></tr>
<tr><td>5</td><td>NTPL Tuticorin</td><td>1</td></tr>
<tr><td>6</td><td>NTPC Kudgi</td><td>2</td></tr>
<tr><td>7</td><td>NLC - TPS 2 Exp</td><td>1</td></tr>
</table>
</td></tr>
</table>

		8	NLC - TPS 1 Exp	1
		9	NNTPS new Neyveli	1
		Total		**10**
3.	**Objective / Justification**	i. As per CEA, Manual of Communication Planning in Power System Operation 2022, CTU for high availability requirements for Power System Communication, redundancy with route diversity for critical links shall be maintained. ii. NLDC stated that additional FOTE and redundant ethernet ports are required at all AGC operated generating stations, in view of resource disjoint and criticality of AGC operation for grid operation purpose. iii. In view of the above, additional FOTE and additional Ethernet (10 nos) cards for existing FOTE are required at mentioned AGC operated generating stations in Southern Region as provided by POWERGRID.		
4.	**Estimated Cost**	**Rs. 1.02 Cr. (approx.) (excluding GST)**		
5.	**Implementation timeframe**	12 months from the date of allocation		
6.	**Implementing Agency / Mode**	M/s POWERGRID in RTM mode		
7.	**Deliberations in different meetings**	5th SR CPM dtd. 18.04.2024 (**Annexure-CI**) 44th COM SR dtd. 21.03.2024 (**Annexure-CII**) 49th TCC dtd. 02.08.2024 & 52nd SRPC dtd. 03.08.2024 (**Annexure-CIII**) SRPC approval letter (**Annexure-CIV**)		