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

सेवा में / To

-As per enclosed list-

विषय: "ट्रांसमिशन पर राष्ट्रीय समिति " (एनसीटी) की 8th बैठक की कार्यसूची |

Subject: Minutes of the 8th Meeting of "National Committee on Transmission (NCT)"

महोदया/ महोदय/Sir/Madam,

The 8th meeting of the "National Committee on Transmission" (NCT) was held on 25.03.2022 under the chairmanship of Chairperson, CEA& Chairman, NCT, through Video Conferencing (Microsoft Teams).The Minutes of the meeting are enclosed herewith.

भवदीय,

रवीन्द्र गुप्ता 5/3/22

(रविंद्र गुप्ता /Ravinder Gupta)
मुख्य अभियन्ता/Chief Engineer & Convener (NCT)

Copy to:

(i) Joint Secretary (Trans), Ministry of Power, Shram Shakti Bhawan, New Delhi-110001.

List of addressees:

1.	Chairperson, Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	2.	Member (Power System), 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	10.	Shri Sushanta Kumar Ray Mohapatra, Ex. Chief Engineer, Central Electricity Authority

Minutes of the 8th meeting of National Committee on Transmission

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

Chairman (NCT) & Chairperson, CEA welcomed the participants and stated that as per MoP OM dated 28.10.2021, the ISTS Schemes costing between Rs 100 Cr – 500 Cr needs to be approved by NCT while the schemes costing more than Rs 500 Cr needs to be recommended to MoP for approval. He requested Chief Engineer (PSPA-I), CEA, to present the Agenda.

1. Confirmation of the minutes of the 7th meeting of National Committee on Transmission.

1.1. The minutes of the 7th meeting of NCT held on 03/12/2021 were issued vide CEA letter no CEA-PS-11-15(11)/1/20-PSPA- I-Part (1)/19355/2021 dated 28/12/2021.

1.2. The following typographical errors have been observed in the minutes of the meeting:

(i) S.no 2, column no 2 of table under Para 1.1.0 at Page no. 7: The implementation timeframe of the transmission scheme "Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B" is mentioned as July 2022. The same may be read as June 2023.

(ii) S.no 1, column no 2 of table under Para 1.6 at Page no. 11: The name of the scheme got inadvertently mentioned as "Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Phase-II: Part B". The same may be read as "Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Part A-Phase-II"

1.3. In addition CTU had suggested modifications in the minutes of the 7th NCT meeting as given below:

(i) Modifications in the detailed scope of the scheme"Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B" included in Annexure-IV (table under item no.2, S.no 1, column no 2). CTU has suggested for provision of space for 765 kV/400 kV line bays along with space for switchable line reactor instead of provision of space for 765 kV/400 kV line bays as recorded in the minutes of the 7th NCT meeting.

(ii) Modifications of the capacity of 400 kV D/c Khandukhal (Srinagar) - Rampura (Kashipur) line (Twin HTLS) from minimum capacity of 2500 MVA on each circuit at nominal voltage to minimum capacity of 2100 MVA on each circuit at nominal voltage. Line capacity of 2500 MVA would necessitate 4000 Amp switchgear rating for bay equipment. The committee (comprising members from CEA, CTUIL and PTCUL to assess the feasibility of installation of 4000 Amp or 3150 Amp switchgears in the proposed line bays of Srinagar- Kashipur 400kV D/C line) has proposed installation of 3150A switchgears in the yard of Kashipur. Kashipur substation is at high altitude with 400 kV DMT scheme with optimized layout in different levels in the hills. Considering larger equipment size for 4000 Amp rating (commensurate for 2500 MVA line capacity) as compared to the equipment size for 3150 Amp rating (commensurate for 2100 MVA line capacity), live

metal clearances and ground clearances would not be available at both Srinagar & Kashipur substations within the space available. Further, 400kV, 4000A equipment are in general not readily available in the Indian market which may lead to delay in procurements as well. Considering all these aspects, line capacity of 2100 MVA is recommended commensurate to 3150 Amp switchgear rating.

1.4. The Transmission scheme for evacuation of 1500 MW from Gadag SEZ Part A Phase-II was approved in the 7th NCT meeting excluding the augmentation of 400/220 kV, 3x500 MVA ICT (along with associated bays) and 4 nos. of 220 kV line bays. CTUIL vide its letter dated 23.12.2021 has requested that augmentation of balance 400/220 kV, 3x500 MVA ICT (along with associated bays) and 4 nos. of 220 kV line bays for facilitating connectivity to RE developers may be taken up for deliberations/recommendations/approval in the upcoming NCT. Instead of treating the proposal of CTU as separate scheme, it could be included in the already approved scheme by issuing corrigendum to the Minutes of the 7th NCT meeting. Detailed deliberation at item no.7.

1.5. CTU stated that the implementation timeframe of "400 kV Khandukhal (Srinagar) - Rampura (Kashipur) D/c line" is mentioned as in matching time frame of commissioning of Vishnugad Pipalkoti HEP (Dec'23) of THDC or Tapovan Vishnugad HEP of NTPC, whichever is earlier. However, as per the ongoing progress, the timeframe of Vishnugad Pipalkoti HEP is October'2024 while that of Tapovan Vishnugad is September'2024. Accordingly, the same may be updated in the minutes of the 7th NCT meeting. Also, as the scheme is under bidding by M/s PFCCL, the latest commissioning schedule needs to be intimated to BPC for incorporation in the bidding documents.

1.6. CEA stated that "400 kV Khandukhal (Srinagar) - Rampura (Kashipur) D/c line" has been notified by MoP vide Gazette Notification dated 19.02.2022 with M/s PFFCL as BPC. The implementation timeframe notified in the Gazette does not explicitly mentions December'23. Also, only the broad scope of works have been notified and it is mentioned to refer to the minutes of 7th NCT for detailed scope of works. Accordingly, no change is envisaged in the MoP's Gazette Notification for the scheme.

1.7. Expert Member, Shri R Saha, enquired that whether the decision to reduce the transmission line rating from 2500 MVA/ckt to 2100 MVA/ckt is leading to compromise of the power evacuation capacity envisaged from the scheme. He also enquired about the type of conductor being used for the above line. CTUIL clarified that the decision to reduce the rating to 2100 MVA/ckt is on account of the fact that with the space available at substation, installation of bay equipments with 3150 Amp current carrying capacity would only be feasible. CTUIL further informed that the HTLS conductors are being used for the line because of availability of limited corridor to implement the line with quad conductor.

1.8. Expert Member, Shri S K Ray Mohapatra clarified that available system rating in India for AIS is limited to 3150 Amp for 400 kV Voltage class. For GIS only, 4000 Amp rating for 400 kV class is available.

1.9. After deliberations , the minutes of the 7th NCT meeting was confirmed by the NCT with following corrigendum

(i) Modified para 3.4 at page no. 19 of minutes of meeting of the 7th NCT

3.4 NCT recommended the following:

400 kV Khandukhal(Srinagar)-Rampura (Kashipur) D/c line

Name of the scheme/est. cost/schedule	**Mode of implementation**	**Purpose /Justification**
400 kV Khandukhal(Srinagar)-Rampura (Kashipur) D/c line **Estimated Cost**: Rs 800 Crores **Implementation Timeframe**: Matching time frame of commissioning of Vishnugad Pipalkoti HEP (Oct'24) of THDC or Tapovan Vishnugad HEP (Sep'24) of NTPC, whichever is earlier.	TBCB	To evacuate power from upcoming hydro-electric projects in the Alaknanda river basin

The detailed scope of works in the scheme is as given below:

Sl. No.	**Scope of the Transmission Scheme**	**Capacity /km**
1	400 kV D/c Khandukhal(Srinagar) - Rampura (Kashipur) line (Twin HTLS*)	Length – 195 km
2	1x80MVAr switchable line reactor at Rampura (Kashipur) end on each circuit of Khandukhal(Srinagar) - Rampura (Kashipur) line	Switching equipment for 420 kV 80 MVAR switchable line reactor –2 420 kV, 80 MVAr Switchable line reactor- 2
3	1 no. of 400 kV line bay at Rampura (Kashipur) S/s	400 kV line bay -1
4	Upgradation of existing 400kV bays at Khandukhal (Srinagar)	Upgradation works for 400 kV line bays -2
5	Upgradation of existing 1 no. of 400 kV diameter comprising line bay (Srinagar) and ICT bay alongwith associated Tie bay at Rampura (Kashipur)	Upgradation works for 400 kV line bay – 1 Upgradation works for 400 kV ICT bay – 1 Upgradation of Tie bay -1

**with minimum capacity of 2100 MVA on each circuit at nominal voltage*

Note:

(i) ***Implementation Timeframe****: The timeline to be considered as matching timeframe of commissioning of VishnugadPipalkoti HEP (October'24) of THDC or TapovanVishnugad HEP (September'24) of NTPC, whichever is earlier.*

(ii) *The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey*

(iii) *PTCUL to provide space for 1 nos. of 400kV bay at Rampura (Kashipur) along with the space for switchable line reactors.*

(ii) Modified Scope of works for the scheme"Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B" included in Annexure-IV of minute of meeting of the 7th NCT

Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B

Sl.No.	***Scope of the Transmission Scheme***	***Capacity /km***
	1.Establishment of 765/400/220 kV Navsari (new) (South Gujarat) S/s (GIS) Space provisions for Future Scope 765/400 kV ICT: 4 nos. 400/220 kV ICT: 4 nos. 765 kV line bays along **with space for switchable line reactor:** 8 nos. 400 kV line bays **along with space for switchable line reactor**: 6 nos. 220 kV line bays: 16 nos.	765/400 kV, 1500 MVA- 2 nos. (7 X 500 MVA inc 1 spare unit) 400/220 kV, 500 MVA- 3 nos. 765 kV ICT bays- 2 nos. 765 kV GIS line bays -2 (for Phadge line) 400 kV ICT bays- 5 nos. 400 kV line bays – 4 nos. (for Kala and Magarwada lines) 220 kV ICT bays- 3 nos. 765 kV, 330 MVAr BR – 2 nos. (7 X 110 MVArinc. 1 switchable spare unit) 1X 80 MVAr single phase switchable spare unit (for Ahmedabad – Navsari (New) (South Gujarat) 765 kV D/c line) 765 kV Bus Reactor bays – 2 nos. 400 kV, 125 MVAr Bus Reactor- 1 400 kV Bus Reactor bay- 1 no.
2.	Navsari (new) (South Gujarat) (GIS)-Kala (GIS) 400 kV D/c line (conductor with minimum capacity of 2100 MVA/ Ckt at nominal voltage) with 63MVAr switchable line reactor on each ckt at Navsari(new) (GIS) end.	110 km 400 kV GIS line bays- 2 nos. (at Kala) 63 MVAr, 400 kV SLR along with switching eqpts.- 2 nos.

3.	Navsari(New) (South Gujarat) (GIS) – Magarwada (GIS) 400 kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage)	80 km 400 kV GIS line bays- 2 nos. (at Magarwada)
4.	Navsari(New) (South Gujarat) (GIS) – Padghe (GIS) 765 kV D/c line with 330 MVAr, 765 kV Switchable line reactor on each ckt at Navsari(New) (South Gujarat) end.	200 km 765 kV GIS line bays -2 (at Padghe) 765 kV, 330 MVAr SLR – 2 nos (6 X 110 MVAr)
5.	Augmentation of transformation capacity at Padghe (GIS) 765/400 kV substation by 1x1500 MVA ICT. The available spare equipped bays (765kV bay: existing & 400kV bay: under construction under WRSS XIX scheme) at Padghe(GIS) S/s shall be utilised for the subject ICT	765/400 kV, 1500 MVA- 1 no

Note:

(i) Navsari (New) (South Gujarat) S/s shall be establishment as GIS substation to reduce the land requirement as there may be issues in getting contiguous land in this area which is industrial in nature as well as densely populated.

(ii) Augmentation of transformation capacity at Navsari(new) (GIS) 765/400 kV substation by 1x1500 MVA ICT (3rd) along with its associated bays to be implemented in matching time frame of Khavda Phase-A (Ph-II) (5GW) scheme as a part of the scheme "Transmission Network Expansion in Gujarat associated with integration of RE projects from Khavda potential RE zone".

(iii) As Kala and Magarwada are located close to each other, majority of common stretch of Navsari(new) – Kala and Navsari(new) – Magarwada 400 kV D/c line may be constructed using Multi-circuit towers in order to save RoW.

(iv) **Implementation Time-frame:** June 2023

(v) GETCO shall implement the following downstream system in matching time-frame of Navsari (New) (South Gujarat) S/s:

220kV Interconnections Navsari (New) (South Gujarat) S/s) [Under Intra-state]

a) LILO of both circuits of 220 KV D/C Navsari – Chikhli line at Navsari(New) (South Gujarat) (GIS) substation along with associated line bays

b) LILO of both circuits of 220 KV D/C Navsari – Nasik line at Navsari(New) (South Gujarat) (GIS) substation along with associated line bays

(iii) Modified para 1.6 at page no. 10 of minutes of meeting of the 7th NCT.

1.6 After deliberations, NCT approved the Transmission scheme for evacuation of 1500 MW from Gadag SEZ Part A Phase-II as given below:

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Phase-II: Part B Est Cost: Rs 310 Cr **Implementation Timeframe**: 18 months from SPV acquisition date.	Since the cost of the scheme is lies between Rs 100 to 500 Crore, NCT has to approve the scheme. Accordingly, NCT approved the scheme for implementation through TBCB mode.	Evacuation of RE power to be pooled at Gadag P.S.

Detailed scope of the scheme is given below:

Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Part A-Phase-II

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	400/220 kV, 3x500 MVA ICT Augmentation at Gadag Pooling Station	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 220 kV ICT bays – 3 220 kV line bays – 4
2.	Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/c line	Length – 60
3.	2 nos. of 400 kV line bays at each end of Gadag PS-Koppal PS 400 kV D/c line	Line bays – 4

Note:

(i) *Developer of Koppal PS to provide space for 2 no. of 400 kV line bays at Koppal PS for termination of Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/C Line.*

(ii) *Developer of Gadag-Ph I PS to provide space for 2 no. of 400 kV line bays at Gadag PS for termination of Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/C Line and space for ICT augmentation at Gadag pooling station*

Implementation Timeframe: 18 months from SPV acquisition date.

