

I/24971/2022



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय 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 दसवीं बैठक के कार्यवृत्त – के सम्बन्ध में।


Subject: Minutes of the 10th meeting of National Committee on Transmission (NCT) – regarding.

महोदया (Madam) / महोदय (Sir),

"ट्रांसमिशन पर राष्ट्रीय समिति" (एनसीटी) की 10 वीं बैठक 7 नवंबर, 2022 को आयोजित की गई थी। बैठक के कार्यवृत्त इसके साथ संलग्न हैं।

The 10th meeting of the "National Committee on Transmission" (NCT) was held on 7th November, 2022. Minutes of the meeting are enclosed herewith.

भवदीय/Yours faithfully,

 12.12.2022

(ईशान शरण/Ishan Sharan)
मुख्य अभियंता / Chief Engineer

प्रतिलिपि / Copy to:

संयुक्त सचिव (पारेषण), विद्युत मंत्रालय, नई दिल्ली /
Joint Secretary (Trans), Ministry of Power, New Delhi

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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. Dilip Nigam, Scientist ‘G’, MNRE, Block No. 14, CGO Complex, Lodhi Road, New Delhi – 110003	6.	Chief Operating Officer, CTUIL, Saudamini, Plot No. 2, Sector-29, Gurgaon – 122 001.
7.	Sh. Rajnath Ram, Adviser (Energy), NITI Aayog, Parliament Street, New Delhi – 110 001.	8.	CMD, POSOCO, B-9, Qutub, Institutional Area, Katwaria Sarai, New Delhi – 110010
9.	Dr. Radheshyam Saha, Ex. Chief Engineer, Central Electricity Authority		

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Minutes of the 10th meeting of National Committee on Transmission (NCT)

List of participants is attached as **Annex-I**.

Chairperson, CEA, & Chairman, NCT, welcomed the participants and requested Member Secretary, NCT, to take up the agenda points for discussion.

- 1** Confirmation of the minutes of the 9th meeting of National Committee on Transmission.
 - 1.1 Member Secretary, NCT, stated that the minutes of the 9th meeting of NCT held on 28.09.2022 have been issued on 01.11.2022 vide CEA letter No.CEA-PS-12-13/3/2019-PSPA-II Division.
 - 1.2 CTUIL vide email dated 02.11.2022 had requested for some amendments in the minutes. In the 10th NCT meeting, CMD, POSOCO, also made some observations on the minutes of 9th NCT meeting.
 - 1.3 Member Secretary NCT proposed that a corrigendum to the minutes of 9th meeting of NCT would be issued considering the suggested modifications.
 - 1.4 Dr. R. Saha, Expert Member, suggested that instead of just mentioning HTLS conductor, the type of HTLS conductor to be used may be specified. Member (E&C) clarified that as per Standard Bidding Document (SBD) for procurement of transmission services, only the functional requirement are to be mentioned. Specific conductor type may restrict the number of bidders
 - 1.5 The minutes of 9th meeting of NCT along with proposed amendments (**Annex- II**) were confirmed.
- 2** Status of the transmission schemes noted/approved/recommended in the 9th meeting of NCT
 - 2.1 The status of the transmission schemes noted/approved/recommended in the 9th meeting of NCT is given below:

Sl . No	Name of the Transmission Scheme	Noted/ Recommen ded/ Approved	Survey Agency	MoP approval	BPC	Remarks
1.	Augmentation of ISTS for interconnection of HVPNL transmission schemes	Approved for implementation through RTM route	Not applicable	Not required		Allocated to CTUIL
2.	Scheme to relieve high loading of WR-NR Inter Regional Corridor (400 kV Bhinmal-	Approved for implementation through RTM route	Not applicable	Not required		Allocated to CTUIL

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Sl. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
	Zerda line)					
3.	Eastern Region Expansion Scheme-XXIX (ERES-XXIX)	Approved for implementation through RTM route	Not applicable	Not required		Allocated to CTUIL
4.	Augmentation of transformation capacity at Kallam PS by 2x500 MVA, 400/220 kV ICTs (3 rd & 4 th) along with 220 kV bays for RE interconnection	Approved for implementation through RTM route	Not applicable	Not required		Allocated to CTUIL
5.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-1: Bikaner Complex) -Part-A	Recommended to MoP for implementation through TBCB route	CTUIL	To be approved		
6.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-1: Bikaner Complex) -Part-B	Recommended to MoP for implementation through TBCB route	PFCCL	To be approved		
7.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-1: Bikaner Complex)- Part-C	Recommended to MoP for implementation through TBCB route	PFCCL	To be approved		
8.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-1:Bikaner Complex)- Part-D	Recommended to MoP for implementation through TBCB route	PFCCL	To be approved		
9.	Transmission	Approved for	Not	Not		Allocated to

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Sl. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
	system for evacuation of power from Rajasthan REZ Ph-IV (Part-1: Bikaner Complex)-Part-E	implementation through RTM route	applicable	required		CTUIL
10.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III: Part I	Recommended to MoP for implementation through TBCB route	RECPDC L	To be approved		
11.	North Eastern Region Expansion Scheme-XVI (NERES-XVI)	Approved for implementation through TBCB route	CTUIL	Not required	RECPDC L	
12.	Supply and installation of OPGW on existing main lines which are to be LILoed under various transmission schemes	Approved for implementation through RTM route	Not applicable	Not required		Allocated to CTUIL

3 Modifications in Schemes discussed in earlier meetings of NCT

3.1 Transmission System for Evacuation of Power from RE Projects in Rajgarh (1000 MW) SEZ in Madhya Pradesh - Phase-II

3.1.1 Transmission system for evacuation of Power from RE Projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh was agreed in the 4th meeting of NCT held on 20.01.2021 & 28.01.2021 for implementation in two phases as two different Transmission packages: Phase-I (1500 MW) & Phase-II (1000 MW).

3.1.2 Ministry of Power, vide Gazette notification dated 24.01.2020, had appointed REC as the Bid Process Coordinator (BPC) for selection of Bidder as Transmission Service Provider (TSP) to establish the subject transmission scheme through Tariff Based Competitive Bidding (TBCB) process. Subsequently, MoP vide gazette notification dated 19.07.2021 had modified the scope of the subject transmission scheme after examining the recommendations of the 4th NCT meeting and renotified the scope to be

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taken up under Phase-I i.e. “Transmission system for evacuation of power from RE projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh under Phase-I.”

3.1.3 Phase-I of the scheme is under implementation by M/s GR Infraprojects Ltd. with SCoD of 30.11.2023.

3.1.4 SECI vide letter dated 23.06.2022 has requested to initiate the development of Pooling Stations simultaneously at various locations as specified in the letter, irrespective of the receipt of connectivity applications. This inter-alia includes implementation of scope of works under Rajgarh Phase-II (1000 MW). The scope of works under Phase-II of the Rajgarh scheme as agreed in the 4th NCT meeting is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity/km.
1.	Augmentation of 400/220 kV, 2x500 MVA ICT (4 th & 5 th) at Pachora PS	400/220 kV, 500 MVA ICT – 2 400 kV ICT bays – 2 220 kV ICT bays – 2 400 kV line bays – 2 220 kV line bays – 4 (to be taken up as per Connectivity/LTA applications received)
2.	Pachora – Shujalpur 400 kV D/c line (Quad/HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length – 80 km
3.	2 Nos. of 400 kV line bays at Shujalpur for Pachora – Shujalpur 400 kV D/c line (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays – 2

Note:

(i) Powergrid to provide space for 2 Nos. of 400 kV line bays at Shujalpur for termination of Rajgarh SEZ PP – Shujalpur 400 kV D/c line.

(ii) Phase-II scheme to be taken up only after grant of Connectivity/LTA applications beyond 1500 MW at Pachora PS.

(iii) The schedule of implementation of Phase-II of the scheme would be matching with schedule of RE developers or 18 months from the date of transfer of SPV whichever is later.

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- 3.1.5 Phase-II of the scheme, as agreed by 4th NCT, was to be taken up only after grant of Connectivity/LTA applications beyond 1500 MW at Pachora PS. However, based on request of SECI to expedite the Phase-II of the scheme irrespective of connectivity applications, the matter was deliberated in the 9th meeting of NCT held on 28.09.2022. In that meeting, it was decided that the scheme would be reviewed in the next NCT meeting based on visibility of RE generation.
- 3.1.6 Further, keeping in view the provision for total number of 220 kV bays (present as well as future) approved at Rajgarh PS (Phase I & Phase II), the scope of works for Rajgarh Phase-II (1000 MW) scheme as agreed in the 4th meeting of NCT has been updated. The scope of works after incorporation of additions regarding the conductor configuration of Pachora – Shujalpur 400 kV D/c line as well as bus sectionalization required at 220 kV level, is as given below (changes marked in bold):

Sl. No.	Scope of the Transmission Scheme	Capacity/km
1.	400/220 kV, 2x500 MVA ICT augmentation (4 th & 5 th) at Pachora PS	400/220 kV, 500 MVA ICT – 2 400 kV ICT bays – 2 220 kV ICT bays – 2 400 kV line bays – 2 220 kV line bays – 4 (to be taken up as per Connectivity/LTA applications received) 220 kV Bus Sectionalizer – 1 set 220 kV TBC bay – 1 No. 220 kV BC bay – 1 No.
2.	Pachora – Shujalpur 400 kV D/c line (Quad ACSR/AAAC/AL59 Moose equivalent)	Length – 80 km
3.	2 No. of 400 kV line bays at Shujalpur for Pachora – Shujalpur 400 kV D/c line	400 kV line bays – 2

Note:

- (i) Powergrid to provide space for 2 Nos. of 400 kV line bays at Shujalpur for termination of Rajgarh SEZ PP – Shujalpur 400 kV D/c line.
- (ii) Phase-II scheme to be taken up only after grant of Connectivity/LTA applications beyond 1500 MW at Pachora PS.
- (iii) The schedule of implementation of Phase-II of the scheme would be matching with schedule of RE developers or 18 months from the date of transfer of SPV whichever is later.

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- 3.1.7 Representative from SECI informed that they have invited location specific bids for Rajgarh.
- 3.1.8 CTUIL informed that MPPTCL has some reservations on the transmission scheme as implementation of the scheme may lead to overloading of 400/220 kV ICTs & downstream network at Shujalpur. CTUIL further stated that they are in discussions with MPPTCL to resolve the issue.
- 3.1.9 Chairman, NCT, directed CTUIL to discuss and resolve the issue with MPPTCL and come out with a feasible solution within two weeks, so that the scheme could be discussed in the next NCT meeting.

3.2 Future space provision in Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW) scheme

- 3.2.1 Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW) is currently under bidding with PFCCL as the Bid Process Coordinator. This scheme would facilitate evacuation of power from two solar parks, namely, 550 MW at Barethi by NTPC and 950 MW at Bijawar by RUMS. The location of the pooling station at Chhatarpur SEZ is nearby Bijawar.
- 3.2.2 In the 9th meeting of NCT, CTUIL had proposed following revision in the space provisions at Chhatarpur PS to be developed under the aforesaid scheme, in view of the direction of MoP for more space provisions in new ISTS substations (for evacuation of power from potential RE Zones / for meeting drawl requirements of STUs etc.)

Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW)

Sl. No.	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
1.	(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur (ii) 1x125 MVAR, 420 kV bus reactor at Chhatarpur PS (iii) 5 Nos. 220 kV line bays for solar park interconnection <i>*out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina</i> Future provisions: Space to accommodate: <ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICT 	(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur (ii) 1x125 MVAR, 420 kV bus reactor at Chhatarpur PS (iii) 5 Nos. 220 kV line bays for solar park interconnection <i>*out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina</i> Future provisions: Space to accommodate:

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Sl. No.	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
	along with associated bays -1 <ul style="list-style-type: none"> • 4 Nos. of 220 kV line bays • Sectionalizer arrangement 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICT along with associated bays -5 • 400 kV line bays: 6 Nos. • 3x125 MVA Bus Reactor with bay • 13 Nos. of 220 kV line bays • Sectionalizer arrangement at 220 kV (2 Sets) & 400 kV (1 Set) levels
2.	LILO of Satna – Bina 400 kV (1 st) D/c line at Chhatarpur PS	LILO of Satna – Bina 400 kV (1 st) D/c line at Chhatarpur PS

3.2.3 In the 9th meeting of NCT, it was discussed that on account of the transmission line passing through Panna Tiger Reserve, it is not possible for NTPC to construct dedicated transmission line upto the planned Chhatarpur PS. It was also informed that separate pooling stations are being planned for pooling of RE power of RUMS and NTPC. Hence, additional future provisions at Chhatarpur PS may not be required. Accordingly, CTUIL was directed to examine the requirement of future provisions in view of the above and it was decided that the matter shall be deliberated again in the next NCT meeting.

3.2.4 Regarding RE potential in the area, CTUIL informed that as per verbal communication from RUMS, additional land is available in the area for setting up of RE generation. However, they have not received any new connectivity application for Chhatarpur PS.

3.2.5 Representative from SECI informed that in place of future provisions for additional 3 GW RE capacity, space provisions for 1 GW may be considered at present.

3.2.6 Chairperson, NCT, agreed with the suggestion of SECI regarding future provisions for additional 1 GW RE potential on new bus section to be created at Chhatarpur PS. This will make the total capacity of pooling station as 3000 MVA (existing + future provisions) considering an additional 400/220 kV ICT for taking care of ‘N-1’ contingency.

3.2.7 After detailed deliberations, the following revision in the scheme was agreed.

Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW)

Sl. No.	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
1.	(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur (ii) 1x125 MVAR, 420 kV bus reactor at Chhatarpur PS (iii) 5 Nos. 220 kV line bays for solar	(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur (ii) 1x125 MVAR, 420 kV bus reactor at Chhatarpur PS (iii) 5 Nos. 220 kV line bays for solar

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Sl. No.	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
	<p>park interconnection</p> <p><i>*out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina</i></p> <p>Future provisions: Space to accommodate:</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICT along with associated bays -1 • 4 Nos. of 220kV line bays • Sectionaliser arrangement 	<p>park interconnection</p> <p><i>*out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina</i></p> <p>Future provisions: Space to accommodate:</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICT along with associated bays - 3 • 400 kV line bays- 6 Nos. • 3x125 MVA Bus Reactor with bay • 220 kV line bays - 5 Nos. • 400 kV Bus Sectionaliser - 1 set • 220 kV Bus Sectionaliser – 1 set • 220 kV Bus Coupler bay- 1 No. • 220 kV TBC bay – 1 No.
2.	LILO of Satna – Bina 400kV (1 st) D/c line at Chhatarpur PS	LILO of Satna – Bina 400 kV (1 st) D/c line at Chhatarpur PS

3.3 Implementation modalities of Transmission scheme for evacuation of 4.5 GW RE injection at Khavda PS under Phase II- Part D

3.3.1 MoP vide Gazette notification dated 23.09.2020 had notified the “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda PS under Phase-II – Part D” to be implemented under TBCB route which forms a part of the planned Transmission system for evacuation of 4.5 GW RE injection from Khavda complex (Part A to Part D). Scope of the scheme is detailed below:

Sl. No.	Scope of the Transmission Scheme	Scheduled COD (months) in months form Effective Date
1	LILO of Pirana (PG) – Pirana (T) 400 kV D/c line at Ahmedabad S/s with twin HTLS alongwith reconductoring of Pirana (PG) – Pirana (T) line with twin HTLS conductor with OPGW for both main line and LILO section	24
2	Bay upgradation work with requisite FOTE at Pirana (PG) & Pirana (T)# 400 kV line bays (Bay Upgradation) – 4 Nos [@]	

The current rating of existing bays is 2000 A.

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@ 04 Nos. 400 kV line bays upgradation includes 02 bays upgradation at Pirana (PG) and 02 bays upgradation at Pirana (T). Upgradation at Pirana(T) shall also include upgradation of 400 kV Bus coupler bay and 400 kV Transfer bus coupler bay alongwith upgradation of bus bar.

Note:

- (i) Transmission system for evacuation of 3 GW RE injection at Khavda is being taken up under Phase-I. Phase-II RE scheme for evacuation of 4.5 GW RE injection at Khavda needs to be taken up for evacuation requirement beyond 3 GW from Khavda RE park.
- (ii) Implementation of all the transmission packages proposed for evacuation of 4.5 GW RE injection at Khavda RE park under Phase-II (Part A to Part D) needs to be taken up in similar timeframe.
- (iii) The switching scheme of existing 400 kV Pirana (T) S/S is Double Main and Transfer (DMT) Scheme and current rating of existing Bus Coupler bay and Transfer Bus Coupler bay is 2000 A. With upgradation of line bays to 3150 A (to suit the re-conductoring with Twin HTLS conductor), existing 400 kV Bus Coupler bay and Transfer Bus Coupler bay (with associated Bus Bar) shall also be upgraded to 3150 A by the TSP.

- 3.3.2 The length of Pirana (T)- Pirana (PG) 400 kV line is about 6 km and the LILO portion is around 20 km. The scheme is part of Comprehensive Transmission System for evacuation of 4.5 GW RE Injection at Khavda under Phase-II that was recommended by NCT in its 3rd meeting held on 26th & 28th May, 2020. At that time, NCT worked in line with ToR issued by MoP vide its OM dated 04.11.2019 which did not include formulation of packages, examination of cost and recommendation of the mode of implementation. Therefore, 3rd NCT simply recommended the comprehensive Transmission system to MoP for decision.
- 3.3.3 Subsequently, MoP vide letter dated 24.08.2020 requested CEA to structure/package the new ISTS schemes approved by 3rd NCT along with suggested mode of implementation and the estimated cost of the packages. Accordingly, CEA vide letter dated 07.09.2020 furnished the package wise segregation of the schemes along with estimated cost and proposed mode of implementation. The packages formulated by CEA inter-alia included the above mentioned “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part D” with an estimated cost of Rs. 117.8 Cr with proposed mode of implementation through RTM route to JV of Torrent & PGCIL. However, MoP vide Gazette dated 23.09.2020 notified the “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda PS under Phase-II – Part D” for implementation through TBCB route. The scheme is presently under bidding.
- 3.3.4 With initiation of bidding, when the BPC i.e. RECPDCL requested owner of Pirana (T) and Pirana (PG) – Pirana (T) 400 kV D/c line i.e. Torrent Power Grid Limited (TPGL) to furnish the tower schedule then Torrent Power Grid Limited (TPGL) vide e-mail dated 30.09.2022 highlighted the following commercial & operational issues in respect of implementation of the subject scheme:

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- i. *“Whether the proposed reconductoring and bay work will have any implication on Tariff of TPGL? If yes, we request you to kindly share the methodology for adjustment (Removal/ replacement of bays at Pirana-PG and Pirana-T and Reconductoring)*
- ii. *As existing assets are licensed assets, whether the modification of same requires approval of Hon’ble CERC or not. If yes, we request you to kindly share proposed steps for same?*
- iii. *We also request you to kindly clarify the operational aspects in respect of O&M responsibility after execution of the project due to peculiar situation i.e.*
 - a. *Joint Ownership of line between Torrent Pirana to PGCIL Pirana: Towers will be owned by TPGL whereas reconductoring portion will be owned by the successful bidder. Request you to guide for responsibility of carrying out line maintenance and tower maintenance.*
 - b. *Joint Ownership: O&M of Bays at Pirana (T) within TPL substation and owned & installed by bidder. Request you to please confirm that the bidder will pay the O&M charges to TPGL as per CERC Regulations as TPGL is paying O&M Charges to PGCIL at PGCIL substation end though same is owned by TPGL.*
- iv. *Further, we request you to share with us the role and responsibility of declaring Availability so as to avoid possible issues and defining the responsibility e.g. in case of conductors snapped or Tower collapsed.*

3.3.5 Member Secretary, NCT, stated that TPGL has raised the issue that reconductoring of the Pirana (PG) – Pirana (T) 400 kV D/c line another transmission licensee will lead to joint ownership of the line with the transmission towers/accessories being owned by TPGL and the conductors/bay equipments being owned by the new transmission licensee.-

3.3.6 CTUIL informed that the existing line bays, bus bar, bus couplers etc. at Pirana (T) also needs to be upgraded after reconductoring of Pirana (PG) – Pirana (T) line with twin HTLS conductor. This would lead to several commercial as well as operational issues such as tariff implications for existing asset owner, responsibility of O&M of towers etc. CTUIL further stated that if the work is allocated to the existing owner under RTM, the differential cost for carrying out reconductoring works will be comparatively less, as the value of old scrap conductors would also be significant.

3.3.7 Accordingly, it was proposed that keeping in view the commercial, operational & ownership issues involved in implementation of the reconductoring works by the successful bidder/ new transmission licensee, and on account of urgency to take up the implementation of the aforesaid scheme (in matching timeframe of Khavda Phase II 4.5 GW schemes), it would be prudent to allocate the scheme through RTM route.

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- 3.3.8 Chairman, NCT, opined that this practice of allocating reconductoring works through RTM route need not be generalised. Consultation with stakeholders may be done and a base paper needs to be prepared for identification of Implementation Modalities for Reconductoring works in order to standardise/simplify decisions in this regard in future. Member (E&C), CEA, also agreed that reconductoring works may not necessarily be taken up under RTM.
- 3.3.9 After detailed deliberations, it was agreed that considering the apprehensions raised by the existing owner of Pirana (PG) – Pirana (T) 400 kV D/c line & Pirana (T) S/stn i/e TPGL, the mode of implementation for the “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda PS under Phase II- Part D” would be changed from TBCB to RTM.
- 3.3.10 Further, as implementation of all the transmission packages proposed for evacuation of 4.5 GW RE injection at Khavda RE park under Phase-II (Part A to Part D) needs to be taken up in similar timeframe, accordingly, the implementing agency under RTM would coordinate with the BPC/SPV of Khavda Phase II (Part A – C) schemes to match the commissioning timeframe. This would entail the following actions:
1. Denotification of the scheme “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda PS under Phase II- Part D” that was issued by MoP vide Gazette Notification dated 25.09.2020.
 2. Allocation of the aforesaid scheme to CTUIL for implementation through RTM route by the respective asset owners i.e.
 - LILO of Pirana (PG) – Pirana (T) 400 kV D/c line at Ahmedabad S/s with twin HTLS conductor alongwith reconductoring of Pirana (PG) – Pirana (T) line with twin HTLS conductor (with OPGW for both main & LILO portion) and Bay upgradation work at Pirana (T) along with requisite FOTE - to be awarded to TPGL.
 - Bay upgradation work at Pirana (PG) along with requisite FOTE - to be awarded to Powergrid.
- 3.3.11 Further, as the estimated cost of the scheme is less than Rs. 500 Crores, the same have been allocated to CTUIL by NCT.
- 3.4 **Modification in notified Transmission schemes “Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park” & “Transmission scheme for injection beyond 3 GW RE power at Khavda PS1”.**

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3.4.1 MoP vide Gazette notification dated 03.12.2021 had notified the scheme, “Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park” to be implemented under TBCB route.

