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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 4th बैठक – मिनट

Subject: Minutes of the 4th Meeting of "National Committee on Transmission" (NCT)

Sir/Madam,

The two sittings of the 4th meeting of the "National Committee on Transmission" (NCT) were held on 20.01.2020 and 28.01.2020 respectively under the Chairmanship of Shri P. S. Mhaske, Chairperson, CEA . The minutes of the meeting are enclosed herewith.

भवदीय,

(Ishan Sharan)
Chief Engineer (PSPA-I) &
Member Secretary (NCT)

Copy to:

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

(ii) CMD (POSOCO), B-9, Qutub, Institutional Area, Katwaria Sarai, New Delhi – 110010

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, Central Transmission Utility POWERGRID, Saudamini, Plot No. 2, Sector-29, Gurgaon – 122 001.
7.	Sh. Rajnath Ram, Adviser (Energy), NITI Aayog, Parliament Street, New Delhi – 110 001.	8.	Sh. P. K. Pahwa, Ex. Member (GO&D), CEA 428 C, Pocket -2, Mayur Vihar, Phase -1, Delhi – 110091.
9.	Shri Prabhakar Singh, Ex. Director (Projects), POWERGRID D 904, Tulip Ivory, Sector-70, Gurgaon – 122 001.		

Minutes of the 4th meeting of National Committee on Transmission held on 20.02.2021 & 28.01.2021

List of participants of the meeting is attached as **Annexure-A**

Chairman, NCT welcomed the participants to the meeting and requested Chief Engineer (PSPA-I), CEA to proceed with the meeting. Chief Engineer (PSPA-I), CEA stated that the 3rd meeting of NCT was held on 26.05.2020 and 28.05.2020. This 4th meeting is being convened after a lapse of around seven months. The delay can be attributed to the fact that on account of lockdown, conducting the regional Standing Committees on Transmission Planning could not be done as per their normal schedule. He requested Director (PSPA-I), CEA to take up the Agenda Items.

A. Review of the earlier meetings of NCT:

1. Confirmation of the minutes of 3rd meeting of National Committee on Transmission (NCT)

1.1. The minutes of 3rd meeting of National Committee on Transmission held on 26.05.2020 and 28.05.2020 were issued vide CEA letter No. File No.CEA-PS-11-15(11)/1/20-PSPA-I/10573/2020 dated 17.07.2020. The minutes of the meeting were confirmed by the members.

2. Status of the transmission schemes approved/noted in the 3rd meeting of Reconstituted NCT:

2.1. The details of the transmission schemes noted/approved in 3rd meeting of NCT is given below:

Sr. No	Name of the Transmission Scheme	Approved/ Noted	MoP approval	BPC
1.	Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh Notified by MoP as a single scheme with PS at Rajgarh. The pooling station was proposed at Pachora and scheme was proposed to be implemented into two phases. 1. Transmission system for evacuation of power from RE projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh. 2. Transmission system for evacuation of power from RE projects in Rajgarh (1000 MW) SEZ in Madhya Pradesh.	Noted	Intimated to MoP regarding phasing. Yet to be approved by MoP. Waiting for NCT Recommendation.	REC Amendment yet to be issued.
2.	Transmission system strengthening	Noted		REC

	scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part A Scheme notified by MoP as a single scheme with pooling station at Ramgarh. The Ramgarh PS shifted to Fatehgarh area to avoid GIB zone			
3.	Transmission Scheme for Evacuation of power from RE sources in Koppal Wind Energy Zone (Karnataka) (2500 MW) The ISTS PS relocated near the proposed Koppal Solar Park.	Noted		PFC
4.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II-Part B1 and Part G1 Allotted to PGCIL by MoP. OM No: 15/3/2018-Trans-Pt(1) dated 23-01-2020. OM issued for ± 600 MVAr STATCOM at Fatehgarh-II and Bhadla-II Splitting of ± 600 MVAr STATCOM into two nos. of ± 300 MVAr STATCOM was proposed.	Noted		RTM PGCIL
5.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part G1 Allotted to PGCIL by MoP. OM No: 15/3/2018-Trans-Pt(1) dated 23-01-2020. The OM issued for LILO section on DC towers with Quad conductor. Extension of LILO section with Twin HTLS conductor and on multi-circuit towers was proposed.	Noted		RTM PGCIL
6.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under	Noted		PFCC L. Amend