2. Status of the transmission schemes noted/approved/recommended to MoP in the previous meetings of NCT:

2.1. The status of the transmission schemes noted/approved/recommended in the5th, 6th& 7thmeetings of NCT is tabulated below

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/Approved	Survey Agency	MoP approval	BPC	Remarks
	5th NCT					
1.	Transmission system for evacuation of power from Neemuch SEZ (1000 MW)	Recommended for implementation through TBCB route	CTUIL#	Approved & notified vide Gazette Notification dated 06.12.2021	RECPDCL	
2.	Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park		RECPDCL		RECPDCL	
3.	Establishment of Khavda Pooling Station-3 (KPS3) in Khavda RE Park		RECPDCL		RECPDCL	
4.	Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)		RECPDCL		RECPDCL	
5.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1		PFFCL		PFFCL	
6.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A3		PFFCL		PFFCL	
7.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part B1		PFFCL		PFFCL	
8.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part C1		RECPDCL		RECPDCL	
9.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part D		CTUIL#		RECPDCL	
10.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part F		RECPDCL		RECPDCL	
11.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part G		PFFCL		PFFCL	
12.	Transmission system for		CTUIL#		PFFCL	

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/Approved	Survey Agency	MoP approval	BPC	Remarks
	evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part H					
13.	Creation of 400/220 kV, 2x315 MVA S/S at Siot, Jammu & Kashmir		PFCCL		PFFCL	
14.	Implementation of 400 kV D/c Khandukhal (Srinagar)-Rampura (Kashipur) line to be taken up under central sector as an ISTS scheme		CTUIL#	Not sent for MoP approval		Scheme Reviewed based on inputs from CTU and revised scheme again recommender in 7th NCT
15.	Transmission system strengthening beyond Kolhapur for export of power from Solar & Wind Energy Zones in Southern Region- Re- conductoring of Kolhapur (PG) – Kolhapur 400 kV D/c line	Recommended for implementation through RTM	Not applicable	Approved and allotted to CTUIL vide OM dated 1.12.2021	Not applicable	
16.	Augmentation of 1x500 MVA, 400/220 kV ICT (3rd) at Bhatapara (PG)					
17.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part E1					
18.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part E2					
19.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part J					
20.	System Strengthening scheme for Reconductoring of portion of Dulhasti - Kishtwar- Kishenpur 400 kV (Quad) S/c					
21.	Grant of 400kV & 220kV bays to RE generators at Fatehgarh-III (erstwhile Ramgarh-II) PS under ISTS					
22.	1x500 MVA, 400/220 kV ICT augmentation 3rd at					

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/Approved	Survey Agency	MoP approval	BPC	Remarks
	Sohawal (PG) under system strengthening					
23.	One no of 220kV bay at Chamera Pooling point for 2nd Circuit stringing of 220 kV Karian – Chamera Pool line under implementation by HPPTCL					
23	220 kV bays at 400 kV substation PGCIL Khatkar (Jind)&Naggal (Panchkula) substation					
24	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part A2	Recommended for implementation through RTM	Not applicable	MoP vide letter dated 10.12.2021 has referred the scheme to NCT with a request to recommend the same at appropriate time.	Not applicable	
25	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part B2					
26	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part C2					
	6th NCT *					
1.	Augmentation of Transformation Capacity in Southern Region	Approved for implementation through RTM. Allotted to CTUIL	Not applicable	Not required	Not applicable	Scheme cost less than 500 cr.
2.	Transmission System Strengthening for 'Srinagar – Leh Transmission System'					
3.	Transmission system for evacuation of 10 GW RE power from renewable energy parks in Leh: Pang (Leh) to Kaithal (Haryana) transmission system- Part-1	Recommended to MoP. Mode of implementation not recommended		Not approved		Reviewed and updated scheme recommended by 7th NCT
4.	Transmission system for evacuation of power from Kaza Solar Power Project	Recommended to MoP.		Not sent for MoP approval.		CTUIL had informed that the pooling station at Kaza needs to be GIS in place of AIS. Scheme

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/Approved	Survey Agency	MoP approval	BPC	Remarks
						Reviewed and recommend in 8th NCT meeting.
5.	400 kV Khandukhal (Srinagar)-Rampura (Kashipur) D/c line	Recommended to MoP. NCT also recommended for joint visit for confirmation of space availability at Kashipur end		Not sent for MoP approval.		Scheme Reviewed based on joint visit and recommended in 7th NCT meeting
	7th NCT*					
6.	Transmission Network Expansion in Gujarat associated with integration of RE projects from Khavda potential RE zone	Recommended for implementation through TBCB route	RECPDCL	Approved and notified vide Gazette Notification dated 17.02.2022	RECPDCL	
7.	400 kV Khandukhal (Srinagar) - Rampura (Kashipur) D/c line		PFFCL		PFFCL	
8.	Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B	Recommended for implementation through RTM route.	Not applicable	MoP OM dated 13.01.2022	Not applicable	MoP in meeting dated 02.11.2020 had opined for implementation through RTM. NCT agreed to the same.
9.	Transmission system for evacuation of RE power from renewable energy parks in Leh(5 GW Leh - Kaithal transmission corridor)	Recommended. Mode to be decided by MoP				Prons and cons of implementation route RTM/TBCB elaborated by NCT
10.	Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part C	Approved for implementation through	Not applicable	Not required	Not applicable	

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/Approved	Survey Agency	MoP approval	BPC	Remarks
		RTM. Allotted to CTUIL				
11.	Transmission Schemes for Solar Energy Zone in Gadag (1500 MW), Karnataka: Part A-Phase-II:	Approved for implementation through TBCB. Notified in Gazette Notification dated 04.03.2022	RECPDCL	Not required	RECPDCL	

* As per the MoP order dated 28.10.2021, ISTS schemes costing between Rs. 100 Crore to Rs. 500 Crore are to be approved by NCT while ISTS schemes costing more than Rs. 500 Crore to be recommended by NCT to MoP for approval.
# The survey works were carried out by the respective BPCs instead of CTU.

2.2. **Change in scope of schemes already approved by MoP**: From the transmission schemes tabulated above, it can be seen that Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1 has been recommended by the NCT in its 5th meeting. The same was approved and notified by MoP vide Gazette Notification dated 06.12.2021 for implementation through TBCB route. The scope of works under this scheme (Part-A1) inter alia includes Establishment of 400/220 kV, 2x500 MVA Fatehgarh-4 PS and Fatehgarh-4 PS – Fatehgarh-3 PS 400kV D/c Twin HTLS line (50 km) along with space provision of future scope at Fathegrah-4 PS.

Further, Part A2 scheme includes augmentation of 3x500 MVA ICTs and 5 no. of 220 kV line bays at Fatehgarh-4 PS and has been recommended by 5th NCT for implementation under RTM route for evacuation of RE power beyond 1000 MW at Fatehgarh-4 PS. MoP vide its letter dated 10.12.2021 has referred the scheme to NCT with a request to recommend the same at appropriate time.

2.2.1. Based on the SECI input on potential REZ in Rajasthan, Fatehgarh-4 PS was planned for 2.1 GW of RE Potential. Against which, CTU has already granted/agreed for grant of 2040 MW of Stage-II connectivity at Fatehgarh-4 PS and LTA for 510 MW. Further MNRE/SECI has recently indicated 75 GW potential in Rajasthan mainly in the areas of Barmer, Jaisalmer, Jodhpur, Jalore, Sirohi, Ajmer, Nagaur, Pali districts as part of Government of India's target of 500 GW non-fossil installed capacity by 2030.

In view of the envisaged RE potential in the areas of Barmer/Jaisalmer district, the following proposal has been received from CTUIL vide its email dated 15.02.2022:

(i) Inclusion of the space provision to upgrade Fatehgarh-4 PS to 765 kV in the future scope of works of "Transmission system for evacuation of power from REZ in Rajasthan

(20GW) under Phase- III Part A1" which is presently under bidding stage so that additional 6 GW RE capacity can be pooled.

(ii) Considering the quantum of applications received at Fatehgarh-4 PS (Stage-II: 2040 MW, LTA 510 MW), it is recommended to merge Part A1 and Part A2 as a single package for timely implementation of the transmission system.

2.2.2. Chairman, NCT enquired about implication on implementation timeframe of the already notified A1 scheme in which change in scope has been proposed by CTU.

CTU stated that the implementation timeframe of the scheme gets fixed once the SPV acquisition takes place. Since the scheme is presently under bidding process, the implementation timeframe would undergo no change and would remain same i.e 18 months from the date of SPV acquisition.

2.2.3. Chairman, NCT enquired about the availability of RE generations commensurate with the increased transformation capacity. CTU stated that 2.04 GW Stage-II Connectivity applications have already been granted/agreed for grant at Fatehgarh-4 P.S. Although, LTA quantum available, as of now, is 510 MW only; however, waiting for LTA from the Stage-II grantee to take up the augmentation of ICT capacity would result in delay in its implementation.

2.2.4. CEA stated that Stage-II Connectivity of the RE developers would translate into LTA, once the PPA between the RE developers and SECI (REIA) is accomplished. As per PPA, the RE developers are given a period of 18 months from PPA signing for commissioning of their RE projects. ICT Augmentation can also take place in the timeframe of 18 months. Accordingly, information regarding signing of PPA would help in deciding the implementation timeframe of ICT Augmentation, and also the option of phasing of the commissioning of ICT's can be explored.

2.2.5. MNRE stated that as per the information obtained from SECI, Stage-II Connectivity applicants corresponding to 2190 MW RE capacity is available at Fatehgarh-4 P.S., out of which PPAs for 510 MW has been signed. The other Stage-II Connectivity grantees are the ones who have applied for Stage-II through land route.

2.2.6. Expert Member, Dr. R Saha stated that as per the Transmission Planning Criteria, the maximum substation capacity at 400/220 kV level is 2000 MVA, whereas the capacity proposed under the present scope at Fatehgarh-4 PS is 2500 MVA. Further, with envisaged future potential at Fatehgarh-4, it would be prudent to plan 765 kV outlets. Also, when sufficiently high quantum of RE potential pocket is identified, grant of connectivity to RE generators at planned pooling station in such pockets needs to be given at 400 kV voltage level as this would lead to reduction in losses and would reduce RoW requirement.

2.2.7. CTU stated that the maximum substation capacity specified in the Transmission Planning Criteria is for drawl of power. In the proposed revision of Transmission Planning Criteria, for injection purpose, pooling capacity of 5000 MVA at 400 kV is being proposed. Further, the provision of appropriate sectionalisation is being kept at Fatehgarh-4 PS. Also, keeping in

view the additional quantum beyond 2.1 GW indicated by SECI in Barmer/Jaisalmer area, the space provision for creation of 765 kV level at Fatehgarh-4 in the future space provisions has also been incorporated in the modified scope of works.

CTU further clarified that the reason behind grant of connectivity at 220 kV voltage level is on account of the fact that RE developers seek connectivity in chunks of 250- 300 MW only. Any RE developer aiming to inject higher quantum of power are encouraged/advised to seek connectivity at 400 kV voltage level.

2.2.8. MoP enquired about the delay in the completion of bidding process on account of time required to notify the change in Gazette notification required for the scheme.

CEA & CTUIL stated that the A1 scheme is already under bidding by M/s PFCCL. The modified scope of works for the scheme would be conveyed to M/s PFCCL by the NCT for incorporation in the bidding documents. The implementation timeframe for the scheme is 18 months from date of SPV acquisition and would undergo no change, Further, the actual timeframe of implementation of the scheme would be clear only after GIB issue affecting the scheme gets resolved.

2.2.9. After detailed deliberations, the modifications proposed by CTU was agreed by NCT. Chair directed to incorporate the views of BPC in this regard.

2.2.10. M/s PFCCL vide its letter dated 01.04.2022 has informed that the bidding for "Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1" is ongoing and the Survey Report has also been issued to the bidders. Due to proposed change in the scope of transmission scheme, there would be no change in the Qualifying Requirement (QR) in the RfP documents issued to the bidders. The SCoD would also remain same i.e 18 months from date of transfer of SPV. Only the Survey Report would be required to be revised.

2.2.11. NCT recommended the following modifications in the scope of the scheme, already notified by MoP, "Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1":

S. No	**Present Scope**	**Revised Scope**
1	Establishment of 2x500 MVA, 400/220 kV pooling station at Fatehgarh-4 along with 2x125 MVAr Bus Reactor 400/220 kV, 500 MVA ICT – 2 nos. 400 kV ICT bays - 2 nos. 220 kV ICT bays - 2 nos. 400 kV line bays - 2 nos. 220 kV line bays - As per connectivity	Establishment of **5**x500 MVA, 400/220 kV pooling station at Fatehgarh-4 along with 2x125 MVAr Bus Reactor 400/220 kV, 500 MVA ICT – **5** nos. 400 kV ICT bays - **5** nos. 220 kV ICT bays - **5** nos. 400 kV line bays - 2 nos. 220 kV line bays - As per connectivity

S. No	**Present Scope**	**Revised Scope**
	granted to RE developers (4 no. of bays considered at present). 125 MVAr, 420 kV bus reactor - 2 nos. 420 kV reactor bay - 2 nos. **Future provisions**: Space for 400/220 kV ICTs along with bays: 5 nos. 400 kV line bays along with switchable line reactor: 6 nos. 400 kV Bus Reactor along with bays: 2 nos. 400 kV Sectionalization bay: 1 nos. 220 kV line bays: 10 nos. 220 kV Sectionalization bay: 2 nos.	granted to RE developers (**7** no. of bays considered at present). 125 MVAr, 420 kV bus reactor - 2 nos. 420 kV reactor bay - 2 nos. **220kV Sectionalization bay: 1set** **220 kV Bus Coupler (BC) Bay -2 nos.** **220 kV Transfer Bus Coupler (TBC) Bay - 2 nos.** **Future provisions:** Space for **765/400kV ICTs along with bays: 6 nos.** **765kV line bay along with switchable line reactor: 6 nos.** **765kV Bus Reactor along with bays: 3 nos.** 400/220 kV ICTs along with bays: **8** nos. 400 kV line bays along with switchable line reactor: **10** nos. 400kV Bus Reactor along with bays: 2 nos. 400kV Sectionalization bay: **2sets** 220 kV line bays: **13** nos. 220kV Sectionalization bay: **3sets** **220 kV Bus Coupler (BC) Bay -3 nos.** **220 kV Transfer Bus Coupler (TBC) Bay - 3 nos.**
2	Fatehgarh-4- Fatehgarh-3 400 kV D/c twin HLTS* line (50 km)	Fatehgarh-4- Fatehgarh-3 400 kV D/c twin HLTS* line (50 km)
3	2 no. of 400 kV line bays at Fatehgarh-3	2 no. of 400 kV line bays at Fatehgarh-3

** with minimum capacity of 2100 MVA on each circuit at nominal voltage*

Note:

i. Developer of Fatehgarh-3 S/s(new section) to provide space for 2 nos. of 400 kV line bays at Fatehgarh-3 S/s for termination of Fatehgarh-4- Fatehgarh-3 400 kV D/c twin HLTS line
ii. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
iii. *Scheme to be awarded after SECI/ /REIA awards first bid of RE project* at Fatehgarh-4 pooling station.