3.4.2 The scope of the notified scheme along with future space provisions as agreed in 9th NCT meeting is as following:

Sl. No.	Scope of the Transmission Scheme	Capacity / line length
1.	<p>Establishment of 765/400 kV, 4x1500 MVA, KPS2 (GIS) with 2x330 MVAR 765 kV bus reactor and 2x125 MVAR 400 kV bus reactor.</p> <p><i>Bus sectionalizer at 765 kV & 400 kV.</i></p> <p><i>On each bus section, there shall be 2x1500 MVA 765/400 kV ICTs, 1x330MVA, 765 kV & 1x125MVA 420kV bus reactor with space for future expansion.</i></p> <p><i>Bus sectionalizer at 765 kV level shall normally be closed and bus sectionalizer at 400 kV level shall normally be open</i></p> <p><u>Future provisions: Space for</u> 765/400 kV ICTs along with bays: 5 Nos.</p> <p>765 kV line bay with switchable line reactor: 10 Nos.</p> <p>400 kV line bay with switchable line reactor: 12 Nos.</p> <p>8000 MW, ±800kV HVDC Converter station (LCC)</p> <p>To take care of any drawal needs of area in future:</p> <p>400/220 kV ICT: 2 Nos. 220 kV line bays: 4 Nos.</p>	<p>1500 MVA, 765/400 kV ICT- 4 Nos. (13x500 MVA including one spare unit)</p> <p>765 kV ICT bays – 4 Nos.</p> <p>400 kV ICT bays – 4 Nos.</p> <p>765 kV line bays – 2 Nos.</p> <p>400 kV line bays – 3 Nos. (3 Nos. of bays considered at present, one each for NTPC, GSECL & GIPCL)</p> <p>1x330 MVA, 765 kV bus reactor-2 (7x110 MVA, including one spare unit)</p> <p>765 kV reactor bay – 2</p> <p>1x125 MVA 400 kV bus reactor-2</p> <p>400 kV reactor bay – 2</p> <p>765 kV bus sectionalizer – 2</p> <p>400 kV bus sectionalizer – 2</p>
2.	LILO of one ckt of KPS1- Bhuj PS 765 kV D/c line at KPS2	Line length – 1 km

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3.4.3 The transmission element at Sl. No. 2 of the above scheme (LILO of one ckt of KPS1-Bhuj PS 765 kV D/c line at KPS2) was planned to interconnect KPS2 with KPS1 and Bhuj PS through LILO of one circuit of KPS1-Bhuj 765 kV D/c line (under implementation). The said LILO line is planned to be interim in nature and is mandated for RE injection of upto 3 GW at KPS1. Beyond 3 GW injection at KPS1, KPS1-KPS2 765 kV D/c line (to be established with bypassing of LILO of one ckt of KPS1-Bhuj line at KPS2 & utilisation of LILO section and extension upto KPS1) is required.

3.4.4 In respect of the above, MoP vide Gazette notification dated 03.12.2021 had notified the scheme, “Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)” to be implemented under TBCB route. The scope of subject scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity / line length
1.	Augmentation of Khavda PS1 by 765/400 kV transformation capacity* (max. upto 4x1500 MVA) with 1x330 MVAR 765 kV bus reactor and 1x125 MVAR 420 kV bus reactor on 2 nd 765 kV and 400 kV bus sections respectively	765/400 kV, 1500 MVA- 4 Nos. (13x500 MVA, including one spare unit) (Actual No. of ICTs may be decided based on evacuation requirement) 765 kV ICT bays – 4 Nos. 765 kV line bays – 2 Nos. 400 kV ICT bays – 4 Nos. 400 kV line bays – 3 Nos. considered at present (Actual No. of bays as per connectivity granted to RE developers) 1x330 MVA _r , 765 kV bus reactor- 1 No. (4x110 MVA _r , including one spare unit) 765 kV reactor bay – 1 No. 125 MVA _r , 420 kV reactor- 1 No. 400 kV Reactor bay- 1 No. 765 kV bus sectionalizer- 2 Nos. 400 kV bus sectionalizer- 2 Nos.
2.	KPS1-Khavda PS GIS (KPS2) 765 kV D/C line (to be established with bypassing of LILO of one ckt of KPS1-Bhuj at KPS2 and utilisation of LILO section)	Length ~ 20 km

* Actual No. of ICTs may be decided based on evacuation requirement

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Note: (i) Implementation to be taken up for evacuation requirement beyond 3 GW at KPS1

- 3.4.5 CTUIL informed that as on date, total of 3500 MW & 2755 MW stage-II connectivity has been granted at KPS1 and KPS2 respectively. Further, as informed by developers in a meeting organized by GPCL on 19.01.2022, about 6.8 GW capacity is expected at KPS1 by 2024-25. Considering that evacuation requirement at KPS1 has already exceeded 3 GW, the interim arrangement of LILO of one circuit of KPS1-Bhuj 765 kV D/c line at KPS2 as mentioned in the scope of scheme “*Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park*” is no more required and the KPS1-KPS2 765 kV D/c line alongwith 765/400 kV ICT augmentation at KPS-1 is now required to be implemented [as mentioned in scheme “*Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)*”].
- 3.4.6 After deliberations, following modified scope of scheme “*Establishment of Khavda Pooling Station -2 (KPS2) in Khavda RE Park*” was agreed:

Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park (modified scheme)

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	<p>Establishment of 765/400 kV, 4x1500 MVA, KPS2 (GIS) with 2x330 MVAR 765 kV bus reactor and 2x125 MVAR 400 kV bus reactor.</p> <p><i>Bus sectionalizer at 765 kV & 400 kV.</i></p> <p><i>On each bus section, there shall be 2x1500 MVA 765/400kV ICTs, 1x330 MVAR, 765 kV & 1x125MVAR 420kV bus reactor with space for future expansion.</i></p> <p><i>Bus sectionalizer at 765 kV level shall normally be closed and bus sectionalizer at 400 kV level shall normally be open</i></p> <p><u>Future provisions: Space for</u></p> <p>765/400 kV ICTs along with bays: 5 Nos.</p>	<p>1500 MVA, 765/400 kV ICT- 4 Nos. (13x500 MVA including one spare unit)</p> <p>765 kV ICT bays – 4 Nos.</p> <p>400 kV ICT bays – 4 Nos.</p> <p>765 kV line bays – 2 Nos.</p> <p>400 kV line bays – 3 Nos. (3 No. of bays considered at present, one each for NTPC, GSECL & GIPCL)</p> <p>1x330 MVAR, 765 kV bus reactor-2 (7x110 MVAR, including one spare unit)</p> <p>765 kV reactor bay – 2</p> <p>1x125 MVAR 400 kV bus reactor-2</p> <p>400 kV reactor bay – 2</p> <p>765 kV bus sectionalizer – 2</p> <p>400 kV bus sectionalizer – 2</p>

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Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
	<p>765 kV line bay with switchable line reactor: 10 Nos.</p> <p>400 kV line bay with switchable line reactor: 12 Nos.</p> <p>8000 MW, \pm800 kV HVDC Converter station (LCC)</p> <p>To take care of any drawal needs of area in future:</p> <p>400/220 kV ICT: 2 Nos. 220 kV line bays: 4 Nos.</p>	

Note: *The above scheme shall be implemented with an implementation timeframe of 24 months from date of SPV acquisition and matching with the implementation timeframe of "Transmission scheme for injection beyond 3 GW RE power at Khavda PS1"*

3.4.7 Following **modified scheme** for "Transmission scheme for injection beyond 3 GW RE power at Khavda PS1" was also agreed:

Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)
(modified Scheme)

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	Augmentation of Khavda PS1 by 4x1500 MVA, 765/400 kV transformation capacity* with 1x330 MVAR 765 kV bus reactor and 1x125 MVAR 420 kV bus reactor on 2 nd 765 kV and 400 kV bus sections respectively	<p>765/400 kV, 1500 MVA- 4 Nos. (13x500 MVA, including one spare unit)</p> <p>765 kV ICT bays – 4 Nos. 765 kV line bays – 2 Nos. 400 kV ICT bays – 4 Nos. 400 kV line bays – 3 Nos. considered at present (actual No. of bays as per connectivity granted to RE developers)</p> <p>1x330 MVAR, 765 kV bus reactor- 1 No. (4x110 MVAR, including one spare unit) 765 kV reactor bay – 1 No. 125 MVAR, 420 kV reactor- 1 No.</p>

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Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
		400 kV Reactor bay- 1 No. 765 kV bus sectionalizer- 2 Nos. 400 kV bus sectionalizer- 2 Nos.
2.	KPS1-Khavda PS GIS (KPS2) 765 kV D/C line	Length ~ 21 km

* 2nd Bus Section is to be created at Khavda PSI

Note: (1) M/s KBTL (Adani Transmission Limited) to provide space for bays for implementation of ICT Augmentation works and termination of KPS1-Khavda PS GIS (KPS2) 765 kV D/C line at KPS1.

(2) The above scheme shall be implemented with an implementation timeframe of 24 months from date of SPV acquisition and matching with the implementation timeframe of the scheme "Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park".

4 Resumption of bidding process of transmission schemes at Bidar, Ananthapuram and Kurnool

4.1 Member Secretary, NCT, informed that the issue regarding resumption of bidding process of the transmission scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka, and transmission scheme for Solar Energy Zone in Ananthapuram (Anantapur) (2500 MW) and Kurnool (1000 MW), Andhra Pradesh, has already been discussed with CTUIL, SECI, MNRE and BPC on 03.11.2022 and BPCs have been directed to initiate the bidding process of the schemes. POWERGRID has also been directed to immediately start the works of the transmission scheme "**Evacuation of power from RE Sources in Kurnool Wind Energy Zone (3000 MW) / Solar Energy Zone (1500 MW) Part A and Part B**" awarded under RTM route.

4.2 NCT noted the same.

5 New Transmission Schemes submitted by CTUIL

5.1 CTUIL stated that out of the identified (86 GW) RE Potential in Southern Region, 17 GW has been identified in the State of Karnataka. MNRE have indicated that out of the 17 GW REZ potential in Karnataka, transmission system for evacuation capacity of about 10.5 GW capacity may be identified considering the Energy Storage System. The details of district wise potential is as given **below**:

District	Potential (GW)		Total (GW)	Dispatch (90% S + 55% W)	BESS	Evacuation capacity to be planned (GW)
	Wind	Solar				
Koppal	2	2	4	2.9	1	2

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District	Potential (GW)		Total (GW)	Dispatch (90% S + 55% W)	BESS	Evacuation capacity to be planned (GW)
	Wind	Solar				
Gadag	2	2	4	2.9	1	2
Davangere / Chitradurga	2	2	4	2.9	1	2
Bijapur	2		2	1.1		2
Bellary		1.5	1.5	1.35		1.5
Tumkur		1.5	1.5	1.35		1.5
Total	8	9	17	12.5	3	11

5.2 CTUIL added that a comprehensive transmission system has been identified for immediate integration and evacuation of the above RE potential. Further, based on the communication received from SECI regarding prioritization of development of transmission system for integration of additional RE potential in Koppal and Gadag area of Karnataka and receipt of Stage-II Connectivity applications of about 900 MW at Koppal-II / Gadag-II area (Koppal-II – 400 MW & Gadag-II – 500 MW), as an advance action, transmission system for integration and immediate evacuation of additional RE potential of 1 GW each at Koppal-II and Gadag-II is being proposed for implementation.

5.3 The Gadag-II REZ is being integrated with Koppal-II PS through Gadag-II PS – Koppal-II PS 400 kV (Quad Moose) D/c line and Gadag-II REZ evacuation is dependent on Koppal-II PS. Accordingly, the schemes “Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-A)” and “Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Gadag-II (Phase-A)” are proposed to be implemented simultaneously as a single scheme. The present phased scheme shall facilitate immediate integration and evacuation of 1 GW potential each at Koppal-II and Gadag-II.

5.4 Accordingly, “Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-A) and Gadag-II (Phase- A) in Karnataka” with tentative cost of Rs. 2564 Crore was proposed:

Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-A) and Gadag-II (Phase- A)

Sl.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 765/400 kV 2x1500 MVA, 400/220 kV 2x500 MVA Koppal-II (Phase A) Pooling Station with provision of two (2) sections of 4500 MVA each at 400 kV level and provision of four (4) sections of 2500 MVA each at 220 kV level	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA, ICTs – 2 Nos. (7x500 MVA including 1 spare unit) • 765 kV ICT bays – 2 Nos. • 400 kV ICT bays – 2 Nos. • 400/220 kV, 500 MVA, ICTs – 2 Nos.