	Phase-II-Part D Scheme notified by MoP Gazette Notification dated 24-01-2020. The Notification did not include spare unit. Provision of spare reactor unit at Aligarh was proposed.			ment issued
7.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part G Scheme notified by MoP Gazette Notification dated 24-01-2020 Inclusion of 1x110 MVAr spare reactor at Narela(GIS) to be used as spare for Khetri – Narela (GIS) 765 kV D/c line was proposed	Noted		PFCCL. Amendment issued
8.	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F Scheme notified by MoP Gazette Notification dated 24-01-2020. Correction in the scheme notified by MoP (provision of line reactors at both ends of Bikaner-II- Khetri lines instead of only at Khetri end) was proposed.	Noted		PFCCL. Amendment issued
9.	Transmission system for evacuation power from Pakaldul HEP in Chenab Valley HEPs. The following packages of the approved scheme was recommended to MoP by CEA.	Approved	Approved	
	1. Transmission system for evacuation power from Pakaldul HEP in Chenab Valley HEPs - Connectivity System (TBCB)		MoP Gazette Notification dated 23-09-2020	PFCCL

	2. Transmission system for evacuation power from Pakaldul HEP in Chenab Valley HEPs – LTA System		MoP OM No: 15/3/2018-Trans-Pt(2) dated 1025-09-2020	RTM PGCIL
10.	Transmission scheme for evacuation of 8 GW RE injection at Khavda P.S The following packages of the approved scheme was recommended to MoP by CEA.	Approved	Approved and notified vide Gazette Notification dated 23-09-2020	
	1. Transmission scheme for evacuation of 3 GW RE injection at Khavda P.S. under Phase-I (TBCB)			PFCCL
	2. Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part A (TBCB)			REC
	3. Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part B (TBCB)			REC
	4. Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part C (TBCB)			REC
	5. Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part D (TBCB)			REC
	6. Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part E (TBCB)			REC
11.	Augmentation of ICTs at Western Region (WR)	Approved	Approved	
	1. Augmentation of ICTs at Western Region (WR)- in Morena 400/220 kV S/stn of M/s CWRTL		MoP OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
	2. Augmentation of ICTs at Western Region (WR)- in Wardha and Seoni 400/220 kV S/stn of M/s PGCIL			RTM PGCIL
12.	Conversion of 50MVAr fixed line reactor at Bina (PG) end of Sagar (MP)- Bina(PG) 400kV line into switchable line reactor	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL

13.	Development of common facilities at Tuticorin-II GIS for RE Integration	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
14.	Transmission system for power evacuation from Arun-3 (900MW) HEP, Nepal of M/s SAPDC- Indian Portion	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
15.	Shifting of 400/220kV ICT from section A to section B at Durgapur (POWERGRID) S/s	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
16.	Establishment of new 220/132kV substation at Nangalbibra	Approved	MoP Gazette Notification dated 23-09-2020	PFC
17.	Installation of line reactor at a (POWERGRID) S/s	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
18.	Augmentation of transformation capacity at Salakati (POWERGRID) S/s	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
19.	Reconductoring of ISTS lines of Powergrid	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
20.	Upgradation of switching scheme at POWERGRID substations at Nirjuli and Imphal	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL
21.	400kV connectivity to Surajmaninagar (TSECL) 400/132kV S/s	Approved	Allotted to PGCIL by MoP vide OM No: 15/3/2018-Trans-Pt(2) dated 25-09-2020	RTM PGCIL

2.2. Director, CEA stated that in addition to the above mentioned schemes, NCT in its 3rd meeting also approved the following transmission scheme for evacuation of power from Dholera UMSP (Phase I – 2GW)

i) Establishment of 400 kV Dholera Pooling station (Injection of power from the Solar Park at 400kV level) along with 400kV, 1x125MVAr bus reactor

ii) LILO of both circuits of Vadodara- Pirana (PG) 400 kV DC line at Dholera

pooling station.