2.3. Status of Transmission Schemes approved/recommended by 7th NCT: Member (E & C), CEA vide his email dated 25.03.2022 requested the NCT to discuss the status of implementation of recommendations made by 7th NCT.

Accordingly, the status of the Transmission Schemes approved/recommended by 7th NCT for implementation through TBCB route has been obtained from the Bid Process Coordinator and the same is tabulated below:

S.No.	Name of ITP	Present Status
Projects under bidding		
1.	400 kV Khandukhal (Srinagar) - Rampura (Kashipur) D/c line	• MoP vide Gazette Notification 19.01.2022 has appointed PFCCL as BPC; • RfP bid process has been initiated on 11.03.2022. • PTCUL has provided the details of existing Khandukhal & Rampura Substation vide mail dated 04.02.2022 & 17.02.2022. • Scheduled COD is matching timeframe of commissioning of Vishnugad Pipalkoti HEP (October'24) of THDC or TapovanVishnugad HEP (September'24) of NTPC, whichever is earlier. • RFP bid submission is scheduled on 13.05.2022.
2.	Transmission Network Expansion in Gujarat associated with integration of RE projects from Khavda potential RE zone	• MoP vide its Gazette Notification dated 19.01.2022 allocated the project to RECPDCL • RECPDCL is in process of initiating the bidding
3.	Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Part A-Phase-II	• CEA vide its letter dated 31.01.2022 allocated the project to RECPDCL • RFP issued on 10.02.2022

3. Allocation of the task of carrying out survey amongst the CTU and Bid Process Coordinators.

3.1. MoP vide its OM dated 20/05/2021 had issued the amendments in the Terms of Reference of the National Committee on Transmission (NCT) which inter-alia includes the function of "allocation of task of carrying out survey amongst CTU, RECPDCL and PFFCCL by maintaining a roster".

Accordingly, NCT in its 5th, 6th and 7th NCT meetings has allocated survey works as summarized below:

S.No	NCT meeting	CTUIL	RECPDCL	PFCCL
1	5th -25/08/2021 & 02/09/2021	4	5	5
2	6th -29.10.2021	-	-	-
3	7th- 03.12.2021		2	1

3.2. NCT in its 5th meeting held on 25/08/2021 & 02/09/2021 had allocated the survey agency for 14 nos. of ISTS schemes amongst CTU (4 nos.), RECPDCL (5 nos.) and PFCCL (5 nos.). In the meeting, NCT members observed that there would be three agencies involved in carrying out the survey of TBCB schemes, therefore, there was a need to evolve Standard Specifications for carrying out the survey work. Accordingly, NCT agreed that CEA in coordination with BPC's (RECPDCL & PFCCL) and CTUIL would prepare standard specifications for carrying out survey of transmission schemes being implemented through TBCB route.In compliance of the same, CEA after due consultation with CTUIL and BPC's issued "Technical Specifications for survey work of Transmission lines/ Sub-Stations associated with TBCB projects" vide its letter dated 21/11/2021.

3.3. Subsequently, MoP vide Gazette Notification dated 06/12/2021 had allocated the Bid Process coordinator for the transmission schemes recommended by 5th NCT for implementation through TBCB route. It inter-alia, included following three transmission schemes, for which CTUIL was assigned as the Survey Agency by the 5th NCT:

S.no	**Name of the Transmission Scheme**	**BPC**	**Survey Agency**
(i)	Transmission system for evacuation of power from Neemuch SEZ (1000 MW)	RECPDCL	CTUIL
(ii)	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part D	RECPDCL	
(iii)	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part H	PFCCL	

3.4. With initiation of bidding process, RECPDCL vide its letter dated 09/12/2021requested for survey report from CTU for the Transmission schemes whose survey works were assigned to CTU by the 5thNCT.In response to RECPDCL request for submission of survey report, CTU vide its email dated 24.12.2021 has intimated that CTU, being new in the area of survey has recently initiated the tendering process for selection of survey agency based on Technical specifications issued by CEA which would take around two months' time to conclude. In view of the same, the survey of the projects assigned to CTUIL may be carried out by respective BPC's allocated by MoP.

Further, MoP vide its letter dated 10/12/2021 has clarified that there is no need of separate approval of MoP for assigning of the survey agency by the NCT in respect of TBCB projects.

3.5. In view of above, the following clarification has been issued in respect of agencies assigned for carrying out survey works vide CEA letter dated 28.12.2021, to avoid any delay in bidding process:

(1) The survey works of the ISTS projects for which CTU was assigned as the survey agency by the 5th NCT may be carried out by respective BPC's to whom the scheme has been allocated by MoP for implementation through TBCB route.

(2) In future, the respective survey agency allocated by NCT may take necessary action for initiating the survey works in respect of Transmission schemes approved/recommended by the NCT for implementation through TBCB mode.

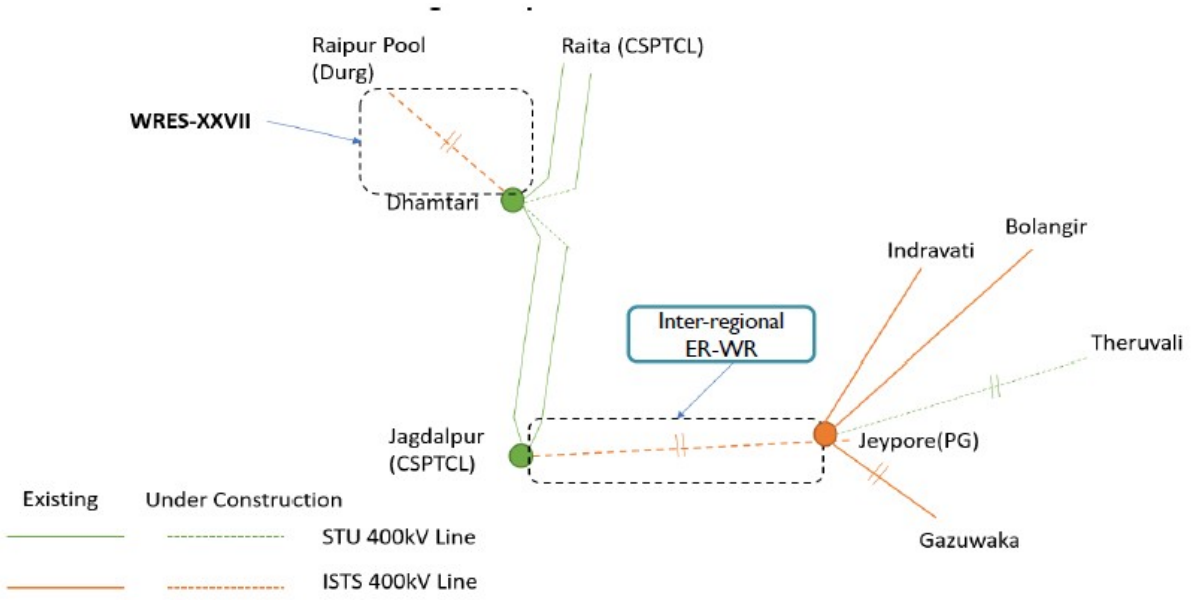
3.6. MoP stated that CTU needs to develop its expertise in conducting survey works , in view of the functions and responsibilities envisaged to be performed by it with expansion of the functions under the fold of CTUIL.

3.7. NCT enquired about the readiness of CTU to carry out the survey works for the ISTS schemes approved/recommended by NCT.
CTU stated that they have already empaneled the Survey Agency and now they were in position to undertake survey works. CTU requested NCT to allot survey work for at least one scheme from the schemes proposed in the meeting.

3.8. NCT noted and agreed with the clarifications issued by CEA at para 3.4.

4. New Transmission Schemes submitted by CTU for consideration of 8th NCT:

4.1. Inter-regional ER-WR Interconnection: The scheme has been proposed by CTU to facilitate reliability of power supply to 400/220 kV Jagdalpur substation of CSPTCL (in Western Region) and 400/220 kV Jeypore substation of POWERGRID (in Eastern Region) , enhance short circuit strengths of Jagdalpur and Jeypore S/s as well as to augment Inter-regional capacity between WR & ER Grids. The scheme has been deliberated in the 2nd Joint study meeting on Transmission Planning for Western Region held on 10.12.2021, 2nd Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER) held on 27.12.2021 and 2nd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR) held on 28.12.2021. The scheme involves establishment of Jeypore – Jagdalpur 400kV D/c line as depicted below:



4.1.1. As the estimated cost of the scheme lies between Rs 100 to 500 Crore, accordingly NCT approved the scheme for implementation through TBCB route.

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Inter-regional ER-WR Interconnection Est Cost: Rs 293 Cr **Implementation Timeframe**: 24 months from the date of SPV transfer or September' 2024, whichever is later	• Approved. • Implementation through **TBCB** mode.	To facilitate reliability of power supply to Jagdalpur S/s of CSPTCL and Jeypore S/s of POWERGRID, enhance short circuit strengths of Jagdalpur and Jeypore S/s as well as to augment Inter-regional capacity between WR & ER Grids

Detailed scope of the scheme is as given below:

Inter-regional ER-WR Interconnection

S.No.	Scope of the scheme	Capacity / Line length/nos.
(i)	Jeypore – Jagdalpur 400kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage)	~80km
(ii)	400kV GIS line bays at 400/220 kV Jeypore (POWERGRID) S/s	2 nos.
(iii)	400kV line bays at Jagdalpur (CSPTCL) S/s	2 nos.

Note:

(i) Powergrid to provide space for 2 no. of 400 kV line bays at Jeypore 400 kV substation for

termination of Jeypore – Jagdalpur 400kV D/c line.

(ii) CSPTCL to provide space for 2 no. of 400 kV line bays at Jagdalpur 400 kV substation for termination of Jeypore – Jagdalpur 400kV D/c line.

(iii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

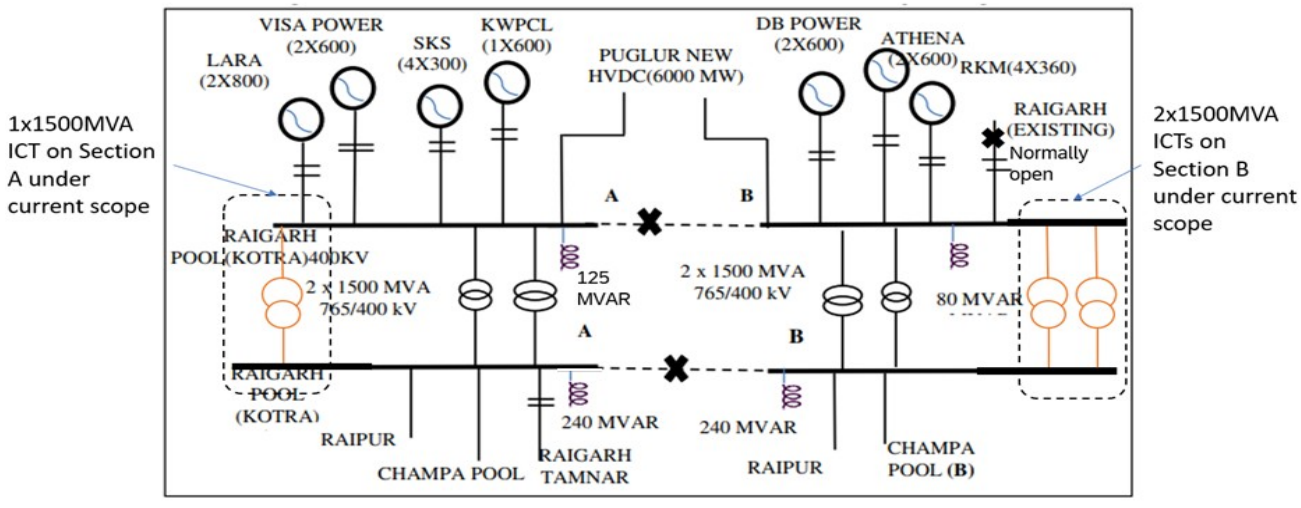
(iv) The schedule of implementation would be 24 months from the date of SPV Transfer or September' 2024, whichever is later.

4.2. Western Region Expansion Scheme-XXV (WRES-XXV): The scheme , which involves 765/400 kV ICT augmentation, has been proposed by CTU for N-1 compliance of 765/400 kV ICTs at Raigarh PS Bus sections (A & B) under following 2 conditions:

- With Raigarh – Pugalur HVDC line operating under blocked mode or reverse mode (SR to WR) during high renewable generation in southern region and high generation at Raigarh (Kotra) PS
- With Raigarh – Pugalur HVDC line operating under forward mode (WR to SR) and under low generation at either of the bus section at Raigarh PS

The scheme has been deliberated in the Joint study meeting on Transmission Planning for Western Region and Southern Region held on 16.12.2021 and 2nd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR) held on 28.12.2021. Further, with the proposed ICTs on both the sections, fault level at 400kV Section-A is about 45kA and Section-B is about 30kA which is under design limit. This scheme involves Augmentation of transformation capacity at Raigarh (Kotra) by 1x1500MVA, 765/400kV ICT at Section-A (3rd ICT on Section A) and by 2x1500MVA, 765/400kV ICTs at Section-B (3rd& 4th ICTs on Section B) along with associated ICT bays as depicted below:

Western Region Expansion Scheme-XXV (WRES-XXV)



***Note**: Status of VISA Power & Athena Generations is Uncertain*

4.2.1. The estimated cost of the scheme lies between Rs 100 to 500 Crore scheme and it involves ICT augmentation in existing 765/400 kV Raigarh (Kotra) substation. The scheme is required to be implemented in a compressed time schedule of 15 months, accordingly NCT approved the scheme for implementation through RTM route.