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<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	<p>Future Space Provisions: (Including space for Phase-B)</p> <ul style="list-style-type: none"> • 765/400 kV, 1500 MVA, ICTs – 6 Nos. • 765 kV ICT bays – 6 Nos. • 400 kV ICT bays – 6 Nos. • 400/220 kV, 500 MVA, ICTs – 10 Nos. • 400 kV ICT bays – 10 Nos. • 220 kV ICT bays – 10 Nos. • 765 kV line bays – 8 Nos. (with provision for SLR) • 400 kV line bays – 14 Nos. (with provision for SLR) • 220 kV line bays – 12 Nos. • 220 kV Bus Sectionalizer: 3 sets • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. • 400 kV Bus Sectionalizer: 1 set 	<ul style="list-style-type: none"> • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 765 kV line bays – 2 Nos. (at Koppal-II for termination of Koppal-II-Narendra new 765kV D/c line) • 220 kV line bays – 4 Nos. • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.
2.	Koppal-II PS – Narendra (New) 765 kV D/c line with 240 MVar SLR at Koppal-II PS end (~150 km)	<ul style="list-style-type: none"> • Line length ~150 km • 765 kV line bays – 2 Nos. (GIS) (at Narendra New) • 765 kV, 240 MVar SLR at Koppal-II PS – 2 Nos. (7x80 MVar including 1 switchable spare unit)
3.	2x330 MVar (765 kV) & 2x125 MVar (400 kV) bus reactors at Koppal-II PS	<ul style="list-style-type: none"> • 765 kV, 330 MVar Bus Reactor – 2 Nos. (7x110 MVar including 1 switchable spare unit) • 765 kV Bus Reactor bays – 2 Nos. • 420 kV, 125 MVar Bus Reactors – 2 Nos. • 420 kV, 125 MVar Bus Reactor bays – 2 Nos.
4.	<p>Establishment of 400/220 kV, 2x500 MVA Gadag-II (Phase A) Pooling Station</p> <p>Future Space Provisions:</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 10 Nos. • 400 kV ICT bays – 10 Nos. • 220 kV ICT bays – 10 Nos. • 400 kV line bays – 6 Nos. (with provision for SLR) 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 400 kV line bays – 2 Nos. (at Gadag-II for termination of Gadag-II – Koppal-II line) • 220 kV line bays – 4 Nos. • 220 kV Bus Coupler (BC) Bay – 1 No.

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<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	<ul style="list-style-type: none"> • 220 kV line bays – 10 Nos. • 220 kV Bus Sectionalizer: 3 sets • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. 	<ul style="list-style-type: none"> • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.
5.	Gadag-II PS – Koppal-II PS 400 kV (Quad Moose) D/c line (~100 km)	Line length ~100 km 400 kV line bays - 2 (at Koppal-II)
6.	2x125 MVA, 420 kV bus reactors at Gadag-II PS	<ul style="list-style-type: none"> • 420 kV, 125 MVA bus reactors – 2 Nos. • 420 kV, 125 MVA bus reactor bays – 2 Nos.

5.5 Further, the following “Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-B)” was also proposed with total cost of Rs. 1881 crore:

Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-B)

<i>Sl.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	Koppal-II PS – Raichur 765 kV D/c line with 330 MVA SLR at Koppal-II PS end (~190 km)	<ul style="list-style-type: none"> • Line length ~190 km • 765 kV line bays – 2 Nos. (at Koppal-II) • 765 kV line bays – 2 Nos. (at Raichur) • 765 kV, 330 MVA SLR – 2 Nos. (7x110 MVA including 1 switchable spare unit)- • Switching equipment for 765 kV, 330 MVA SLR – 2 Nos.
2.	Augmentation by 2x1500MVA, 765/400 kV ICTs at Koppal-II PS	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA, ICTs – 2 Nos. • 765 kV ICT bays – 2 Nos. • 400 kV ICT bays – 2 Nos.
3.	Augmentation by 2x500 MVA, 400/220 kV ICTs at Koppal-II PS.	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 220 kV line bays – 4 Nos. • 220 kV Bus Sectionalizer: 1 set • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.

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- 5.6 CTUIL stated that during the system studies carried out for integration and immediate evacuation of additional RE potential of 2 GW each at Koppal and Gadag, 1 GW (for 5 hours) BESS each at Koppal-II and Gadag-II was considered. The land requirement for establishment of BESS shall be under scope of BESS implementing agency. Further, power from other RE Zones in Karnataka viz. Gadag-II, Davangere, Bijapur and Bellary area (part of 181.5 GW RE capacity addition by 2030) would be pooled at Koppal-II PS for further evacuation through 400 kV lines.
- 5.7 The transmission scheme was discussed in the 43rd SRPC meeting held on 23.09.2022 and SRPC vide letter dated 04.10.2022 had forwarded the views of SRPC on the above transmission scheme. The transmission scheme had been agreed by POSOCO/SRLDC and SRPC Secretariat. The SR States had raised apprehension that as adequate connectivity applications had not been received for Koppal-II & Gadag-II transmission schemes, the transmission system may remain stranded. Alternatively, they suggested that the scheme may be implemented in phased manner.
- 5.8 CTUIL further informed that as per the discussion with southern states, Phase-B of the scheme may be implemented subsequent to cumulative connectivity application exceeding 2.5 GW.
- 5.9 SECI informed that location specific bids would be invited for Koppal –II and Gadag-II. Further CTUIL informed that they have received connectivity applications of about 900 MW at Koppal-II / Gadag-II area (Koppal-II – 400 MW & Gadag-II – 500 MW).
- 5.10 Keeping in view the connectivity applications for 900 MW received at Koppal-II and Gadag –II, as well as the location specific bids to be invited by SECI and the concerns of SR States regarding phasing of the transmission scheme, it was agreed that the Phase A and Phase B schemes would be clubbed together for bidding purpose though TBCB route with implementation timeframe of 24 months and 36 months respectively.
- 5.11 After detailed deliberations, the following were agreed:

A. Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-A) and Gadag-II (Phase- A) in Karnataka

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
1.	Establishment of 765/400 kV 2x1500 MVA, 400/220 kV, 2x500 MVA Koppal-II (Phase- A) Pooling Station with provision of two (2) sections of 4500 MVA each at 400 kV level and provision of four (4) sections of 2500 MVA each at 220 kV level Future Space Provisions: (Including space for Phase-B)	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA, ICTs – 2 Nos. (7x500 MVA including 1 spare unit) • 765 kV ICT bays – 2 Nos. • 400 kV ICT bays – 2 Nos. • 400/220 kV, 500 MVA, ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos.

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<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA, ICTs – 5 Nos. • 765 kV ICT bays – 5 Nos. • 400 kV ICT bays – 5 Nos. • 400/220 kV, 500 MVA, ICTs – 10 Nos. • 400 kV ICT bays – 10 Nos. • 220 kV ICT bays – 10 Nos. • 765 kV line bays – 8 Nos. (with provision for SLR) • 400 kV line bays – 14 Nos. (with provision for SLR) • 220 kV line bays – 12 Nos. • 220 kV Bus Sectionalizer: 3 sets • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. • 400 kV Bus Sectionalizer: 1 set 	<ul style="list-style-type: none"> • 765 kV line bays – 2 Nos.(at Koppal-II for termination of Koppal-II-Narendra (New) 765 kV D/c line) • 220 kV line bays – 4 Nos. • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.
2.	Koppal-II PS – Narendra (New) 765 kV D/c line with 240 MVar SLR at Koppal-II PS end (~150 km)	<ul style="list-style-type: none"> • Line length ~150 km • 765 kV line bays – 2 Nos. (GIS) [at Narendra (New)] • 765 kV, 240 MVar SLR at Koppal-II PS – 2 Nos. (7x80 MVar including 1 switchable spare unit)
3.	2x330 MVar (765 kV) & 2x125 MVar (400 kV) bus reactors at Koppal-II PS	<ul style="list-style-type: none"> • 765 kV, 330 MVar Bus Reactor – 2 Nos. (7x110 MVar including 1 switchable spare unit for both bus reactor and line reactor) • 765 kV Bus Reactor bays – 2 Nos. • 420 kV, 125 MVar Bus Reactors – 2 Nos. • 420 kV, 125 MVar Bus Reactor bays – 2 Nos.
4.	<p>Establishment of 400/220 kV, 2x500 MVA Gadag-II (Phase -A) Pooling Station</p> <p>Future Space Provisions:</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 10 Nos. • 400 kV ICT bays – 10 Nos. • 220 kV ICT bays – 10 Nos. • 400 kV line bays – 6 Nos. (with provision for SLR) • 220 kV line bays – 10 Nos. • 220 kV Bus Sectionalizer: 3 sets 	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 400 kV line bays – 2 Nos. (at Gadag-II for termination of Gadag-II – Koppal-II line) • 220 kV line bays – 4 Nos. • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.

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<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
	<ul style="list-style-type: none"> • 220 kV Bus Coupler (BC) Bay – 3 Nos. • 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. 	
5.	Gadag-II PS – Koppal-II PS 400 kV (Quad Moose) D/c line (~100 km)	<ul style="list-style-type: none"> • Line length ~100 km • 400 kV line bays - 2 (at Koppal-II)
6.	2x125 MVA 420kV bus reactors at Gadag-II PS	<ul style="list-style-type: none"> • 420 kV, 125 MVA bus reactors – 2 Nos. • 420 kV, 125 MVA bus reactor bays – 2 Nos.

Note:

- (i) Powergrid shall provide space for 2 No. of 765 kV line bays at Narendra (New) for termination of Koppal-II PS – Narendra (New) 765 kV D/c line.

Estimated Cost	Rs. 2564 cr
Mode of implementation	TBCB route
Implementation Time Frame	24 Months from date of SPV transfer

B. Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-B)

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
1.	Koppal-II PS – Raichur 765 kV D/c line with 330 MVA SLR at Koppal-II PS end (~190 km)	<ul style="list-style-type: none"> • Line length ~190 km • 765 kV line bays – 2 Nos. (at Koppal-II) • 765 kV line bays – 2 Nos. (at Raichur) • 765 kV, 330 MVA SLR at Koppal-II PS – 2 Nos. (6x110 MVA)- • Switching equipment for 765 kV, 330 MVA SLR – 2 Nos.
2.	Augmentation by 2x1500 MVA, 765/400 kV ICTs at Koppal-II PS	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICTs – 2 Nos. • 765 kV ICT bays – 2 Nos. • 400 kV ICT bays – 2 Nos.
3.	Augmentation by 2x500 MVA, 400/220 kV ICTs at Koppal-II PS.	<ul style="list-style-type: none"> • 400/220 kV, 500 MVA, ICTs – 2 Nos. • 400 kV ICT bays – 2 Nos. • 220 kV ICT bays – 2 Nos. • 220 kV line bays – 4 Nos.

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Sl. No.	Scope of the Transmission Scheme	Capacity /km
		<ul style="list-style-type: none"> • 220 kV Bus Sectionalizer: 1 set • 220 kV Bus Coupler (BC) Bay – 1 No. • 220 kV Transfer Bus Coupler (TBC) Bay – 1 No.

Estimated Cost	Rs. 1881 cr
Mode of implementation	TBCB route
Implementation Time Frame	36 Months from date of SPV transfer

Note:

- (i) Powergrid shall provide space for 2 No. of 765 kV line bays at Raichur for termination of Koppal-II PS – Raichur 765 kV D/c line

6 Additional Agenda proposed by CTUIL

6.1 Considering RE potential in specific areas and optimization of RoW, following requirement of additional space (Future provision) for ICTs/bays at RE pooling station planned in Rajasthan Phase-III scheme (20 GW) were agreed.