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	**Western Region Expansion Scheme-XXV (WRES-XXV)** Est Cost: Rs. 210 Crore **Implementation Timeframe**: 15 months from date of allocation to implementing agency.	• Approved. • Implementation through **RTM** mode.	To facilitate N-1 compliancy of the 765/400kV ICTs at Raigarh (Kotra) S/s under various operating conditions (after bus split arrangement)

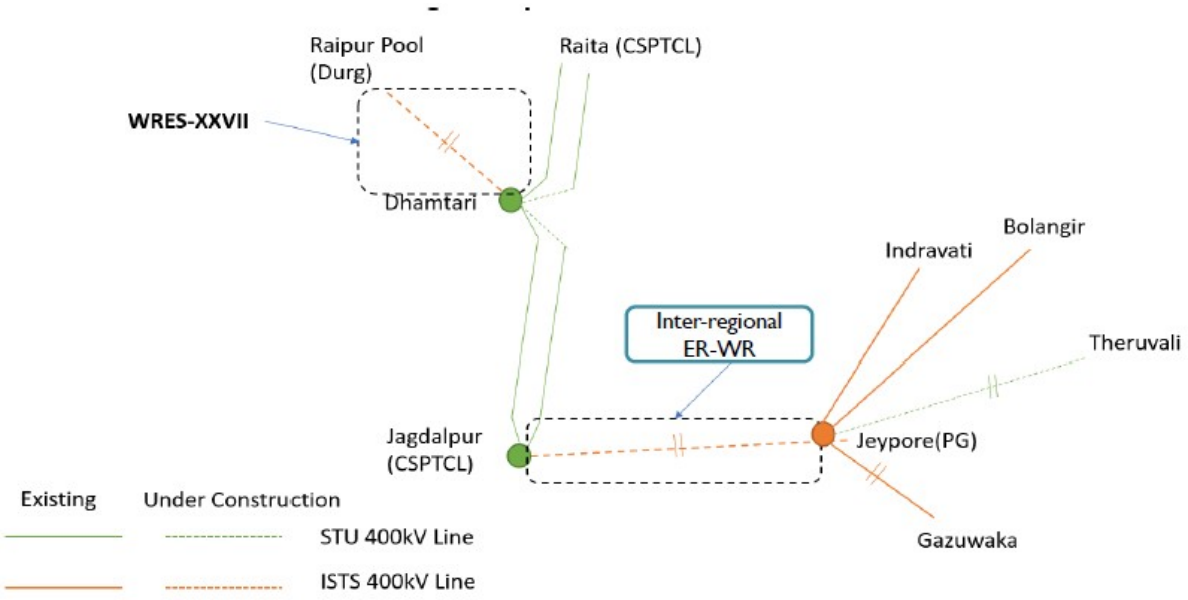
Detailed scope of the scheme is as given below:

Western Region Expansion Scheme-XXV (WRES-XXV)

S. No	Scope of works	MVA/km
1	Augmentation of transformation capacity at Raigarh(Kotra) along with associated ICT bays	**Raigarh(Kotra) Section-A** • 765/400kV ICT: 1x1500MVA • 765kV ICT bay: 1 no. • 400kV ICT bay: 1 no. **Raigarh(Kotra) Section-B** • 765/400kV ICT: 2x1500MVA • 765kV ICT bay: 2 nos. • 400kV ICT bay: 2 nos.

Note: The schedule of implementation would be 15 months from date of allocation to implementing agency.

4.3. Western Region Expansion Scheme-XXVII (WRES-XXVII) : The scheme has been proposed by CTU to provide ISTS feed to Dhamtari S/s of CSPTCL, provide support to ISTS grid for inter-regional flow towards Odisha and relieve overloading on NSPCL's ICT thereby enhancing import TTC of Chattisgarh. The scheme has been deliberated in the 2nd Joint study meeting on Transmission Planning for Western Region held on 10.12.2021, 2nd Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER) held on 27.12.2021 and 2nd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR): 28.12.202. The scheme involves establishment of Raipur Pool – Dhamtari 400 kV D/c line as depicted below:



4.3.1. As the estimated cost of the scheme lies between Rs 100 to 500 Crore, accordingly NCT approved the scheme for implementation through TBCB route.

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Western Region Expansion Scheme-XXVII (WRES-XXVII) Est Cost: Rs. 260 Crore **Implementation Timeframe**: 18 months from SPV Transfer or matching with 3rd 400/220kV, 315MVA ICT at Dhamtari S/s to be implemented by CSPTCL (anticipated by Mar-24), whichever is later.	• Approved. • Implementation through **TBCB** mode.	For improvement of import capability of Chhattisgarh and reliability of power supply to Dhamtari S/s of CSPTCL and for relieving loading on NSPCL ICTs which are critically loaded in present time-frame

Detailed scope of the scheme is as given below:

Western Region Expansion Scheme-XXVII (WRES-XXVII)

S. No	Scope of works	MVA/km
1.	Raipur Pool – Dhamtari 400 kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage)	80 km

S. No	**Scope of works**	**MVA/km**
2.	400kV line bays at Raipur Pool (POWERGRID) S/s for termination of Raipur Pool – Dhamtari 400 kV D/c line	400 kV Line Bays- 2
3.	400kV line bays at Dhamtari (CSPTCL) S/s for termination of Raipur Pool – Dhamtari 400 kV D/c line	400 kV Line Bays- 2

Note:

(i) *Powergrid to provide space for 400 kV line bays at Raipur PS for termination of* Raipur Pool – Dhamtari 400 kV D/c line

(ii) *CSPTCL to provide space for 400 kV line bays at Dhamtari S/stn for termination of* Raipur Pool – Dhamtari 400 kV D/c line

(iii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

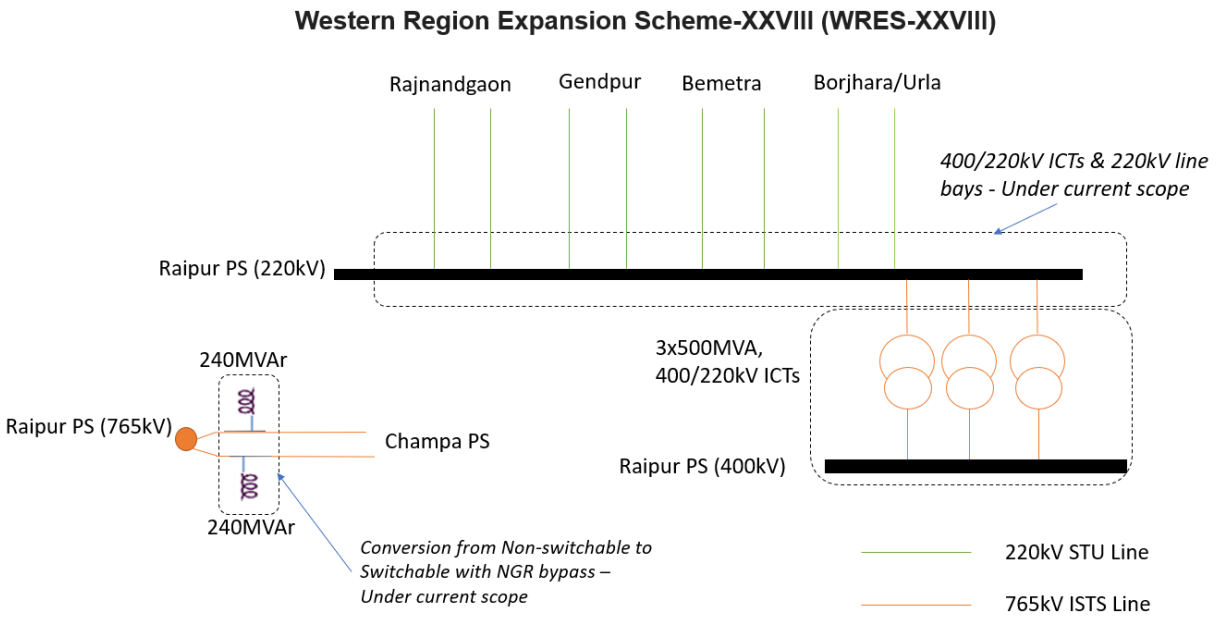
(iv) Downstream system associated with the scheme to be implemented by CSPTCL as an intra-state scheme :

- Dhamtari(Kurud) – Gurur 220 kV D/c (2^{nd}) line by Dec'23 timeframe.
- 3^{rd} 400/220kV, 315MVA ICT at Dhamtari S/s by Mar'24 timeframe.

(v) The schedule of implementation would be 18 months from SPV Transfer or matching with 3^{rd} 400/220kV, 315MVA ICT at Dhamtari S/s to be implemented by CSPTCL (anticipated by Mar-24), whichever is later.

4.4. Western Region Expansion Scheme-XXVIII (WRES-XXVIII): The scheme has been proposed by CTU to facilitate drawl of power at 220 kV level from 765/400 kV Raipur Pool S/s as well as provide direct feed to Borjhara/Urla area, which are major load centres in Chhattisgarh. The scheme primarily comprises of creation of new 220 kV level (GIS) at existing 765/400 kV Raipur Pool substation along with provision of 400/220 kV ICTs. This would also relieve the loading on Raipur (PG) 400/220 kV ICTs (existing). The scope also includes conversion of 2x240MVAr Non-switchable line reactors at Raipur PS (associated with Raipur PS – Champa PS 765kV ckts 1 & 2) into Switchable line reactors along with NGR bypass arrangement to enable them to be utilized as bus reactors for voltage control at Raipur PS.

The scheme has been deliberated in the 2nd Joint study meeting on Transmission Planning for Western Region held on 10.12.2021 and 3rd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR) held on 31.01.2022. The schematic of the scheme is as below:



4.4.1. As the estimated cost of the scheme lies between Rs 100 to 500 Crore, accordingly NCT approved the scheme for implementation through TBCB route.

S. no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Western Region Expansion Scheme-XXVIII (WRES-XXVIII) Est Cost: Rs. 193 Crore **Implementation Timeframe**: Phased implementation i.e. from December 2023 to March 2024	• Approved. • Implementation through **TBCB** mode	Facilitate drawl of power at 220kV level from existing 765/400 kV Raipur Pool S/s as well as provide direct feed to Borjhara/Urla area, which are major load centres in Chhattisgarh, so as increase ISTS drawl ATC of Chhattisgarh as well as relieve loading on Raipur(PG) 400/220kV ICTs (existing).

Detailed scope of the scheme is as given below:

Western Region Expansion Scheme-XXVIII (WRES-XXVIII):

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*	*Implementation time frame*
1.	Creation of 220 kV level (GIS) at 765/400 kV Raipur Pool S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays (220kV-GIS)	500MVA, 400/220kV ICT: 2 nos. 400kV ICT bays: 2 nos. 220kV ICT bays: 2 nos. (GIS)	December 2023 or matching timeframe of Raipur Pool – Rajnandgaon 220 kV D/c line , whichever is later
2.	2 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of Raipur Pool –	220kV line bays: 2 nos. (GIS)	

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*	*Implementation time frame*
	Rajnandgaon 220 kV D/c line		
3.	Augmentation of 1x500 MVA, 400/220 kV ICT at Raipur Pool S/s along with associated ICT bays (220kV-GIS)	500MVA, 400/220kV ICT: 1 no. 400kV ICT bays: 1 no. 220kV ICT bays: 1 no. (GIS)	March 2024 or matching timeframe of 220 kV outlets, whichever is later.
4.	6 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of various lines planned by CSPTCL*	220kV line bays: 6 nos. (GIS)	

Note :

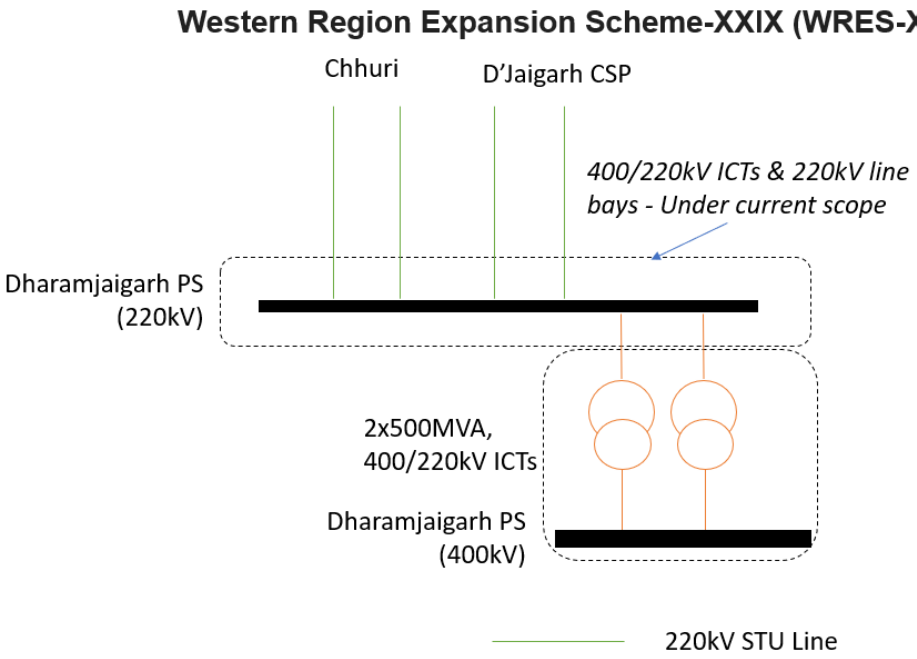
(i) Powergrid to provide space for implementation of above scope of works at Raipur (pool) 765/400 kV substation.

(ii) Downstream system associated with the scheme to be implemented by CSPTCL as an intra-state scheme :

- Raipur Pool – Rajnandgaon 220 kV D/c line in the timeframe of Dec'23
- Raipur Pool – Gendpur 220 kV D/c line in the timeframe of Mar'24*
- Raipur Pool – Bemetra 220 kV D/c line in the timeframe of Mar'24*
- LILO of Borjhara – Urla 220kV S/c line at Raipur Pool in the timeframe of Mar'24*

(iii) Conversion of 2x240MVAr Non-switchable line reactors at Raipur PS (associated with Raipur PS – Champa PS 765kV ckts 1 & 2) into Switchable line reactors along with NGR bypass arrangement may be approved by CTU.

4.5. Western Region Expansion Scheme-XXIX (WRES-XXIX): The scheme has been proposed by CTU to facilitate drawl of power at 220kV level from 765/400 kV Dharamjaigarh S/s to Chhuri & Dharamjaigarh substations of CSPTCL. The scheme has been deliberated in the 2nd Joint study meeting on Transmission Planning for Western Region held on 10.12.2021 and 3rd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR) held on 31.01.2022. The scheme involves Creation of 220 kV level at 765/400 kV Dharamjaigarh S/s and is depicted below:



4.5.1. As the estimated cost of the scheme lies between Rs 100 to 500 Crore, accordingly NCT approved the scheme for implementation through TBCB route.

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Western Region Expansion Scheme-XXIX (WRES-XXIX) Est Cost: Rs. 115.24 Crore **Implementation Timeframe**: Phased implementation i.e. March 2024 to December 2024	• Approved. • Implementation through **TBCB** mode.	To facilitate drawl of power at 220kV level from 765/400 kV Dharamjaigarh S/s to Chhuri & Dharamjaigarh CSP substations of CSPTCL

Detailed scope of the scheme is as given below:

Western Region Expansion Scheme-XXIX (WRES-XXIX)

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*	*Implementation time frame*
1.	Creation of 220 kV level at 765/400 kV Dharamjaigarh S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays	500MVA, 400/220kV ICT: 2 nos. 400kV ICT bays: 2 nos. 220kV ICT bays: 2 nos.	March 2024 or matching timeframe of Dharamjaigarh – Chhuri 220 kV D/c line, whichever is later
2.	2 nos. 220kV line bays at Dharamjaigarh S/s (for termination of Dharamjaigarh – Chhuri 220 kV D/c line)	220kV line bays: 2 nos.	
3.	2 nos. 220kV line bays at Dharamjaigarh	220kV line bays: 2 nos.	December 2024

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*	*Implementation time frame*
	S/s (for termination of Dharamjaigarh – Dharamjaigarh CSP 220 kV D/c line)		or matching timeframe of Dharamjaigarh – Dharamjaigarh CSP 220 kV D/c line, whichever is later

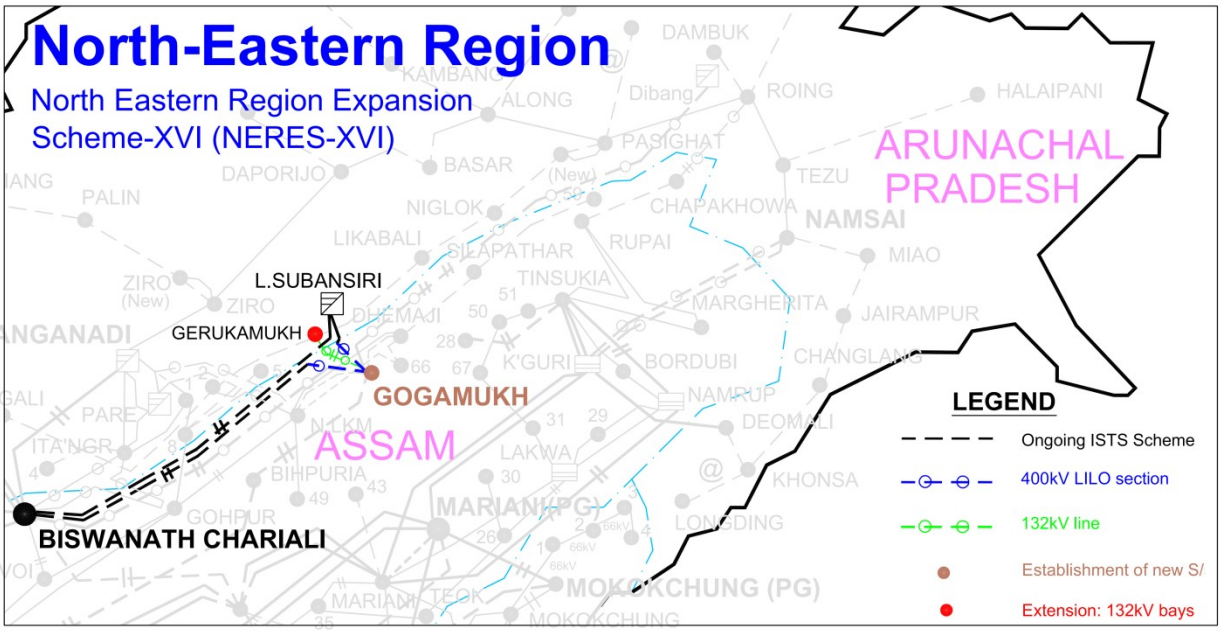
Note:

(i) Powergrid to provide space for implementation of above scope of works at Dharamjaygarh 765/400 kV substation.

(ii) Downstream system associated with the scheme to be implemented by CSPTCL as an intra-state scheme :

- Dharamjaigarh – Chhuri 220 kV D/c line in the timeframe of Mar'24
- Dharamjaigarh – Dharamjaigarh CSP 220 kV D/c line in the timeframe of Dec'24

4.6. North Eastern Region Expansion Scheme-XVI (NERES-XVI) : This scheme comprising of establishment of a new 400kV substation at Gogamukh has been proposed by CTU for feeding power to upper Assam above Brahamputra river. The proposed substation is also planned to be utilised for providing additional feed and strength to under construction 132 kV Pasighat to Khupi corridor in Arunachal Pradesh through Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line. In future, Gogamukh 400/220/132kV substation would also serve the purpose of acting as a pooling point for upcoming large HEPs in Arunachal Pradesh. One such project is Dibang HEP (2880MW, 12x240MW) of M/s NHPC Ltd. in Arunachal Pradesh. The same is planned to be pooled through Dibang – Gogamukh 400kV 2xD/c (Quad) line and for onward power transfer to other parts of Indian grid, Biswanath Chariyali – Gogamukh 400kV D/c (Quad) line has been planned. The scheme has been deliberated in the 1st Consultation Meeting for Evolving Transmission Schemes in NER followed by 3rd meeting of CMETS-NER held on 25-01-2022. The scheme involves Establishment of New Gogamukh 400/220/132kV substation along with and 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 and Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line. The same is depicted below:



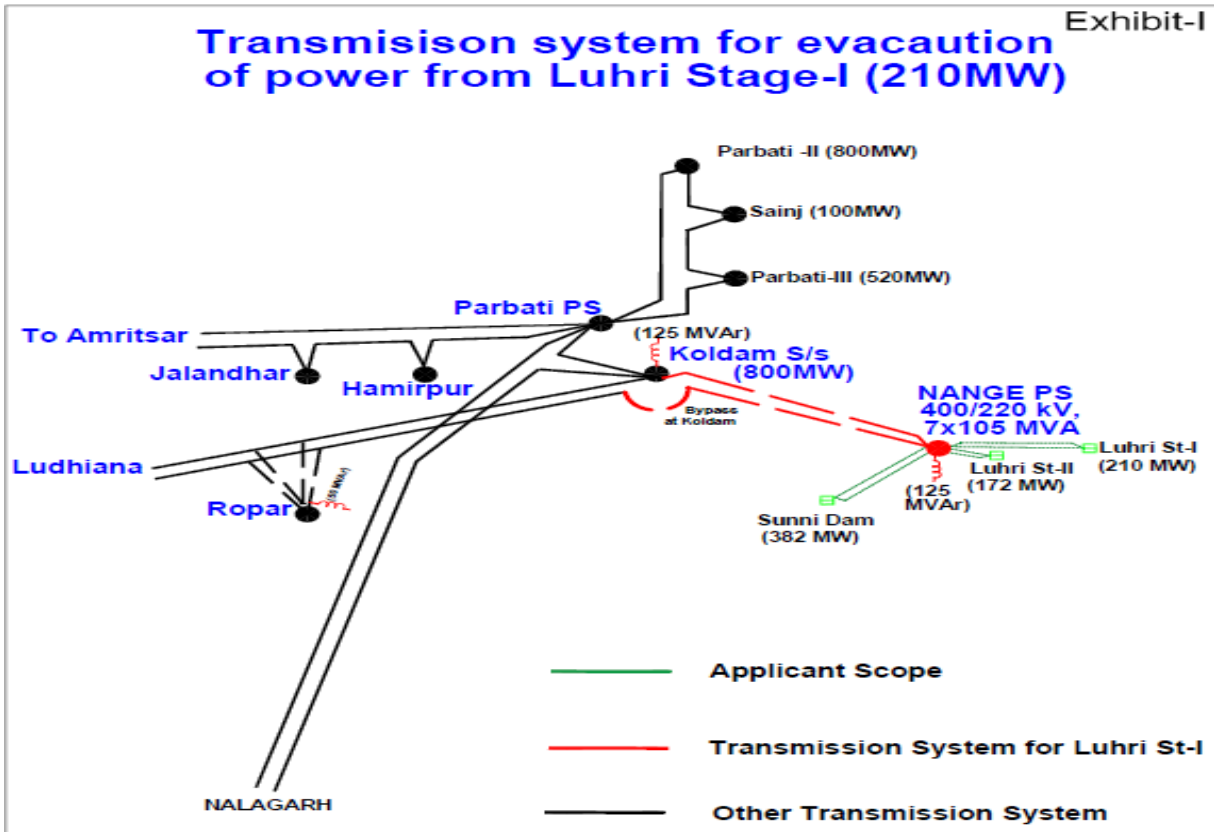
4.6.1. In view of commissioning timeframe of May'2029 for Dibang HEP (2880 MW) and proposal of Assam for intra-state system strengthening in the area where Gogamukh substation has been proposed, NCT deferred the proposal for further deliberation and review, if required.

4.7. Transmission system for evacuation of power from Luhri Stage-I HEP

4.7.1. The scheme has been proposed by CTU for evacuation of power from proposed Luhri Stage-I (210MW) HEP and will also facilitate interconnection of proposed Luhri-II (172 MW) & Sunni Dam (382 MW) near Shimla/Mandi/Kullu in HP with ISTS network. The SCOD of Luhri St-I (210 MW), Luhri St-II (172 MW) and Sunni Dam (382 MW) intimated by M/s SJVNL is April'25 onwards, Oct'27 onwards and Jan'27 onwards respectively. SJVN is also been granted LTA for Luhri HEP St-I (Target NR- 210 MW). The system was agreed in 3rd meeting of NRPC (TP) held on 19.02.2021.Identified dedicated transmission system each from Luhri-I/Luhri-II/Sunni Dam uptoNange PS shall be under the scope of SJVN/generation developer.

4.7.2. The scheme was taken up for discussion in the 5th meeting of NCT held on 25.08.2021 and 02.09.2021, wherein it was informed that NTPC has forwarded some observation regarding the availability of space at Koldam S/s (NTPC) for 2 nos. of 400kV line bays. Therefore, the scheme was deferred and decided to be taken up again after resolution of the issue. Subsequently, a joint site visit of 400/220kV Koldam S/s was held on 07.01.2022 by a team comprising officers from CEA, CTUIL, and NTPC& SJVN to assess the availability of space for 2 nos. of 400kV bays at Koldam (NTPC) which proposed two alternatives. For further deliberation on above alternatives, joint study meeting was held on 21.01.22 with CEA, CTU, POSOCO, NTPC, SJVNL, PSTCL and other STUs of Northern region. Based on detailed deliberations in above Joint Study meeting, transmission scheme for evacuation of power from Luhri St-I was finalized. Existing ISTS system beyond Koldam/Ropar would also facilitate transfer of power from Luhri-I HEP. Connectivity of existing 400kV Koldam (NTPC) S/s includes 400kV D/c line to Ludhiana (PG), which would be LILOed at Ropar (PSTCL) S/s in future (under implementation). 400kV Koldam S/s is also interconnected to Banala (Parbati PS) as well as Nallagarh S/s through 400kV line.

4.7.3. The revised scheme was discussed & agreed in 3rd Consultation Meeting for Evolving Transmission Schemes in Northern Region (CMETS-NR) held on 28.01.2022 and is depicted below:



4.7.4. As the estimated cost of the scheme lies between Rs 100 to 500 Crore, accordingly NCT approved the scheme for implementation through TBCB route.

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Transmission system for evacuation of power from Luhri Stage-I HEP Est Cost: Rs. 432 Cr. **Implementation Timeframe**: Matching time frame of Luhri Stage-I HEP i.e. 24th April, 2025	• Approved • Implementation through **TBCB** mode.	For evacuation of power from proposed Luhri Stage-I (210MW) HEP. The scheme will also facilitate interconnection of proposed Luhri-II (172 MW) & Sunni Dam (382 MW) near Shimla/Mandi/ Kullu in HP with ISTS network

Detailed scope of the scheme is as given below:

Transmission system for evacuation of power from Luhri Stage-I HEP

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*
1.	Establishment of 7x105 MVA, 400/220kV Nange GIS Pooling Station alongwith125 MVAR (420kV) Bus Reactor at Nange (GIS) PS(1-Ph units along with one spare unit) Future provisions: Space for • 400/220kV ICTs (315 MVA with single phase units) along with associated bays: 3 nos. • 400 kV line bays along with switchable line reactor: 3 nos. • 220 kV line bays: 10 nos	315MVA, 400/220kV ICT: 2 nos. (7x105 MVA including 1 spare ICT) 400kV ICT bays: 2 nos. 220kV ICT bays: 2 nos. 400 kV, 125 MVAr Bus Reactor- 1 400 kV Bus Reactor bay- 1 no. 400 kV Line Bays- 2 nos.
2.	Nange (GIS) Pooling Station – Koldam 400 kV D/c line (Triple snowbird) (*only one circuit is to be terminated at Koldam while second circuit would be connected to bypassed circuit of Koldam – Ropar/Ludhiana 400kV D/c line)*	40 km
3.	1 no. of 400kV line bay at Koldam S/s for termination of Nange (GIS) Pooling Station – Koldam 400 kV linealongwith125 MVAR (420kV) Bus Reactor at Koldam S/s (1-Ph units along with one spare unit)	400 kV Line Bays- 2 nos. 400 kV, 125 MVAr Bus Reactor- 1 400 kV Bus Reactor bay- 1 no.
4.	Bypassing one ckt of Koldam – Ropar/Ludhiana 400kV D/c line (Triple snowbird) at Koldam and connecting it with one of the circuit of Nange-Koldam 400kV D/c line(Triple snowbird), thus forming Nange- Ropar/ Ludhiana one line (Triple snowbird)	
5.	1x50 MVAR switchable line reactor at Ropar end of Nange- Ropar/ Ludhiana 400kV line	400 kV, 50MVAr Line Reactor- 1 400 kV Reactor Bay- 1 no.