Sl. No.	Substation	Element	Approved (as part of Ph-III)		Additional space provisions with Ph-IV (75 GW) (Future Scope)	Remarks
			Main Scope	Future Scope		
1	Ramgarh PS	765/400 kV ICTs	2	3	2	Total 7 Nos. ICTs required considering evacuation of 7.9 GW RE potential (Ph-III : 2.9 GW, Ph-IV : 5GW) under “N-1” Scenario
		400/220 kV ICTs	2	6		2

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						220 kV level
		220 kV line Bays	4	8	3	4.5 GW injection considered at 220 kV level (300 MW x15 Nos. of bays)
2	Bhadla-3	765 kV line Bays	4 • Ramgarh-Bhadla-3 D/c – 2 Nos • Bhadla-3-Sikar-II D/c -2 Nos	2 (with Switchable line reactor)	2 (with Switchable line reactor)	4 Nos. of bays may be required as part of Ph-IV (75 GW) REZ scheme (for Ramgarh and Hanumangarh)
		400 kV line Bays	8 • Bhadla-3-Fatehgarh-2 D/c - 2 Nos • Bhadla-3-Fatehgarh-3 D/c - 2Nos. • Bhadla-3-Bhadla (HVDC) 2xD/c – 4 Nos.	4+2 (with Switchable line reactor)	2 (with Switchable line reactor)	4 Nos. of bays may be required as part of Ph-IV (75 GW) REZ scheme (for Bhadla-IV and Bikaner-III). Balance 4 Nos. of bays may be utilized for RE connectivity.
3	Beawar	765 kV line Bays	10 • Fatehgarh-III-Beawar 2x D/c – 4 Nos. • LILO of Ajmer-Chittorgarh D/c at Beawar – 4Nos.] • Beawar – Dausa D/c – 2 Nos.	2 (with Switchable line reactor)	2 (with Switchable line reactor)	4 Nos. of bays may be required as part of Ph-IV (75GW) REZ scheme (for Neemuch and Chittorgarh)

6.2 Requirement of additional space (Future provision) for ICTs/bays at RE pooling station planned in Kurnool, Ananthapur & Bidar REZs.

6.2.1 Transmission System for Kurnool Wind Energy Zone (3000 MW) / Solar Energy Zone (AP) (1500 MW): Part-A & Part-B

- **Part-A**

Sl. No.	Scope of the Transmission Scheme	Capacity/km
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1	<p>i. Establishment of 765/400 kV 3x1500 MVA, 400/220 kV 9x500 MVA Pooling Station at suitable location in Kurnool Distt (Kurnool-III) with 1x330 MVA (765 kV) & 1x125 MVA (400 kV) bus reactors</p> <p>ii. 220 kV line bays for interconnection of wind projects (15 Nos.)</p> <p>Space for:</p> <p>i. 765/400 kV ICTs along with bays: 2 Nos.</p> <p>ii. 400/220 kV ICTs along with bays: 4 Nos.</p> <p>iii. 765 kV line bays with SLR: 6 Nos.</p> <p>iv. 400 kV line bays with SLR: 4 Nos.</p> <p>v. 220 kV line bays: 7 Nos.</p> <p>Additional Space for:</p> <p>i. 765/400 kV ICTs along with bays: 2 Nos.</p> <p>ii. 400/220 kV ICTs along with bays: 7 Nos.</p> <p>iii. 765 kV line bays with SLR: 2 Nos.</p> <p>iv. 400 kV line bays with SLR: 4 Nos.</p> <p>v. 400 kV line bays: 2Nos.</p> <p>vi. 220 kV line bays: 4 Nos.</p> <p>vii. Space provision for 400 kV Bus Sectionalizer: 1 set</p> <p>viii. Space for additional 220 kV future Bus Sectionalizer: 3 sets</p> <p>ix. Space for additional future 220 kV TBC bay : 3 Nos.</p> <p>x. Space for additional future 220 kV BC bay : 3 Nos.</p>	<p>765/400 kV, 1500 MVA ICTs – 3 Nos. (10x500 MVA incl. 1 spare unit)</p> <p>400/220 kV, 500 MVA ICTs -9 Nos.</p> <p>765 kV line bay-2</p> <p>765 kV ICT bay-3</p> <p>400 kV ICT bay-12</p> <p>220 kV ICT bay-9</p> <p>330 MVA BR-1 (4x110 MVAR, 765 kV, including 1 spare unit)</p> <p>125 MVA BR-1</p> <p>765 kV reactor bay -1</p> <p>400 kV reactor bay -1</p> <p>220 kV line bays-15</p> <p>220 kV Bus Sectionalizer – 2 sets</p> <p>220 kV TBC bay – 3 Nos.</p> <p>220 kV BC bay – 3 Nos.</p>
2	Kurnool–III PS – Kurnool (New) 765 kV D/c Line	100 km (approx.)
3	765 kV line bays at Kurnool (New) – 2 Nos.	765 kV line bays-2
Note: PGCIL to provide space for 2 Nos. of 765 kV bays at Kurnool (new)		

• **Part-B**

Sl. No.	Scope of the Transmission Scheme	Capacity / km
1.	Kurnool- III PS – Maheshwaram (PG) 765 kV	250 km

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	D/c line	
2.	765 kV lines bays at Kurnool-III (2 Nos) and Maheshwaram (PG) (2 Nos)	765 kV line bays-4
3.	240 MVAr switchable line reactors at both ends of Kurnool –III PS – Maheshwaram (PG) 765 kV D/c line along with bays	240 MVAr Switchable line reactor - 4 (13 x 80 MVAr including 1 spare unit) Switching equipment for 420 kV 80 MVAR switchable line reactor –4
Note: (i) PGCIL to provide space for 2 Nos. of 765 kV bays at Maheshwaram(PG) S/s (ii) PGCIL to provide space at Maheshwaram (PG) for 765 kV Switchable line reactors at Maheshwaram end of Kurnool-III PS-Maheshwaram (PG) 765 kV D/c line.		

After deliberations, the additional space (Future provision) for ICTs/bays (shown in **bold**) were agreed.

6.2.2 Transmission scheme for Solar Energy Zone in Ananthapuram (Ananthapur) (2500 MW) and Kurnool (1000 MW), Andhra Pradesh

Sl. No.	Scope of the Transmission Scheme	Capacity/km
1.	Establishment of 400/220 kV, 7x500 MVA pooling station at suitable border location between Ananthapuram & Kurnool Distt with 400 kV (2x125 MVAr) bus reactor Space for Future Provision	400/220 kV, 500 MVA ICT-7 400 kV ICT bays – 7 220 kV ICT bays – 7 400 kV line bays – 4
	A. 400 kV	125 MVAr, 420 kV Bus reactor – 2
	i. Space for future line bays along with switchable line reactor: 6 Nos.	420 kV Bus reactor bays – 2
	ii. Space for future 400/220 kV ICT along with associated bay: 1 Nos.	220 kV line bays – 12
	iii. Space for additional future line bay along with switchable line reactor: 6 Nos.	220 kV Bus sectionalizer – 2 sets
	iv. Space for additional future 400/220 kV ICT along with associated 400 kV bay: 3 Nos.	220 kV Bus coupler bays – 3 220 kV Transfer Bus Coupler bays - 3
	B. 220 kV	
	i. Space for future 400/220 kV ICT bay: 1 Nos.	
	ii. Space for future line bay: 4 Nos.	

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	iii. Space for additional future ICT bay: 3 Nos. iv. Space for additional future line bay: 4 Nos. v. Space for additional future 220 kV Bus Sectionalizer: 1 set vi. Space for additional future 220 kV TBC bay : 1 No. vii. Space for additional future 220 kV BC bay : 1 No.	
2.	Ananthpuram PS-Kurnool-III PS 400 kV (Quad Moose) D/c Line	Length – 100 km (approx.)
3.	400 kV line bays at Kurnool-III PS for Ananthpuram PS-Kurnool-III PS 400 kV D/c line	400 kV line bays – 2
4.	Ananthpuram PS-Cuddapah 400 kV (Quad Moose) D/c Line	Length – 150 km (approx.)
5.	400 kV line bays at Cuddapah PS for Ananthpuram PS-Cuddapah 400 kV D/c line	400 kV Line bays – 2
6.	80 MVAR, 420 kV switchable line reactor for Ananthpuram PS-Cuddapah 400 kV D/c line	80 MVAR, 420 kV Line reactor – 2 Switching equipment for 420 kV 80 MVAR switchable line reactor – 2

Note:

- (i) Developer of Kurnool-III PS shall provide space for 2 No. of 400 kV line bays at Kurnool-III PS for termination of Ananthpuram PS-Kurnool-III PS 400 kV (Quad Moose) D/c Line.
- (ii) Powergrid shall provide space for 2 No. of 400 kV line bays at Cuddapah PS for termination of Ananthpuram PS-Cuddapah 400 kV (Quad Moose) D/c Line.

After deliberations, the additional space (Future provision) for ICTs/bays (shown in **bold**) were agreed.

6.2.3 Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka

Sl. No.	Scope of the Transmission Scheme	Capacity/km
1.	Establishment of 765/400 kV 3x1500 MVA, 400/220 kV 5x500 MVA pooling station at suitable border location near Bidar with 765 kV (1x240 MVAR) and 400 kV (1x125	765/400 kV, 1500 MVA, ICTs – 3 Nos. (10x500 MVA including 1 spare unit) 500 MVA, 400/220 kV ICT – 5

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	<p>MVAR) Bus Reactor</p> <p><u>765 kV Future Provision</u></p> <p>i) Space for future 765/400 kV ICT along with associated bay: 1 No.</p> <p>ii) Space for future 765 kV Bus Reactor along with associated bay: 1 No.</p> <p>iii) Space for additional future line bays with SLR: 8 Nos.</p> <p>iv) Space for additional future 765/400 kV ICT along with associated bay: 2 Nos.</p> <p><u>400 kV Future Provision</u></p> <p>i) Space for future line bay: 8 Nos.</p> <p>ii) Space for future 765/400 kV ICT bay: 1 No.</p> <p>iii) Space for future 400/220 kV ICT along with associated bay: 2 Nos.</p> <p>iv) Space for additional future line bay with SLR: 2 Nos.</p> <p>v) Space for additional future 765/400 kV ICT bay: 2 Nos.</p> <p>vi) Space for additional future 400/220 kV ICT along with associated bay: 4 Nos.</p> <p><u>220 kV Future Provision</u></p> <p>i) Space for future 400/220 kV ICT bays: 2 Nos.</p> <p>ii) Space for future line bays: 4 Nos.</p> <p>iii) Space for additional future 400/220 kV ICT bays: 4 Nos.</p> <p>iv) Space for additional future line bay: 6 Nos.</p> <p>v) Space for additional future 220 kV Bus Sectionalizer: 2 sets</p> <p>vi) Space for additional future 220 kV TBC bay: 2 Nos.</p> <p>vii) Space for additional future 220 kV BC bay: 2 Nos.</p>	<p>Nos.</p> <p>765 kV ICT bays – 3 Nos.</p> <p>400 kV ICT bays – 8 Nos.</p> <p>220 kV ICT bays – 5 Nos.</p> <p>765 kV line bays – 2 Nos.</p> <p>220 kV line bays – 8 Nos.</p> <p>765 kV, 240 MVAR Bus reactor – 1 Nos. (3x80 MVAR)</p> <p>765 kV Bus reactor bays - 1</p> <p>125 MVAR, 420 kV Bus reactor – 1</p> <p>420 kV Bus reactor bay – 1</p> <p>220 kV Bus sectionalizer– 1set.</p> <p>220 kV Bus coupler bays – 2 Nos.</p> <p>220 kV Transfer Bus Coupler bays – 2 Nos.</p>
2.	Bidar PS – Maheshwaram (PG) 765 kV D/C line	Length – 160 km
3.	2 Nos. of 765 kV line bays at Maheshwaram (PG) GIS substation for termination of Bidar PS – Maheshwaram (PG) GIS 765 kV D/C line	765 kV line bays (GIS) - 2
4.	765 kV, 1x240 MVAR Switchable Line Reactor for each circuit at Bidar PS end of Bidar PS- Maheshwaram (PG) GIS 765 kV D/	240 MVAR, 765 kV reactor – 2 Nos. (7x80 MVAR including 1 spare unit for both Bus Reactor &

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	C line	Line Reactor) Switching equipment for 765 kV reactor – 2
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Note: POWERGRID to provide space for 2 Nos. of 765 kV line bays at Maheshwaram (PG) substation for termination of Bidar PS – Maheshwaram (PG) 765 kV D/c line.