Note:

(i) *NTPC to provide space for 400 kV line bays and Bus Reactor at Koldam S/stn*

(ii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

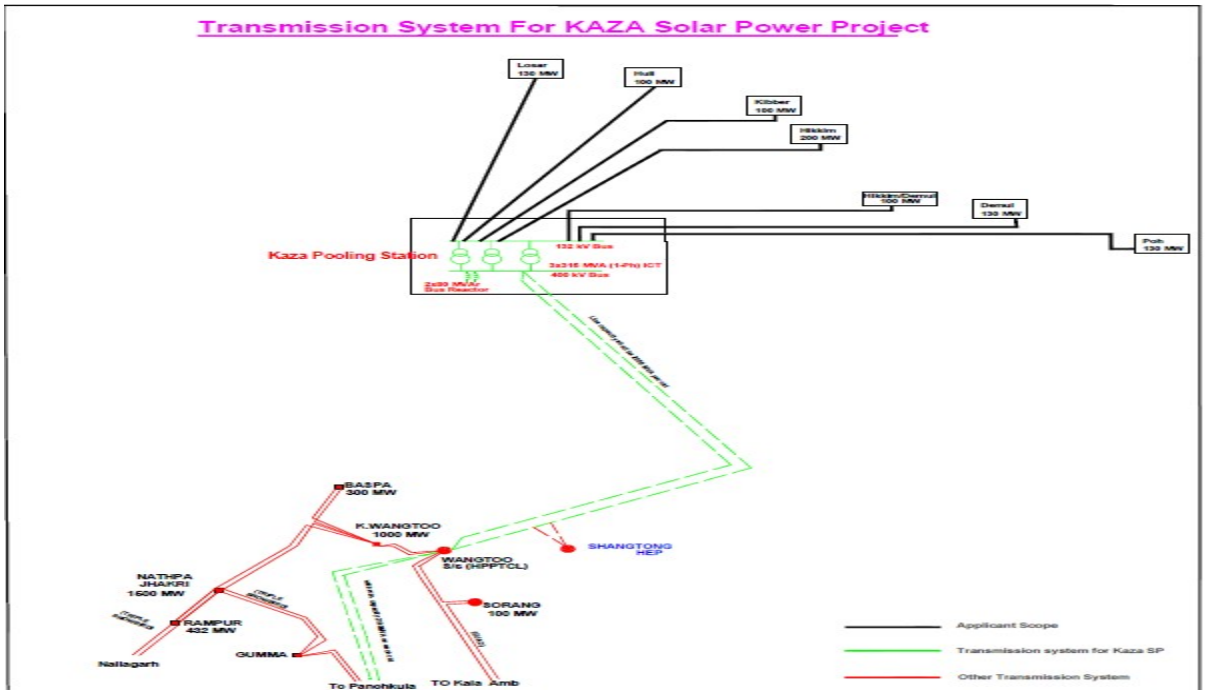
(iii) Implementation timeframe: Matching time frame of Luhri Stage-I HEP i.e. 24th April, 2025

4.8. Transmission system for evacuation of power from Kaza Solar Power Project (880 MW)

4.8.1. SJVN is developing a Solar power park (880 MW) in Lahul & Spiti (Kaza) in Himachal Pradesh. SJVN is also granted Stage-I connectivity in this regard. In the 4thNRPC (TP) meeting held on 05.10.21, Transmission system to provide connectivity to Kaza Solar Power Project was discussed & agreed. It was also decided that for transfer of power beyond Wangtoo S/s (HPPTCL), a high-capacity corridor would be planned.

4.8.2. In the 6th NCT meeting held on 29.10. 2021, the scheme was recommended to MoP for implementation through TBCB route. However, the scheme was not sent MoP as CTU vide its e-mail dated 9.12.2021 has suggested some modification in the scope as well as has suggested additional line for further evacuation of power beyond 400kV Wangtoo S/s. A Joint Study Meeting was held on 24.12.2021 with CEA, POSOCO, HVPN, PTCUL, HPPTCL, UPPTCL and other STUs of Northern Region by CTU to finalize the transmission system for evacuation of power from Kaza Solar Power Project (880MW) beyond Wangtoo. In the above Joint study meeting, various transmission alternatives were deliberated and 400kV Wangtoo-Panchkula D/c line (Twin HTLS) was selected as preferred transmission alternative for evacuation of power beyond Wangtoo S/s. Connectivity of existing 400/220kV Wangtoo (HPPTCL) S/s includes 400kV D/c interconnection with Kala Amb (PG). 400kV Wangtoo S/s is also interconnected to Karcham Wangtoo S/s through 400kV D/c line.

4.8.3. The revised scheme has been discussed in the 2nd Consultation Meeting for Evolving Transmission Schemes in Northern Region (CMETS-NR) held on 29/12/2021 as well as 50th NRPC held on 28.01.2022, wherein transmission scheme comprising connectivity and evacuation system for Kaza Solar-park was agreed.NRPC has opined that in view of higher transmission cost of about Rs 2.5 Cr/MW for proposed scheme, CTU may take up with NCT for Govt. budgetary support/grant for the transmission scheme so as to rationalize transmission charges on the consumers. Transmission scheme for evacuation of 880 MW power from Kaza Solar Park is as shown below:



4.8.4. Director, MoP enquired whether any Battery Energy Storage System has been considered while planning evacuation of power from Kaza Solar park to optimise the transmission requirement. CTU clarified that the system being proposed is the minimum system required for evacuation of power and incorporation of BESS in the present case would not result in any further optimisation.

4.8.5. CEA informed that while the estimated cost of the scheme submitted along with the proposal by CTU was Rs 2135 Crore (March 2020 PL), however, CTU vide its email dated 22.03.2022 has conveyed the revised cost of Rs 3152 Crore based on September, 2021 PL. Also, NRPC while approving the scheme in its 50thmeeting held on 28.01.2022 has opined that in view of higher transmission cost of about Rs 2.5 Cr/MW (2135 crores for evacuation of 880 MW power) for proposed scheme, CTU may take up with NCT for Govt. budgetary support/grant for the transmission scheme so as to rationalize transmission charges on the consumers. With the revised cost of Rs. 3152 crores intimated by CTU, transmission cost would be about 3.6 Cr/MW and the same needs to be apprised again to NRPC.

4.8.6. NCT requested MoP/MNRE to consider the case for Govt. budgetary support/grant as has been done in case of Transmission system for evacuation of RE power from renewable energy parks in Leh.

4.8.7. Regarding the increase in cost CTU clarified that change in the estimated cost of the scheme is on account of increase in the base cost of per km transmission line and equipments (appx 50 %) on account of change in Price Level . The basis of the equipment and per km cost is the Cost Matrix of PGCIL which is made available to the Cost Committee by PGCIL.

4.8.8. NCT members agreed that technically the scheme can be recommended for approval to MoP, As the estimated cost of the scheme is beyond 500 crores, NCT recommended the scheme to MoP for implementation through TBCB route.

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	Transmission system for evacuation of power from Kaza Solar Power Project (880 MW) Est Cost: Rs 3251 Crore **Implementation Timeframe**: Matching with Kaza Solar Park i.e. Mar' 2024	• Recommended to MoP • Implementation through **TBCB** mode • CTU to intimate NRPC regarding increase in the estimated cost of the scheme.	To provide connectivity to Kaza Solar Power Project (880 MW) being developed by SJVNL along with further transfer of power beyond Wangtoo S/s (HPPTCL)

Detailed scope of the scheme is as given below:

Transmission system for evacuation of power from Kaza Solar Power Project (880 MW)

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*
1.	Establishment of 3x315 MVA (10x105 MVA single phase units including one spare) [$] 400/132kV Kaza PS (GIS) alongwith 2x80 MVAr (420kV) Bus Reactors at Kaza PS Future Scope at Kaza Pooling Station: Space provision for: i. 5 nos. of 132 kV line bays for future projects[#] ii. 2 nos. of 400/132 kV Transformers	315MVA, 400/220kV ICT: 3 nos. (10x105 MVA including 1 spare ICT) 400kV ICT bays: 2 nos. 132kV ICT bays: 2 nos. 400 kV GIS Line Bays: 2 nos. 420 kV, 80 MVAr Bus Reactor- 2 420 kV Bus Reactor bay- 2 no.
2.	Kaza-Wangtoo (HPPTCL) 400 kV D/c (Quad) line^	197 km
3.	2 no. of 400kV line bays at Wangtoo S/s (HPPTCL)for termination of Kaza-Wangtoo (HPPTCL) 400 kV D/c (Quad) line	400 kV Line Bays- 2 nos.
4.	1x80 MVAR switchable line reactor on each circuit at Kaza end of Kaza- Wangtoo 400 kV D/c line	420 kV, 80 MVAr SLR- 2 Line Reactor bay – 2 nos.
5.	Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c (Twin HTLS*) Line along with 80 MVAr switchable line reactor at Panchkula end at each circuit-210 Km	210 km 400 kV Line bays- 4 nos. (2 at Wangtoo and 2 at Panchkula) 420 kV, 80 MVAr SLR- 2 Line Reactor bay – 2 nos.

^Line capacity shall be 2500 MVA per circuit at nominal voltage

[$] *In case of transportation constraints, 5x200 MVA ICTs (16x66.67 MVA, 1-phase unit including one spare unit) shall be considered*

[#] *132 kV line bays (9 Nos.) at Kaza PS for termination of lines from 7 pockets of solar projects of SJVNL shall be under applicant scope for implementation. Space provision to kept additionally for above 9 nos. bays.*

***** *with minimum capacity of 2100 MVA on each circuit at nominal voltage*

Note:

(i) HPPTCL to provide space for 400 kV line bays at Wangtoo S/stn for termination of Kaza-Wangtoo (HPPTCL) 400 kV D/c (Quad) line and Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c

(ii) PGCIL to provide space for 400 kV line bays at Panchkula S/s alongwith SLR for termination of Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c

(iii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

(iv) The schedule of implementation would be matching with Kaza Solar park.

5. Space allocated at ISTS substations in ER to STUs for new intra-state lines.

5.1.1. CTU informed that space has been allocated to State Transmission Utility for line bays at ISTS substations in Easter Region for termination of new transmission lines by STU under intra-state scheme. The same has been deliberated in the 1st Consultation Meeting for Evolving Transmission Schemes in Eastern Region held on 25-11-2021 and the details are given below:

(a) Angul 765/400kV (POWERGRID) S/s: Space for 2 no. of new 765kV lines bays has been allocated to OPTCL (Odisha) for implementation of Angul (POWERGRID) – Paradeep (OPTCL) 765kV D/c intra-state line (including suitable switchable line reactors).

(b) Rourkela 400/220kV (POWERGRID) S/s: Space for 2 no. of new 220kV lines bays has been allocated to OPTCL (Odisha) for implementation of 2nd Rourkela (POWERGRID) – Tarkera (OPTCL) 220kV D/c intra-state line.

(c) Keonjhar 400/220kV (POWERGRID) S/s: Space for 2 no. of new 220kV lines bays has been allocated to OPTCL (Odisha) for implementation of Keonjhar (POWERGRID) – Tikarpada (OPTCL) 220kV D/c intra-state line.

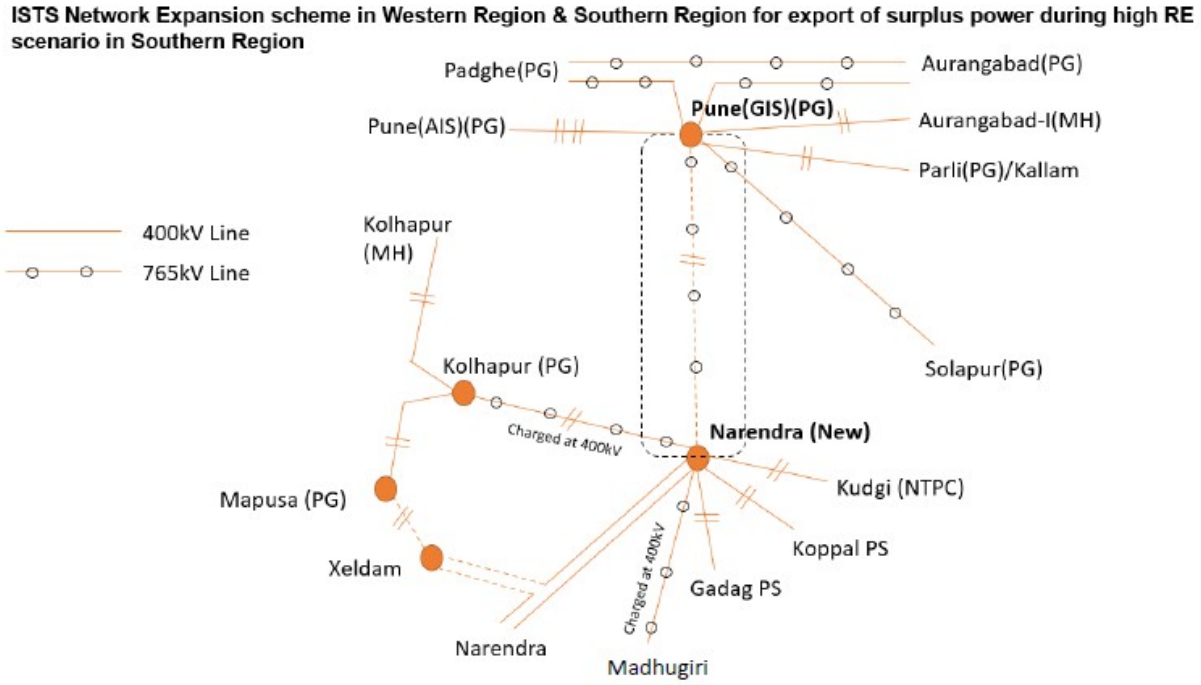
NCT noted the same.

6. ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region: The scheme has been proposed by CTU to cater to export requirement from SR under high RE scenario as well as to mitigate operational constraints being faced on Kolhapur – Kolhapur(MSETCL) 400kV D/c line under real-time as elaborated below:

(i) NLDC as part of operational feedbacks has highlighted the high loadings on transmission lines beyond Kolhapur (i.e. Kolhapur (PG)-Kolhapur(MH) 400kV D/c line, Kolhapur(MH)-Karad 400kV D/c line) which is attributable to multiple factors viz. high generation at Kudgi TPS, low generation at plants in southern Maharashtra, high load around Kolhapur area, high renewable generation in Southern Region etc. In addition, number of large RE based generation projects are envisaged in Southern Region especially in the prioritized REZs of Koppal, Gadag, Karur and Tuticorin areas. Stage-II Connectivity and LTA have already been granted to number of generation projects in these areas.

(ii) Transmission system for integration and immediate evacuation of power from these REZs has already been planned and is under different phases of implementation. However, constraints are observed for export of surplus power from REZs in Southern Region to Western Region under high RE scenario in SR.

6.1. Considering above aspects, the network expansion scheme comprising of Narendra New (GIS) – Pune (GIS) 765kV D/c line has been proposed by CTU between WR and SR for export of surplus power from SR, as depicted below:



6.2. **Deliberation of the scheme in earlier NCT:** In the 4th meeting of NCT held on 20th & 28th January, 2021, upgradation of Narendra (new) – Kolhapur (PG) 765 kV line currently operated at 400 kV level to 765 kV level was proposed. In the meeting POSOCO had stated that in case of high RE scenario in Southern Region, there would be constraint in export of power beyond Kolhapur (PG) even after upgradation of Narendra (new) – Kolhapur (PG) D/c line and reversing the flow of power in Raigarh-Pugalur HVDC line. Even in present scenario, in case of full generation at Kudgi STPP, constraints are observed in evacuation of power in Kolhapur (PG)- Kolhapur (MSETCL) 400 kV section. Accordingly, there was a need for not only upgradation of Narendra (new) – Kolhapur (PG) D/c section but also further augmentation beyond Kolhapur (PG). In the meeting it was agreed that Strengthening of Kolhapur (PG) - Kolhapur (MSETCL) 400 kV section may be taken up in WRPC(TP) based on the operational constraint reported by POSOCO.

Subsequently, POSOCO vide letter dated 02.02.2021 intimated that during Dec'20 – Jan'21, the very high power flow in the Kolhapur (PG) - Kolhapur(MSETCL) 400kV D/c line has been observed and loadings are 'N-1' non-compliance. NLDC and RLDCs are taking various measures in operations such as reduction in power order of HVDCs toward Southern Region (Talcher – Kolar, Bhadravati, Raigarh – Pugalur) to relieve the loading of Kolhapur (PG) – Kolhapur (MSETCL) 400 kV D/c line.