After deliberations, the additional space (Future provision) for ICTs/bays (shown in **bold**) were agreed.

7 Evaluation of functioning of National Grid.

POSOCO may make the requisite presentation apprising NCT of the performance of national Grid.

Due to paucity of time, the agenda could not be discussed.

8 Comprehensive presentation by CTU apprising NCT of measures taken for ensuring development of an efficient, co-ordinated and economical ISTS for smooth flow of electricity.

CTU may present.

Due to paucity of time, the agenda could not be discussed.

9 Five-year rolling plan for ISTS capacity addition.

- As per the amended ToR of the NCT, CTU shall prepare a five-year rolling plan for ISTS capacity addition every year. The Annual Plan shall be put up to the NCT six months in advance.
- CTU may present
- Members may deliberate

Due to paucity of time, the agenda could not be discussed.

Meeting ended with thanks to chair.

Summary of the deliberations of the 10th NCT meeting held on 07.11.2022.

1. ISTS schemes, costing upto Rs 100 Crore, noted by NCT: No information in this regard received from CTUIL.
2. ISTS schemes, costing between Rs 100 Crore to Rs 500 Crore, approved by NCT:

The transmission schemes approved by NCT under RTM route is given below:

Sl. No.	Name of Transmission Scheme	Implementa tion Mode	Implementa tion timeframe	Allocated to	Estimated Cost (Rs. Crs)
1.	Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part D	RTM	24 months	CTUIL	117.8

3. ISTS schemes, costing greater than Rs 500 Crore recommended by NCT to MoP:

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

Sl. No.	Transmission Scheme	Implementati on Mode	Implementati on timeframe	Survey Agency	Estimated Cost (Rs. Crs)
1.	Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-A) and Gadag-II (Phase-A) in Karnataka	TBCB	24 Months	RECPDCL	2564
2.	Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-B)	TBCB	36 Months		1881

Note: Both the schemes would be clubbed together for bidding purpose with implementation timeframe of 24 months and 36 months respectively

- 3.2 The broad scope of ISTS schemes recommended by NCT to MoP for implementation through TBCB mode, to be notified in Gazette of India is as given below:

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Sl. No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
1.	<p>Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-A) and Gadag-II (Phase- A) in Karnataka</p> <p>Implementation Timeframe: 24 months</p>	<p>(i) Establishment of 765/400 kV 2x1500 MVA, 400/220 kV, 2x500 MVA Koppal-II (Phase A) Pooling Station with provision of two (2) sections of 4500 MVA each at 400 kV level and provision of four (4) sections of 2500 MVA each at 220 kV level</p> <p>(ii) Koppal-II PS – Narendra (New) 765 kV D/c line (~150 km)</p> <p>(iii) Establishment of 400/220 kV, 2x500 MVA Gadag-II (Phase A) Pooling Station</p> <p>(iv)Gadag-II PS – Koppal-II PS 400 kV (Quad Moose) D/c line (~100 km)</p> <p>(v) Associated bays and reactors</p> <p>(Detailed scope as approved by 10th NCT and subsequent amendments thereof)</p>	To be decided by MoP
2.	<p>Transmission Scheme for integration of Renewable Energy Zone (Phase-II) in Koppal-II (Phase-B)</p> <p>Implementation Time frame: 36 months</p>	<p>1. Koppal-II PS – Raichur 765 kV D/c line (~190 km)</p> <p>2. Augmentation by 2x1500 MVA, 765/400kV, ICTs at Koppal-II PS</p> <p>3. Augmentation by 2x500 MVA, 400/220 kV, ICTs at Koppal-II PS.</p> <p>4. Associated bays and reactors</p> <p>(Detailed scope as approved by 10th NCT and subsequent amendments thereof)</p>	To be decided by MoP

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4. Modifications in Schemes discussed in earlier meetings of NCT:

4.1 The modified scope of works for Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW) scheme on account of future space provision:

Sl. No.	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
1.	<p>(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur</p> <p>(ii) 1x125 MVAR, 420 kV bus reactor at Chhatarpur PS</p> <p>(iii) 5 Nos. 220 kV line bays for solar park interconnection</p> <p><i>*out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina</i></p> <p>Future provisions: Space to accommodate:</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICT along with associated bays -1 • 4 Nos. of 220kV line bays • Sectionaliser arrangement 	<p>(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur</p> <p>(ii) 1x125 MVAR, 420 kV bus reactor at Chhatarpur PS</p> <p>(iii) 5 Nos. 220 kV line bays for solar park interconnection</p> <p><i>*out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina</i></p> <p>Future provisions: Space to accommodate:</p> <ul style="list-style-type: none"> • 400/220 kV, 500 MVA ICT along with associated bays - 3 • 400 kV line bays- 6 Nos. • 3x125 MVA Bus Reactor with bay • 220 kV line bays - 5 Nos. • 400 kV Bus Sectionaliser - 1 set • 220 kV Bus Sectionaliser – 1 set • 220 kV Bus Coupler bay- 1 No. • 220 kV TBC bay – 1 No.
2.	LILO of Satna – Bina 400kV (1 st) D/c line at Chhatarpur PS	LILO of Satna – Bina 400 kV (1 st) D/c line at Chhatarpur PS

5. Modification in the scope of works of Transmission Scheme presently under bidding (recommended in the 5th NCT meeting).

5.1 Ministry of Power vide Gazette notification 5032(E) published on 06.12.2021 had appointed RECPDCL as BPC for implementation of the transmission scheme “Establishment of Khavda Pooling Station-2 (KPS-2) in Khavda RE Park” through TBCB route. Space for future provisions at KPS2 needs to be kept. “LILO of one ckt. of KPS1- Bhuj PS 765 kV D/c line at KPS2” needs to be deleted. Accordingly, the changes in scope of KPS2 are given as under:

Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park

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S.No	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
1.	<p>Establishment of 765/400 kV, 4x1500 MVA, KPS2 (GIS) with 2x330 MVAR 765 kV bus reactor and 2x125 MVAR 400 kV bus reactor.</p> <p>Adequate space for future expansion of 5x1500 MVA 765/400 kV ICT's</p> <p><i>Bus sectionalizer at 765kV & 400kV.</i></p> <p><i>On each bus section, there shall be 2x1500MVA 765/400kV ICTs, 1x330MVar, 765 kV & 1x125MVar 420kV bus reactor with space for future expansion.</i></p> <p><i>Bus sectionalizer at 765 kV level shall normally be closed and bus sectionalizer at 400 kV level shall normally be open</i></p> <p>Future provisions: Space for 765/400 kV ICTs along with bays: 5 Nos. 765kV line bay with switchable line reactor: 8 Nos. 400kV line bay with switchable line reactor: 10 Nos. To take care of any drawal needs of area in future: 400/220 kV ICT: 2 Nos. 220 kV line bays: 4 Nos.</p>	<p>Establishment of 765/400 kV, 4x1500 MVA, KPS2 (GIS) with 2x330 MVAR 765 kV bus reactor and 2x125 MVAR 400 kV bus reactor.</p> <p><i>Bus sectionalizer at 765kV & 400kV.</i></p> <p><i>On each bus section, there shall be 2x1500MVA 765/400kV ICTs, 1x330MVar, 765 kV & 1x125MVar 420kV bus reactor with space for future expansion.</i></p> <p><i>Bus sectionalizer at 765 kV level shall normally be closed and bus sectionalizer at 400 kV level shall normally be open</i></p> <p><u>Future provisions: Space for</u></p> <p>765/400 kV ICTs along with bays: 5 Nos.</p> <p>765 kV line bay with switchable line reactor: 10 Nos.</p> <p>400 kV line bay with switchable line reactor: 12 Nos.</p> <p>8000 MW, ± 800 kV HVDC Converter station (LCC)</p> <p>To take care of any drawal needs of area in future:</p> <p>400/220 kV ICT: 2 Nos. 220 kV line bays: 4 Nos.</p>
2.	LILO of one ckt. of KPS1- Bhuj PS 765 kV D/c line at KPS2 – 1 km	Dropped from the scope of works

Note: *The above scheme shall be implemented with an implementation timeframe of 24 months from date of SPV acquisition and matching with the implementation timeframe of "Transmission scheme for injection beyond 3 GW RE power at Khavda PSI"*

5.2 Ministry of Power vide Gazette notification 5032(E) published on 06.12.2021 has appointed RECPDCL as BPC for implementation of the scheme "Transmission scheme for

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injection beyond 3 GW RE power at Khavda PS1 (KPS1)” through TBCB route. The rider/clause associated with KPS1-Khavda PS GIS (KPS2) 765 kV D/C line (the interim arrangement of LILO of one circuit of KPS1-Bhuj 765 D/c line at KPS2) needs to be removed. Further, firm no of ICTs (4) needs to be incorporated. Accordingly, the changes in scope of Khavda PS1 (KPS1) are given as under:

Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)

S.No.	Scope of the Transmission Scheme (Original)	Scope of the Transmission Scheme (Revised)
1.	<p>Augmentation of Khavda PS1 by 765/400 kV transformation capacity* (max. upto 4x1500 MVA) with 1x330 MVAR 765 kV bus reactor and 1x125 MVAR 420 kV bus reactor on 2nd 765 kV and 400 kV bus sections respectively</p> <p>765/400 kV, 1500 MVA- 4 Nos. (13x500 MVA, including one spare unit)</p> <p>(Actual No. of ICTs may be decided based on evacuation requirement)</p> <p>765 kV ICT bays – 4 Nos. 765 kV line bays – 2 Nos. 400 kV ICT bays – 4 Nos. 400 kV line bays – 3 Nos considered at present (Actual No. of bays as per connectivity granted to RE developers)</p> <p>1x330 MVA, 765 kV bus reactor- 1No. (4x110 MVA, including one spare unit)</p> <p>765 kV reactor bay – 1No. 125 MVA, 420 kV reactor- 1No. 400 kV Reactor bay- 1No. 765 kV bus sectionalizer- 2 Nos. 400 kV bus sectionalizer- 2 Nos.</p>	<p>Augmentation of Khavda PS1 by 4x1500 MVA, 765/400 kV transformation capacity* with 1x330 MVAR 765 kV bus reactor and 1x125 MVAR 420 kV bus reactor on 2nd 765 kV and 400 kV bus sections respectively</p> <p>765/400 kV, 1500 MVA- 4 Nos. (13x500 MVA, including one spare unit)</p> <p>765 kV ICT bays – 4 Nos. 765 kV line bays – 2 Nos. 400 kV ICT bays – 4 Nos. 400 kV line bays – 3 Nos. considered at present (actual No. of bays as per connectivity granted to RE developers)</p> <p>1x330 MVA, 765 kV bus reactor- 1 No. (4x110 MVA, including one spare unit)</p> <p>765 kV reactor bay – 1 No. 125 MVA, 420 kV reactor- 1 No. 400 kV Reactor bay- 1 No. 765 kV bus sectionalizer- 2 Nos. 400 kV bus sectionalizer- 2 Nos</p>
2.	<p>KPS1-Khavda PS GIS (KPS2) 765 kV D/C line (to be established with bypassing of LILO of one ckt. of KPS1-Bhuj at KPS2 and utilisation of LILO section) - 20 km</p>	<p>KPS1-Khavda PS GIS (KPS2) 765 kV D/C line – 21 km</p>

* 2nd Bus Section is to be created at Khavda PS1

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Note: (1) M/s KBTL (Adani Transmission Limited) to provide space for bays for implementation of ICT Augmentation works and termination of KPS1-Khavda PS GIS (KPS2) 765 kV D/C line at KPS1.

(2) The above scheme shall be implemented with an implementation timeframe of 24 months from date of SPV acquisition and matching with the implementation timeframe of the scheme “Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park”.

6. Modification in the mode of implementation of Transmission scheme from TBCB to RTM

6.1 MoP vide Gazette notification dated 23/09/2020 has notified the “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part D” to be implemented under TBCB route with RECPDCL as BPC. The mode of implementation needs to be changed from TBCB to RTM.

The scheme “Transmission scheme for evacuation of 4.5 GW RE injection at Khavda PS under Phase II- Part D” that was issued by MoP vide Gazette Notification dated 25.09.2020 needs to be Denotified.

Further, the aforesaid scheme needs to be allocated to CTUIL for implementation through RTM route by the respective asset owners i.e

- LILO of Pirana (PG) – Pirana (T) 400 kV D/c line at Ahmedabad S/s with twin HTLS conductor alongwith reconductoring of Pirana (PG) – Pirana (T) line with twin HTLS conductor (with OPGW for both main & LILO portion) and Bay upgradation work at Pirana (T) along with requisite FOTE - to be awarded to TPGL.
- Bay upgradation work at Pirana (PG) along with requisite FOTE - to be awarded to Powergrid.

7. Requirement of additional space (Future provision) for ICTs/bays at planned RE pooling stations

7.1 Following provision for space (future provision) for ICTs/bays at RE pooling station planned in Rajasthan Phase-III scheme (20 GW) were agreed:

Sl. No	Substation	Element	Approved (as part of Ph-III)		Additional space provisions with Ph-IV (75 GW) (Future Scope)	Remarks
			Main Scope	Future Scope		
1	Ramgarh	765/400 kV	2	3	2	Total 7 Nos. ICTs required considering

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	PS	ICTs				evacuation of 7.9 GW RE potential (Ph-III : 2.9 GW, Ph-IV : 5GW) under “N-1” Scenario
		400/220 kV ICTs	2	6	2	2 Nos. additional ICTs may be required considering 4.5 GW injection at 220 kV level
		220 kV line Bays	4	8	3	4.5 GW injection considered at 220 kV level (300 MW x15 Nos. of bays)
2	Bhadla-3	765 kV line Bays	4 • Ramgarh -Bhadla-3 D/c – 2 Nos • Bhadla-3- Sikar-II D/c -2 Nos	2 (with Switchable line reactor)	2 (with Switchable line reactor)	4 Nos. of bays may be required as part of Ph-IV (75 GW) REZ scheme (for Ramgarh and Hanumangarh)
		400 kV line Bays	8 • Bhadla-3-Fatehgarh-2 D/c - 2 Nos • Bhadla-3-Fatehgarh-3 D/c - 2Nos. • Bhadla-3-Bhadla (HVDC) 2xD/c – 4 Nos.	4+2 (with Switchable line reactor)	2 (with Switchable line reactor)	4 Nos. of bays may be required as part of Ph-IV (75 GW) REZ scheme (for Bhadla-IV and Bikaner-III). Balance 4 Nos. of bays may be utilized for RE connectivity.
3	Beawar	765 kV line Bays	10 • Fatehgarh-III-Beawar 2x D/c – 4 Nos. • LILO of Ajmer-Chittorgarh D/c at Beawar – 4Nos.] • Beawar – Dausa D/c – 2 Nos.	2 (with Switchable line reactor)	2 (with Switchable line reactor)	4 Nos. of bays may be required as part of Ph-IV (75GW) REZ scheme (for Neemuch and Chittorgarh)

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7.2 Following provision for space (future provision) for ICTs/bays at RE pooling station planned in Kurnool, Anantapur & Bidar REZs were agreed:

7.2.1 Transmission System for Kurnool Wind Energy Zone (3000 MW) / Solar Energy Zone (AP) (1500 MW): Part-A & Part-B

• **Part-A**

Sl. No.	Scope of the Transmission Scheme	Capacity/km
1	<p>i. Establishment of 765/400 kV 3x1500 MVA, 400/220 kV 9x500 MVA Pooling Station at suitable location in Kurnool Distt (Kurnool-III) with 1x330 MVA (765 kV) & 1x125 MVA (400 kV) bus reactors</p> <p>ii. 220 kV line bays for interconnection of wind projects (15 Nos.)</p> <p>Space for:</p> <p>i. 765/400 kV ICTs along with bays: 2 Nos.</p> <p>ii. 400/220 kV ICTs along with bays: 4 Nos.</p> <p>iii. 765 kV line bays with SLR: 6 Nos.</p> <p>iv. 400 kV line bays with SLR: 4 Nos.</p> <p>v. 220 kV line bays: 7 Nos.</p> <p>Additional Space for:</p> <p>i. 765/400 kV ICTs along with bays: 2 Nos.</p> <p>ii. 400/220 kV ICTs along with bays: 7 Nos.</p> <p>iii. 765 kV line bays with SLR: 2 Nos.</p> <p>iv. 400 kV line bays with SLR: 4 Nos.</p> <p>v. 400 kV line bays: 2Nos.</p> <p>vi. 220 kV line bays: 4 Nos.</p> <p>vii. Space provision for 400 kV Bus Sectionalizer: 1 set</p> <p>viii. Space for additional 220 kV future Bus Sectionalizer: 3 sets</p> <p>ix. Space for additional future 220 kV TBC bay : 3 Nos.</p> <p>x. Space for additional future 220 kV BC bay : 3 Nos.</p>	<p>765/400 kV, 1500 MVA ICTs – 3 Nos. (10x500 MVA incl. 1 spare unit)</p> <p>400/220 kV, 500 MVA ICTs -9 Nos.</p> <p>765 kV line bay-2</p> <p>765 kV ICT bay-3</p> <p>400 kV ICT bay-12</p> <p>220 kV ICT bay-9</p> <p>330 MVA BR-1 (4x110 MVAR, 765 kV, including 1 spare unit)</p> <p>125 MVA BR-1</p> <p>765 kV reactor bay -1</p> <p>400 kV reactor bay -1</p> <p>220 kV line bays-15</p> <p>220 kV Bus Sectionalizer – 2 sets</p> <p>220 kV TBC bay – 3 Nos.</p> <p>220 kV BC bay – 3 Nos.</p>
2	Kurnool-III PS – Kurnool (New) 765 kV D/c Line	100 km (approx.)
	765 kV line bays at Kurnool (New) – 2 Nos.	765 kV line bays-2

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Sl. No.	Scope of the Transmission Scheme	Capacity/km
3		
Note: PGCIL to provide space for 2 Nos. of 765 kV bays at Kurnool (new)		

• **Part-B (same as original)**

Sl. No.	Scope of the Transmission Scheme	Capacity / km
1.	Kurnool- III PS – Maheshwaram (PG) 765 kV D/c line	250 km
2.	765 kV lines bays at Kurnool-III (2 Nos) and Maheshwaram (PG) (2 Nos)	765 kV line bays-4
3.	240 MVAR switchable line reactors at both ends of Kurnool –III PS – Maheshwaram (PG) 765 kV D/c line along with bays	240 MVAR Switchable line reactor - 4 (13 x 80 MVAR including 1 spare unit) Switching equipment for 420 kV 80 MVAR switchable line reactor –4
Note: (i) PGCIL to provide space for 2 Nos. of 765 kV bays at Maheshwaram(PG) S/s (ii) PGCIL to provide space at Maheshwaram (PG) for 765 kV Switchable line reactors at Maheshwaram end of Kurnool-III PS-Maheshwaram (PG) 765 kV D/c line.		

After deliberations, the additional space (Future provision) for ICTs/bays (shown in **bold**) were agreed.

7.2.2 Transmission scheme for Solar Energy Zone in Ananthapuram (Ananthapur) (2500 MW) and Kurnool (1000 MW), Andhra Pradesh.

Sl. No.	Scope of the Transmission Scheme	Capacity/km
1.	Establishment of 400/220 kV, 7x500 MVA pooling station at suitable border location between Ananthapuram & Kurnool Distt with 400 kV (2x125 MVAR) bus reactor Space for Future Provision A. 400 kV i. Space for future line bays along with switchable line reactor: 6 Nos. ii. Space for future 400/220 kV ICT along with associated bay: 1 Nos. iii. Space for additional future line bay along	400/220 kV, 500 MVA ICT-7 400 kV ICT bays – 7 220 kV ICT bays – 7 400 kV line bays – 4 125 MVAR, 420 kV Bus reactor – 2 420 kV Bus reactor bays – 2 220 kV line bays – 12

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	<p>with switchable line reactor: 6 Nos.</p> <p>iv. Space for additional future 400/220 kV ICT along with associated 400 kV bay: 3 Nos.</p> <p>B. 220 kV</p> <p>i. Space for future 400/220 kV ICT bay: 1 Nos.</p> <p>ii. Space for future line bay: 4 Nos.</p> <p>iii. Space for additional future ICT bay: 3 Nos.</p> <p>iv. Space for additional future line bay: 4 Nos.</p> <p>v. Space for additional future 220 kV Bus Sectionalizer: 1 set</p> <p>vi. Space for additional future 220 kV TBC bay : 1 No.</p> <p>vii. Space for additional future 220 kV BC bay : 1 No.</p>	<p>220 kV Bus sectionalizer – 2 sets</p> <p>220 kV Bus coupler bays – 3</p> <p>220 kV Transfer Bus Coupler bays - 3</p>
2.	Ananthpuram PS-Kurnool-III PS 400 kV (Quad Moose) D/c Line	Length – 100 km (approx.)
3.	400 kV line bays at Kurnool-III PS for Ananthpuram PS-Kurnool-III PS 400 kV D/c line	400 kV line bays – 2
4.	Ananthpuram PS-Cuddapah 400 kV (Quad Moose) D/c Line	Length – 150 km (approx.)
5.	400 kV line bays at Cuddapah PS for Ananthpuram PS-Cuddapah 400 kV D/c line	400 kV Line bays – 2
6.	80 MVAR, 420 kV switchable line reactor for Ananthpuram PS-Cuddapah 400 kV D/c line	<p>80 MVAR, 420 kV Line reactor – 2</p> <p>Switching equipment for 420 kV 80 MVAR switchable line reactor –2</p>

Note:

- (i) Developer of Kurnool-III PS shall provide space for 2 No. of 400 kV line bays at Kurnool-III PS for termination of Ananthpuram PS-Kurnool-III PS 400 kV (Quad Moose) D/c Line.
- (ii) Powergrid shall provide space for 2 No. of 400 kV line bays at Cuddapah PS for termination of Ananthpuram PS-Cuddapah 400 kV (Quad Moose) D/c Line.

After deliberations, the additional space (Future provision) for ICTs/bays (shown in **bold**) were agreed.

7.2.3 Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka.