Accordingly, in the 3rd meeting of WRPC(TP) held on 14.06.2021, the "**Transmission system strengthening beyond Kolhapur for export of power from Solar & Wind Energy**

Zones in Southern Region" was deliberated wherein various alternatives were presented and the following was agreed by WRPC(TP):

(i) Re-conductoring of Kolhapur (PG) – Kolhapur 400 kV D/c line with conductor of minimum capacity of 2100 MVA/Ckt at nominal voltage alongwith bay upgradation work at Kolhapur (MSETCL).
(ii) The strengthening requirement beyond Kolhapur other than reconductoring of Kolhapur (PG) – Kolhapur 400 kV D/c line would be studied in separate joint study meeting with CEA, CTU, WRPC&POSOCO.

Re-conductoring of Kolhapur (PG) – Kolhapur 400 kV D/c line was recommended by NCT in its 5th meeting held on 25.08.2021 and 02.09.2021 and the scheme has already been allotted to PGCIL by MoP vide its OM dated 1.12.2021.

6.3. In compliance with the decision taken by WRPC(TP) in its 3rd meeting, Joint study meeting for Western Region & Southern Region regarding transmission system strengthening beyond Kolhapur for export of power from Solar & Wind Energy Zones in Southern Region was held on 16.12.2021. During the joint study meeting, the alternative of direct interconnection of Narendra (New) with Pune (GIS) through 765kV D/c line was found to be technically in order.

6.4. Subsequently, in compliance with the newly delegated function of RPC vide Gazette dated 03.12.2021 i.e. to provide views on the inter-state transmission system costing greater than Rs 500 Crore planned by CTU, the aforesaid scheme has been deliberated

- In the 40th meeting of SRPC held on 31.01.2021 wherein it was concluded that constituents shall forward their comments in writing on CTU's proposal for getting the clarifications from CTUIL. Subsequently a technical meeting would be convened and the outcome would be put up to SRPC in the next meeting.
- Special TCC meeting of SRPC held on 18.02.2022
- In the 41st SRPC meetings held on 02.03.2022.
- In the 41st WRPC meeting held on 23.02.2022.

6.5. The following views have been conveyed by WRPC (Maharashtra) and SRPC states:
(i) The Southern Regional States observed that the assumptions considered for the study are wrong and not in line with the CEA's Planning Criteria.
(ii) Maharashtra State Discom has also raised similar apprehensions on the proposal and that need to be taken into consideration.
(iii) The Southern Regional States, viz. Tamil Nadu, Karnataka, Andhra Pradesh, Telengana, Kerala and Puducherry unanimously objected for the redundant investment in view of the fact that the entire tariff burden will be borne by the States in the ratio of their LTA + MTOA and requested to rectify the wrong assumptions and conduct revised joint study.
(iv) However, CTU without elaborating on specific factual assumptions objected by Southern States stated that revised joint study may not be required.

6.6. CTU vide letter dated letter dated 16/02/2022 & 10.03.2022 to SRPC and letter dated 10.03.2022 to WRPC has already furnished their clarifications raised by SRPC constituents

and WRPC (enclosed as Annexure –II & III respectively). The gist of the various issues raised by constituents and their clarifications furnished by CTUIL is given below:

S.No.	**Observations**	**CTU Clarifications**
1.	• Despatch from RE stations and ISGS stations is not as per CEA guidelines • Planning has been done taking all the worst scenarios at a time • Explore the operation of HVDC links to the full extent so that power flow from SR-WR is minimal	• The scheme has been evolved based on Joint System Study with due participation of SR as well as WR constituents. • Solar Max (June' 24 Afternoon peak) scenario has been simulated with high generations in Narendra Complex (Kudgi, Raichur, Bellary, Gadag SEZ and Koppal SEZ). However, out of 18.5 GW potential REZ in SR, only 8 GW has been considered. In Maharashtra, only 1 GW at Kallam has been considered as rest of REZ's visibility not there due to land and other issues. • Diversity factors and generation dispatched have been considered as per methodology finalized in meeting in CEA regarding Load Generation Balance for All India Studies for 2024-25 for integration of RE projects • Reverse mode/Block Mode of HVDC links: (i) Raigarh-Pugalur reverse flow of 3000 MW has already been considered in the study. Sensitivity of operating this link in export mode is only about 5 % on the proposed Narendra (new)- Pune 765 kV D/c line. (ii) Operation of Talcher-Kolar HVDC in block mode/ reverse mode is not possible due to non-implementation of Talcher-II backup transmission system at Talcher and low voltage issues at Kolar. In case of block/reverse mode, high loading on Talcher-Meramundli line triggers the SPS at Talcher-II regeneration leading to tripping of generation units (iii) Reverse or block mode of Gazuwaka Back to Back HVDC link has no sensitivity on loading beyond Narendra/Kolhapur • Further, with respect to 100 % injection at identified REZ in SR, Transmission system is planned to ensure evacuation commensurate to LTA sought under 24x7 power supply scenario, in line with CEA's Transmission Planning Criteria (TPC). Moreover, as per TPC, usage of actual data of capacity factor is encouraged. Accordingly, the data as per past

		experience of RE generations in the area has been used. • Further, the area specific LGB (Koppal, Gadag area) was created to avoid any curtailment under LTA under probable operational scenarios
3.	The issue of overloading of the Kolhapur(PG)-Kolhapur 400 kV DC line under N-1 condition was a pre-existing problem in the State network of Maharashtra prior to approval of transmission scheme for 8 GW RE capacity addition in SR, as per the communications of CTU and POSOCO.	NLDC as part of operational feedbacks vide its letter dated 02.02.2021 highlighted the high loadings beyond Kolhapur in case of high RE generation in Southern Region. Subsequently, detailed system studies done to assess the adequacy of existing Inter-regional corridors between SR & WR to cater to export of surplus power from potential REZs in SR. The same was taken up for deliberation in 3rd WRPC (TP) held on 14.06.2021 Also, In 3rd SRPC (TP) meeting held on 24.08.2021 , the requirement of re-conductoring of Kolhapur-Kolhapur (PG) and additional strengthening beyond Kolhapur to cater to requirement of surplus power from REZ's in SR was acknowledged and recorded, making it evident that the requirement of proposed scheme is on account of export of surplus power from SR and not an issue of local intra-state loading
4.	CTU's approach in linking the grant of LTA with the new network upgradation which was not part of the transmission schemes approved by Hon'ble CERC in 200/MP/2019 is contrary to the approval accorded by CERC.	CTU in its affidavit dated 14.10.2019 in petition no 200/MP/2019 has submitted that for export of large surplus power of SR, additional inter—regional links and strengthening in NEW (North-East-West) Grid may be required for supply of power to beneficiaries in WR, NR & ER. The same shall be identified subsequently on the basis of All-India System Studies as per requirements. Accordingly, after deliberations through joint study meetings, this additional strengthening beyond Kolhapur has been identified. As far as linking the grant of LTA with the proposed scheme is concerned, CTU has always tried to utilise the margins available in the existing/under implementation system. However in the instant case for grant of additional LTA exceeding 4450 MW, additional system strengthening between SR & WR grid is required to facilitate transfer of power without any curtailment under any of the scenarios.
5.	The optimal feasible solution to resolve the overloading in Kolhapur (PG)- Kolhapur(MS)- 400 kV DC line is to make LILO of any one of the 400 kV lines between Kolhapur	Unrealistic assessment and system studies submitted by TANGEDCO as several MSETCL Intra-state lines loaded beyond their thermal limits and critically loaded in the base case itself. With respect to options proposed. Problem of (n-1)) compliancy exists in all.

	SS(MS) and any other 400 kV SS in Maharashtra(ie. Karad, Ankud, Sholapur etc.) at Kolhapur (PG) substation	

6.7. CEA informed NCT that the proposed scheme has not been agreed at RPCs forum wherein the constituents have highlighted the need to conduct revised study with all SR beneficiaries, CEA, POSOCO, Maharashtra State Transco, Distribution companies. While CTU did respond to the queries raised by the constituents, the scheme has been unanimously objected by the SR constituents citing redundant investment in view of the fact that the entire tariff burden will be borne by the States in the ratio of their LTA+MTOA.

6.8. CTU informed that about 4200 MW LTA has been granted from SR to NEW (North-East-West) grid with availability of Transmission System for Evacuation of Power from various REZ's in SR and System Strengthening in WR (Re-conductoring of Kolhapur (PG) – Kolhapur (MSETCL) 400kV D/c line. Further, they have already received applications in the month of November 2021 of the order of 1080 MW seeking transfer of power from SR to NEW Grid. In case the network expansion schemes for enabling export of power from REZs in Southern Region to Western Region are not identified timely, it may not be possible to grant LTA to these applicants and RE generation may get stranded.

6.9. POSOCO reiterating its stand at RPC forum stated that the real time constraints were being faced on Kolhapur (PG)-Kolhapur (MSETCL) lines during export of power from SR. Pune and Mumbai are the load centers in Western Maharashtra and the generation complex is in north Karnataka area comprising generation from Kaiga, Kudgi, hydro generation and the new renewable generations coming in that particular area. As more renewable generations in the Gadag, Koppal areas get added, line loadings towards the WR side would increase. Even during high import scenario of SR, this situation may continue. Therefore, it has been highlighted that apart from 400 kV Kolhapur PG – Kolhapur (MSETCL) D/C line, there are other constraints beyond Kolhapur also. If it is possible to directly transfer power to Pune or Mumbai it will be helpful for the system.

6.10. Keeping in view the requirement of the link (Narendra-Pune 765 kV D/C)as emphasised by CTU and POSOCO, NCT agreed with the proposal of CTU. However, in view of reservation of various stake holders at WRPC/SRPC meeting regarding the scheme, NCT opined that CEA may review / study the proposal and in case the proposal is justified, the scheme may be recommended to MoP for its approval. Accordingly, CEA has studied the proposal and observations are as follows:

(i) Due to typical location of Kudgi TPS, the power from Kudgi TPS flows towards Western Region, therefore, with increase in the generation from Kudgi TPS beyond 55%, Kolhapur –Karad 400kV D/c line becomes 'n-1' non- compliant.

(ii) With high RE generation at Koppal and Gadag, and dispatch beyond 60 % from Kudgi TPS, several lines are overloaded and become 'n-1'non-compliant. With the "Narendra-Pune 765 kV D/C line", flow on these line is observed to be within limits. There is considerable reduction in the system losses with "Narendra-Pune 765 kV D/C line".

(iii) Government of India has set a target of achieving 500 GW of non-fossil installed capacity by 2030. MNRE has identified potential RE zones totalling to 181.5 GW to be added till 2030. This includes additional 17 GW potential (solar-9 GW, wind-8 GW) is the state of Karnataka. The identified potential zones in Karnataka are Koppal (4 GW), Gadag (4 GW), Davangere/Chitradurga (4 GW), Bijapur (2 GW), Bellary (1.5 GW) and Tumkur (1.5 GW). These are in addition to the RE capacity totalling to 18.5 GW in Southern Region being integrated to ISTS network. The "Narendra (New) – Pune (GIS) 765kV D/C line" would also help in evacuation of power from the additional identified RE zones, particularly Koppal & Gadag RE Zones.
The detailed report attached as Annexure-IV

6.11. Recommendation of NCT:

S.no	Name of the scheme/est. cost	Decision of NCT	Purpose /Justification
1	ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region Est Cost: Rs 2374 Crore **Implementation Timeframe**: 18 months from SPV Transfer	• Recommended to MoP • Implementation through **TBCB** mode	To cater to export requirement from SR under high RE scenario as well as to mitigate operational constraints being faced on Kolhapur(PG) – Kolhapur (MSETCL)-Karad 400kV corridor.

Detailed scope of the scheme is as given below:

ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*
1.	Narendra New (GIS) – Pune (GIS) 765kV D/c line with 1x330MVAr switchable line reactor on each ckt at both ends	340 km 765 kV line bays -2 (GIS) (at Narendra New) 765 kV line bays -2 (GIS) (at Pune) 765 kV, 330 MVAr SLR – 2 nos (7 X 110 MVAr incl. 1 switchable spare unit) at Pune (GIS) 765 kV, 330 MVAr SLR – 2 nos (6 X 110 MVAr) at Narendra (New) (GIS)

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*
2.	Upgradation of Narendra (New) (GIS) to its rated voltage of 765 kV level along with 4x1500 MVA transformer and 2x330 MVAr Bus Reactor.	765/400 kV, 1500 MVA- 4 no. (13 X 500 MVA incl. 1 spare unit) 765 kV ICT bays- 4 nos.(GIS) 400 kV ICT bays- 2 nos.(GIS)^ 765 kV, 330 MVAr BR – 2 nos. (7 X 110 MVAr inc. 1 switchable spare unit to be used for both bus/line reactors) 765 kV Bus Reactor bays – 2 nos. (GIS)

*Narendra (New)(GIS) - Kolhapur 765kV D/c line to be kept charged at 400kV level

^Out of required 04 nos. of 400kV ICT bays (GIS) for 765/400kV ICTs, 02 nos. of 400 kV ICT bays (GIS) for 765/400kV ICTs are under implementation through TBCB route under the scheme "Evacuation of Power from RE Sources in Koppal Wind Energy Zone (Karnataka) (2500 MW)"

Note:

(i) Powergrid to provide space for 2 no of 765 kV GIS line bays alongwith SLR at both Narendra(new) and Pune end for termination of Narendra New (GIS) – Pune (GIS) 765kV D/c line

(ii) Powergrid to provide space for implementation of 4 no. of 765/400kV ICTs alongwith ICT bays at Narendra (New) (GIS) out of which 02 nos. of 400 kV ICT bays (GIS) for 765/400kV ICTs are under implementation through TBCB route under the scheme "Evacuation of Power from RE Sources in Koppal Wind Energy Zone (Karnataka) (2500 MW)"

(iii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

(iv) Implementation timeframe: 18 months from SPV Transfer

7. ICT Augmentation associated with Transmission scheme for evacuation of 1500 MW from Gadag SEZ , Karnataka : Part A Phase-II

7.1. Transmission scheme for evacuation of 1500 MW from Gadag SEZ Part A under Phase-II broadly comprised of 400/220 kV, 3x500 MVA ICT Augmentation at Gadag Pooling Station along with Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/c line. The same was taken up for deliberation in the 7th meeting of NCT held on 03.12.2021

7th NCT agreed that ICT augmentation at Gadag PS scheme may be approved by CTU based on the progress of RE generations so that the transformation capacity can be optimized. The balance part of the scheme comprising of Gadag PS-Koppal PS 400 kV D/C line along with associated bays was approved by NCT for implementation through TBCB route. Accordingly, Transmission scheme for evacuation of 1500 MW from Gadag SEZ Part A : Phase-II comprising of Gadag PS-Koppal PS 400 kV D/C line was approved by 7th NCT and the same notified by CEA vide Gazette notification dated 04.03.2022.

7.2. Subsequently, CTUIL vide its letter dated 23.12.2021 has informed that total Stage-II Connectivity at Gadag PS has reached 1560 MW. Further, as per information provided by SECI, additional connectivity applications for 600 MW and corresponding LTA applications are expected to be submitted by RE developers shortly for which PPA has already been signed between SECI and RE developers. In view of above, CTUIL has requested that augmentation of balance 400/220 kV, 3x500 MVA ICT (along with associated bays) and 4 nos. of 220 kV line bays for facilitating connectivity to RE developers may be taken up for deliberations/recommendations/approval in the upcoming NCT.

CTUIL has furnished the following Status of Stage-II Connectivity and LTA granted at Gadag P.S.

Sl. No.	Applicant name	St-II Connectivity Granted (MW)	LTA granted (MW)
1	Vena Energy Vidyuth Private Limited	160	160
2	Renew Solar Power Pvt Ltd	300	300
3	Azure Power India Private Ltd	120+50	NA
4	Green Infra Wind Energy Ltd	180	180
5.	Adani Renewable Energy Holding	450	-
6.	ReNew Naveen Urja Pvt. Ltd	300	-
7.	Roha Renewables India Pvt Ltd	115	NA
	Total	1675	640

7.3. CEA stated that Stage-II Connectivity of the RE developers would translate into LTA, once the PPA between the RE developers and SECI (REIA) is signed. As per PPA, the RE developers are given a period of 18 months from PPA signing for commissioning of their RE project. ICT Augmentation can also take place in the timeframe of 18 months. Accordingly, information regarding signing of PPA would help in deciding the implementation timeframe of ICT Augmentation, so that the option of phasing of the commissioning of ICT's can be explored.

7.4. MNRE informed that based on information of PPA signing at Gadag PS furnished by SECI, Stage-II Connectivity granted/to be granted at Gadag PS amounts to 2440 MW , out of which PPA for 460 MW has already been signed. Further, PPAs corresponding to 1100 MW is scheduled to be signed in April' 2022. Remaining 880 MW pertains to RE developers coming via Land and Financial Closure route.

7.5. CEA stated that Transmission scheme for evacuation of 1500 MW from Gadag SEZ Part A under Phase-II comprising of Gadag PS-Koppal PS 400 kV along with associated bays was approved by 7th NCT for implementation through TBCB route and the same has been allocated to M/s RECPDCL (BPC). In view of the fact that the need for ICT Augmentation at Gadag P.S has been confirmed by CTUIL as well as MNRE, the Augmentation of

transformation capacity at Gadag PS can also be incorporated in the scope of works of the Phase-II Transmission Scheme already under bidding. This decision would be in line with the decision taken at S.no 2.2 in respect of " Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1"

7.6. CEA further stated that the additional scope of works would be intimated to BPC for incorporation in the bidding documents. The revised scope of works would not entail any change in the Gazette Notification as, only the broad scope of works were notified and it was mentioned to refer to the minutes of 7th NCT for detailed scope of works. Accordingly, the Corrigendum to the Minutes of 7th meeting of NCT would be issued detailing the modified scope of works.

7.7. NCT agreed with the proposal to include the scope of works of ICT Augmentation at Gadag in the already notified scheme Transmission scheme for evacuation of 1500 MW from Gadag SEZ under Part A: Phase-II. NCT directed to obtain the views of BPC in this regard.

7.8. RECPDCL vide its letter dated 19.04.2022 has submitted that with the inclusion of additional scope of work of 3x500 MVA 400/220 kV ICTs under the transmission scheme *Transmission scheme for evacuation of 1500 MW from Gadag SEZ under Part A: Phase-II* , the qualification requirement shall remain unchanged. The bid deadline of the project is due on 02.06.2022 and the additional scope of work may be intimated to the bidders through an amendment.

7.9. After deliberations**,** NCT approved the following revised scope of works:

A. The revised scope of works for the **"Transmission scheme for evacuation of 1500 MW from Gadag SEZ under Part A: Phase-II"** would be as tabulated below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	400/220 kV, 3x500 MVA ICT Augmentation at Gadag Pooling Station	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 220 kV ICT bays – 3 220 kV line bays – 4(to be taken up as per Connectivity/LTA applications received)
2.	Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/c line	Length – 60
3.	400 kV line bays at Koppal PS for Gadag PS-Koppal PS 400 kV D/c line	Line bays – 4

Note:

(i) *Developer of Koppal PS to provide space for 2 no. of 400 kV line bays at Koppal PS for termination of Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/C Line.*

(ii) *Developer of Gadag-Ph I PS to provide space for requisite ICT Augmentation and 2 no. of 400 kV line bays at Gadag PS for termination of Gadag PS-Koppal PS 400 kV*

(high capacity equivalent to quad moose) D/C Line.

(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.*

A. Summary of the deliberations of the 8th NCT meeting held on 25.03.2022.

1. ISTS Transmission schemes, costing upto Rs 100 Crore, noted by NCT: No information in this regard received from CTUIL

2. ISTS Transmission schemes, costing between Rs 100 Crore to Rs 500 Crore, approved by NCT :

The transmission schemes approved by NCT is given below:

S. no	Transmission Scheme	Implementation Mode	Implementation Timeframe	Allocated to	Estimated Cost (Rs Crore)	Survey Agency
1.	**Inter-regional ER-WR Interconnection**	TBCB	24 months from the date of SPV Transfer or September' 2024, whichever is later	RECPDCL Through Gazette Notification by CEA	293	RECPDCL
2.	**Western Region Expansion Scheme-XXV (WRES-XXV)**	RTM	15 months from date of allocation to implementing agency	CTU through OM/letter by CEA	210	
3.	**Western Region Expansion Scheme-XXVII (WRES-XXVII):**	TBCB	18 months from SPV Transfer or matching with 3rd 400/220kV, 315MVA ICT at Dhamtari S/s to be implemented by CSPTCL (anticipated by Mar-24), whichever is later.	PFCCL Through Gazette Notification by CEA	260	PFCCL
4.	**Western Region Expansion Scheme-XXVIII (WRES-XXVIII)**	TBCB	Phased implementation i.e. from December 2023 to March	PFCCL Through Gazette Notification by CEA	193.04	PFCCL

			2024			
	Western Region Expansion Scheme-XXIX (WRES-XXIX)		Phased commissioning March'24 – Dec'24		115.24	
6.	**Transmission system for evacuation of power from Luhri Stage-I HEP**	TBCB	Matching time frame of Luhri Stage-I HEP i.e. 24th April, 2025	RECPDCL Through Gazette Notification by CEA	432	CTUIL

The broad scope of above ISTS scheme, approved for implementation through TBCB mode by NCT to be notified in Gazette of India is as given below:

S.No.	Name of Scheme & Implementation timeframe	Broad Scope	Bid Process Coordinator
1)	**Inter-regional ER-WR Interconnection**	i) Jeypore – Jagdalpur 400kV D/c line ii) Associated line bays and reactors **(Detailed scope as approved by 8th NCT and subsequent amendments thereof)**	RECPDCL
2)	**Western Region Expansion Scheme-XXVII (WRES-XXVII):**	i) Raipur Pool – Dhamtari 400 kV D/c line ii) Associated line bays and reactors **(Detailed scope as approved by 8th NCT and subsequent amendments thereof)**	PFCCL
3)	**Western Region Expansion Scheme-XXVIII (WRES-XXVIII) & XXIX (WRES-XXIX)**	i) Creation of 220 kV level alongwith 400/220 kV ICTs at 765/400 kV Raipur Pool S/s & 765/400 kV Dharamjaigarh S/s **(Detailed scope as approved by 8th NCT and subsequent amendments thereof)**	PFCCL
4)	**Transmission system for evacuation of power from Luhri Stage-I HEP**	(i) Establishment of 7x105 MVA, 400/220kV Nange GIS Pooling Station (ii) Nange (GIS) Pooling Station – Koldam 400 kV D/c line* (Triple	RECPDCL

		snowbird) – 40 km (iii) Bypassing one ckt of Koldam – Ropar/Ludhiana 400kV D/c line (Triple snowbird) at Koldam and connecting it with one of the circuit of Nange- Koldam 400kV D/c line(Triple snowbird), thus forming Nange-Ropar/ Ludhiana one line (Triple snowbird) (iv) Associated line bays and reactors **(Detailed scope as approved by 8th NCT and subsequent amendments thereof)**	

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

The ISTS transmission schemes recommended to MoP are given below:

S.no	Transmission Scheme	Implementation Mode	Implementation Timeframe	Survey Agency	Estimated Cost (Rs Cr.)
1.	Transmission system for evacuation of power from Kaza Solar Power Project (880 MW)	TBCB	Matching with Kaza Solar Park i.e. Mar' 2024	PFCCL	Rs 3152 Crore
2.	ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region	TBCB	18 months from SPV Transfer	RECPDCL	Rs. 2374 Crore

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

S.No.	**Name of Scheme & Implementation timeframe**	**Broad Scope**	**Bid Process Coordinator**
1.	Transmission system for evacuation of power from Kaza Solar Power Project (880 MW) Timeframe: Matching with Kaza Solar Park i.e. Mar' 2024	i) Establishment of 3x315 MVA 400/132kV Kaza PS (GIS) ii) Kaza-Wangtoo (HPPTCL) 400 kV D/c (Quad) line iii) Wangtoo (HPPTCL) - Panchkula	(To be decided by MoP)

		(PG) 400 kV D/c iv) Associated line bays and reactors **(Detailed scope as approved by 8th NCT and subsequent amendments thereof)**	
2.	ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region Timeframe: 18 months from SPV Transfer	i) Narendra New (GIS) – Pune (GIS) 765kV D/c line ii) Upgradation of Narendra (New) (GIS) to its rated voltage of 765 kV level iii) Associated line bays and reactors **(Detailed scope as approved by 8th NCT and subsequent amendments thereof)**	(To be decided by MoP)

4. Modification in the scope of works of Transmission Scheme presently under bidding , approved by earlier NCTs:

4.1. The modified scope of works for **Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1** (recommended by 5th NCT and notified by MoP) is as follows:

S. No	**Scope of works**	**MVA/ckm**
1	Establishment of 5x500 MVA, 400/220 kV pooling station at Fatehgarh-4 along with 2x125 MVAr Bus Reactor **Future provisions:** Space for **765/400kV ICTs along with bays: 6 nos.** **765kV line bay along with switchable line reactor: 6 nos.** **765kV Bus Reactor along with bays: 3 nos.** 400/220 kV ICTs along with bays: **8** nos. 400 kV line bays along with switchable line reactor: **10** nos. 400kV Bus Reactor along with bays: 2 nos. 400kV Sectionalization bay: **2sets** 220 kV line bays: **13** nos. 220kV Sectionalization bay: **3sets**	400/220 kV, 500 MVA ICT – **5** nos. 400 kV ICT bays - **5** nos. 220 kV ICT bays - **5** nos. 400 kV line bays - 2 nos. 220 kV line bays - As per connectivity granted to RE developers (**7** no. of bays considered at present). 125 MVAr, 420 kV bus reactor - 2 nos. 420 kV reactor bay - 2 nos. **220kV Sectionalization bay: 1set** **220 kV Bus Coupler (BC) Bay -2 nos.** **220 kV Transfer Bus Coupler (TBC) Bay - 2 nos.**

S. No	**Scope of works**	**MVA/ckm**
	220 kV Bus Coupler (BC) Bay -3 nos. **220 kV Transfer Bus Coupler (TBC) Bay - 3 nos.**	
2	Fatehgarh-4- Fatehgarh-3 400 kV D/c twin HLTS* line	100 ckm
3	2 no. of 400 kV line bays at Fatehgarh-3	400 kV line bays- 2

** with minimum capacity of 2100 MVA on each circuit at nominal voltage*

Note:

(i) Developer of Fatehgarh-3 S/s(new section) to provide space for 2 nos. of 400 kV line bays at Fatehgarh-3 S/s for termination of Fatehgarh-4- Fatehgarh-3 400 kV D/c twin HLTS line

(ii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

(iii) *Scheme to be awarded after SECI/ /REIA awards first bid of RE project* at Fatehgarh-4 pooling station.

4.2. The modified scope of works for **Transmission scheme for evacuation of 1500 MW from Gadag SEZ under Part A: Phase-II** (approved by 7th NCT) is as follows:

Sl. No.	**Scope of the Transmission Scheme**	**Capacity /km**
1.	400/220 kV, 3x500 MVA ICT Augmentation at Gadag Pooling Station	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 220 kV ICT bays – 3 220 kV line bays – 4(to be taken up as per Connectivity/LTA applications received)
2.	Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/c line	Length – 60
3.	400 kV line bays at Koppal PS for Gadag PS-Koppal PS 400 kV D/c line	Line bays – 4

Note:

(i) *Developer of Koppal PS to provide space for 2 no. of 400 kV line bays at Koppal PS for termination of Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/C Line.*

(ii) *Developer of Gadag-Ph I PS to provide space for requisite ICT Augmentation and 2 no. of 400 kV line bays at GadagPSfor termination of Gadag PS-Koppal PS 400 kV (high capacity equivalent to quadmoose) D/C Line.*

(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.

Annexure-I

List of participants of 8th NCT meeting held on 25.03.2022 through VC

Sl. No.	Name (Sh./Smt.)	Designation
	Central Electricity Authority	
1.	B K Arya	Chairperson
2.	Goutam Roy	Member (Power System)
3.	Ishan Sharan	Chief Engineer (PSPA-I)
4.	Awdhesh Kumar Yadav	Director (PSPA-I)
5.	Priyam Srivastava	Deputy Director
6.	Vikas Sachan	Deputy Director
7.	Nitin Deswal	Asst. Director
8.	Komal Dupare	Asst. Director
	Ministry of Power	
9.	Gautam Ghosh	Director (Trans)
	MNRE	
10.	Dilip Nigam	Advisor
11.	Irfan Ahmed	Director
	NITI Aayog	
12.	Manoj Upadhyay	Deputy Adviser (Energy)
	Technical Experts	
13.	Dr. Radheshyam Saha	Technical Expert
14.	S. K. Ray Mohapatra	Technical Expert
	Central Transmission Utility of India Limited	
15.	P.C Garg	COO
16.	Ashok Pal	Dy. COO
	POSOCO	
17.	S. R. Narasimhan	Director (System Operation)
18.	Priyam Jain	Manager