Sl. No.	Scope of the Transmission Scheme	Capacity/km
1.	<p>Establishment of 765/400 kV 3x1500 MVA, 400/220 kV 5x500 MVA pooling station at suitable border location near Bidar with 765 kV (1x240 MVAR) and 400 kV (1x125 MVAR) Bus Reactor</p> <p><u>765 kV Future Provision</u></p> <p>i) Space for future 765/400 kV ICT along with associated bay: 1 No.</p> <p>ii) Space for future 765 kV Bus Reactor along with associated bay: 1 No.</p> <p>iii) Space for additional future line bays with SLR: 8 Nos.</p> <p>iv) Space for additional future 765/400 kV ICT along with associated bay: 2 Nos.</p> <p><u>400 kV Future Provision</u></p> <p>i) Space for future line bay: 8 Nos.</p> <p>ii) Space for future 765/400 kV ICT bay: 1 No.</p> <p>iii) Space for future 400/220 kV ICT along with associated bay: 2 Nos.</p> <p>iv) Space for additional future line bay with SLR: 2 Nos.</p> <p>v) Space for additional future 765/400 kV ICT bay: 2 Nos.</p> <p>vi) Space for additional future 400/220 kV ICT along with associated bay: 4 Nos.</p> <p><u>220 kV Future Provision</u></p> <p>i) Space for future 400/220 kV ICT bays: 2 Nos.</p> <p>ii) Space for future line bays: 4 Nos.</p> <p>iii) Space for additional future 400/220 kV ICT bays: 4 Nos.</p> <p>iv) Space for additional future line bay: 6 Nos.</p> <p>v) Space for additional future 220 kV Bus Sectionalizer: 2 sets</p> <p>vi) Space for additional future 220 kV TBC bay: 2 Nos.</p> <p>vii) Space for additional future 220 kV BC bay: 2 Nos.</p>	<p>765/400 kV, 1500 MVA, ICTs – 3 Nos. (10x500 MVA including 1 spare unit)</p> <p>500 MVA, 400/220 kV ICT – 5 Nos.</p> <p>765 kV ICT bays – 3 Nos.</p> <p>400 kV ICT bays – 8 Nos.</p> <p>220 kV ICT bays – 5 Nos.</p> <p>765 kV line bays – 2 Nos.</p> <p>220 kV line bays – 8 Nos.</p> <p>765 kV, 240 MVAR Bus reactor – 1 Nos. (3x80 MVAR)</p> <p>765 kV Bus reactor bays - 1</p> <p>125 MVAR, 420 kV Bus reactor – 1</p> <p>420 kV Bus reactor bay – 1</p> <p>220 kV Bus sectionalizer– 1set.</p> <p>220 kV Bus coupler bays – 2 Nos.</p> <p>220 kV Transfer Bus Coupler bays – 2 Nos.</p>

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2.	Bidar PS – Maheshwaram (PG) 765 kV D/C line	Length – 160 km
3.	2 Nos. of 765 kV line bays at Maheshwaram (PG) GIS substation for termination of Bidar PS – Maheshwaram (PG) GIS 765 kV D/C line	765 kV line bays (GIS) - 2
4.	765 kV, 1x240 MVAR Switchable Line Reactor for each circuit at Bidar PS end of Bidar PS- Maheshwaram (PG) GIS 765 kV D/ C line	240 MVA _r , 765 kV reactor – 2 Nos. (7x80 MVA _r including 1 spare unit for both Bus Reactor & Line Reactor) Switching equipments for 765 kV reactor – 2

Note: POWERGRID to provide space for 2 No. of 765 kV line bays at Maheshwaram (PG) substation for termination of Bidar PS – Maheshwaram (PG) 765 kV D/c line.

After deliberations, the additional space (Future provision) for ICTs/bays (shown in **bold**) were agreed.

Annex-IList of participants of the 10th meeting of NCT**CEA:**

1. Sh. Ghanshyam Prasad, Chairperson, CEA & Chairman, NCT
2. Sh. Ajay Talegaonkar, Member (E&C)
3. Sh. Ishan Sharan, Chief Engineer (PSPA-I)
4. Sh. B.S. Bairwa, Director (PSPA-II)
5. Smt. Manjari Chaturvedi, Director (PSPA-I)
6. Sh. J. Ganeswara Rao, Deputy Director (PSPA-I)
7. Ms. Priyam Srivastava, Deputy Director (PSPA-I)
8. Sh. Vikas Sachan, Deputy Director (PSPA-I)
9. Sh. Suyash Ayush Verma, Deputy Director (PSPA-II)
10. Sh. Deepanshu Rastogi, Deputy Director (PSPA-II)
11. Sh. Nitin Deswal, Assistant Director (PSPA-I)
12. Ms. Komal Dupare, Assistant Director (PSPA-I)
13. Sh. Prateek Jadaun, Assistant Director (PSPA-II)

MoP:

1. Sh. Goutam Ghosh, Director (Trans.)

MNRE:

1. Sh. Dilip Nigam, Adviser
2. Sh. Rohit Thakwani, Sc.C
3. Sh. Tarun Singh,

Expert Member:

1. Dr. R. Saha

SECI

1. Sh. S.K. Mishra, Director

NITI Aayog:

1. Sh. Manoj Kumar Upadhyay, Deputy Adviser

CTUIL:

1. Sh. P.C. Garg, COO
2. Sh. Ashok Pal, Deputy COO
3. Sh. Jasbir Singh, CGM
4. Sh. P.S. Das, Sr.GM
5. Sh. Kashish Bhambhani, GM
6. Sh. Anil Kumar Meena, Sr. DGM
7. Sh. Venkatesh, CM
8. Sh. Sandeep Kumawat, CM

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9. Ms. Himanshi, Manager

POSOCO:

1. Sh. S.R. Narasimhan, CMD
2. Sh. Surajit Banerjee, CGM
3. Sh. Vivek Pandey, GM
4. Sh. Priyam Jain, Manager
5. Sh. Rahul Shukla, Manager
6. Sh. Aman Gautam, Manager
7. Sh. Prabhankar Porwal, Dy Manager
8. Sh. Gaurab Dash, Assistant Manager

Annex-II

Amendment to the minutes of 9th meeting of NCT

1. Para 4.3.3 is modified as:

“4.3.3 CTUIL clarified that in this particular instance, ampacity of 1228 A (using HTLS) can be achieved for existing line implemented with maximum conductor temperature of 75°C and ampacity of 1400 A (using HTLS) can be achieved for existing line implemented with maximum conductor temperature of 85°C. As all four circuits are of similar line length, loading on these circuits shall be in similar range and would be limited to 1228 A. Accordingly, all four circuits are planned to be reconducted with HTLS of 1228 A.”

2. Para 4.3.5 (a) is modified as:

“4.3.5 (a)Reconductoring of Jharsuguda/Sundargarh (PG) – Rourkela (PG) 400 kV 2xD/c Twin Moose line (approx. 540 ckm) with Twin HTLS conductor (with ampacity of single HTLS as 1228 A at nominal voltage)”

3. Para 4.4.3 is modified as:

“4.4.3 CMD, POSOCO, stated that even after augmentation of ICTs at Kallam by 2x500 MVA, 400/220 kV ICTs, Kallam substation will not fulfill ‘N-1’ criteria. Further connectivity/LTA at Kallam PS may be granted only after approval of additional ICT (required for N-1 compliance) and operationalized after commissioning of the same.”

4. The following bullet is added to Sl.No.1 of table of Para 4.5.4 (Part A) Future Provisions: space for:

- “220 kV BC (2 No.) and 220 kV TBC (2 No.)”

5. Para 5.1.2 is modified as:

“5.1.2 CTU stated that the Stage-II Connectivity and LTA for 2600 MW has already been granted at Ramgarh PS. Further, Adani Renewable Energy Park Rajasthan Ltd. (AREPRL) are in process of developing 2 GW Solar Park proposed to be connected at Ramgarh PS and they have requested to enhance the transmission system capacity of Ramgarh PS by minimum 5 GW. EHVAC transmission system (Rajasthan REZ Phase-III transmission scheme) for 14 GW RE potential is already under bidding. Implementation of HVDC system shall facilitate evacuation of additional 6 GW RE potential as well as help in evacuation of additional power from Ramgarh PS.”

6. After para 5.1.4, following para is added:

“CMD, POSOCO stated that all HVDCs to be conceived in future should have ability to operate at full capacity in either direction. At Bhadla-III end of the proposed Bhadla-III - Fatehpur HVDC, system strength will be shared by both HVDC as well as RE plants connected at the station.

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7. Following Note is added at the end of para 5.1.5:

Note:

1. Developer of Bhadla-III S/s to provide space for 4 Nos. of 400 kV bays at their substation
2. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

8. Para 5.3.3 is modified as:

Scope of works: North Eastern Region Expansion Scheme-XVI (NERES-XVI)

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / line length (km)/ Nos.
i.	<p>Establishment of Gogamukh 400/220/132kV substation</p> <p>Additional space for future expansion:</p> <ul style="list-style-type: none"> - 400/220kV, 1x500MVA ICT - 1 No. (along with associated bays at both levels) - 220/132kV, 1x200MVA ICT - 1 No. (along with associated bays at both levels) - 420kV, 1x125MVA bus reactor along with associated bays - 12 Nos. of 400kV line bays for future lines <ul style="list-style-type: none"> • 4 Nos. of 400kV line bays for termination of Dibang – Gogamukh 2xD/c lines • 2 Nos. of 400kV line bays (along with 2x80MVA switchable line reactor) for termination of Gogamukh – Biswanath Chariali 400kV D/c (Quad) line 	<p>500MVA, 400/220kV ICT: 2 Nos.</p> <p>200MVA, 220/132kV ICT: 2 Nos.</p> <p>420kV, 125MVA Bus reactor: 2 Nos.</p> <p>400kV ICT bays: 2 Nos.</p> <p>220kV ICT bays: 4 Nos.</p> <p>132kV ICT bays: 2 Nos.</p> <p>400kV Bus reactor bays: 2 Nos.</p> <p>220kV Bus coupler bay: 1 No.</p> <p>220kV Transfer bus coupler bay: 1 No.</p> <p>132kV Transfer bus coupler bay: 1 No.</p> <p>400kV line bays: 4 Nos.</p> <p><i>[for termination of LILO of one D/c line (ckt-1 & ckt-2 of line-1) of Lower Subansiri - Biswanath</i></p>

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Sl. No.	Scope of the Transmission Scheme	Capacity (MVA) / line length (km)/ Nos.
	<ul style="list-style-type: none"> • 6 Nos. of 400kV line bays (along with switchable line reactor) for future lines - 6 Nos. of 220kV line bays for future lines - 6 Nos. of 132kV line bays for future lines - 220 kV Bus sectionalizer :1 set - 220 kV Bus coupler bay: 1 No. - 220 kV Transfer bus coupler bay:1 No. - 132 kV Bus sectionalizer :1 set - 132 kV Transfer bus coupler bay:1 No. 	<p><i>Chariali 400kV (Twin Lapwing) 2xD/c lines]</i></p> <p>220kV line bays: 2 Nos.</p> <p><i>[for termination of Bihpuria – Gogamukh 220kV D/c line (line to be implemented by AEGCL)]</i></p> <p>132kV line bays: 4 Nos.</p> <p><i>[2 No. for termination of LILO of one circuit of North Lakhimpur – Dhemaji 132kV new D/c line (LILO to be implemented by AEGCL) & 2 No. for termination of Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line]</i></p>
ii.	Extension works at Gerukamukh (Arunachal Pradesh) 132kV S/s	132kV line bays: 2 Nos. (for termination of Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line)
iii.	Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c (Zebra) line	20 km
iv.	LILO of one D/c (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400kV (Twin Lapwing) 2xD/c lines at Gogamukh S/s	20 km

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Note:

- a) Lower Subansiri – Biswanath Chariali 400kV (Twin Lapwing) D/c line is under implementation by POWERGRID and is expected to be commissioned shortly.
- b) DoP, Arunachal Pradesh to provide space at Gerukamukh (Arunachal Pradesh) S/s for implementation of 2 No. 132kV line bays.
- c) Bihpuria (AEGCL) – Gogamukh (ISTS) 220kV D/C line is to be implemented by AEGCL.
- d) LILO of one circuit of North Lakhimpur (AEGCL) – Dhemaji (AEGCL) 132kV new D/C line is to be implemented by AEGCL.
- e) The line lengths mentioned above are approximate, as the exact length shall be obtained after detailed survey.

9. In the table under Para 5.6.1 (Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW)) sub-point (iii) in column ‘Scope of the Transmission Scheme (Revised)’ is replaced with following:

‘(iii) 5 Nos. 220 kV line bays for solar park interconnection’

10. First bullet under Western Region of Para 6.2 is replaced with following:

‘Supply and installation of OPGW on 400 kV Bachau (PG)- EPGL line (to be LILOed at Lakadia)’

11. The following is added in SI No. 5 of Table 4.2 under the heading Summary of the deliberations of the 09th NCT meeting held on 28.09.2022:

- LILO of both circuits of 765kV Varanasi-Kanpur (GIS) D/c line at Fathepur (~30km).