However, GETCO in the 2nd meeting of WRPC (TP) held on 04.09.2020 had requested to review the transmission system for evacuation of power from Dholera UMSP (Phase I – 2 GW) and plan a 765/400 kV pooling station at Dholera along with 765 kV outlet upto planned Ahmedabad S/stn. Therefore, Dholera transmission scheme was not recommended to MoP for notification in the Gazette of India.

2.3. Director, CEA further stated the transmission system associated with 2 GW RE generations from potential WEZs in Osmanabad was approved in 1st meeting of WRSCT held on 05.09.2018. Subsequently, the scheme was also approved in the 2nd meeting of NCT and 3rd meeting of ECT held on 04.12.2018 and 21.12.2018 respectively. The transmission scheme included establishment of 4x500 MVA Kallam pooling station. However, in the 2nd meeting of WRSCT held on 21.05.2019, it was agreed to reduce the capacity of the Kallam 400/220 kV pooling station agreed as a part of ISTS to 1000 MW (from 2000 MW already planned). The scope was reduced as evacuation system for 1 GW out of total 2 GW potential in Osmanabad was being planned by MSETCL in intrastate. Erstwhile National Committee on Transmission (NCT) had approved the revised transmission package with reduced transformation capacity at Kallam P.S. in its 4th meeting held on 31.07.2019. Subsequently, Ministry of Power vide Gazette notification dated 24.01.2020 has notified the scheme with RECTPCL as BPC for implementation of the transmission scheme through TBCB route.

While revising the transmission scheme commensurate to evacuation of only 1 GW RE potential form Osmanabad area, the revisions required in the provisions kept in the future scope of works were inadvertently left out. Accordingly, a meeting to review and optimise the space requirement at Kallam PS for future 400/220kV ICTs & 220kV bays was held on 11.06.2021 amongst CEA, CTU, RECTPCL, SECI, MNRE and MSETCL.
The scope of work for the transmission scheme "Transmission system for evacuation of power from RE projects in Osmanabad area (1 GW) in Maharashtra" after incorporating the modified future provisions is as given below:

Sl. No.	**Scope of the Transmission Scheme**	**Capacity /km**
1.	Establishment of 2x500MVA, 400/220kV near Kallam PS Space for future Provisions 400/220 kV ICTs along with bays: 2 nos. 400 kV line bays including the space for switchable line reactors: 6 nos. 220kV line bays: 4 nos. 400 kV bus reactor along with bays: 1 no.	2x500MVA, 400/220kV 400kV ICT bay-2 220kV ICT bay-2 400kV line bay-4 220kV line bay- 4
2	1x125MVAr bus reactor at Kallam PS	1x125 MVAr 400kV reactor bay -1
3	LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS	10km

4	Provision of new 50MVAr switchable line reactor with 400 ohms NGR at Kallam PS end of Kallam – Pune(GIS) 400kV D/c line	2x50 MVAr 400kV Reactor bays -2

2.4. Members noted the status of the schemes and approved the modification done in the future scope of works of the "Transmission system for evacuation of power from RE projects in Osmanabad area (1 GW) in Maharashtra"

3. Status of transmission schemes under bidding process :

3.1. A meeting was held amongst CEA, CTU, SECI & MNRE on 16.10.2020 based on MNRE letter dated 13.10.2020 vide which it had requested to put such transmission projects on hold where RE generations are not coming up. The status of bidding have been apprised to MoP and BPCs in the form of Minutes of the Meeting. The summary of the ISTS projects presently under bidding through TBCB is enclosed as Annexure-I. The status of bidding process of these ISTS projects as submitted by BPCs is enclosed as Annexure-II.

3.2. The proposal regarding phasing of the "Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh" along with the scope of works to be carried out in two phases was earlier noted by the 3rd NCT. However, when the proposal was forwarded to MoP vide CEA letter dated 01/07/2020 for issuance of necessary directions to BPC, it was opined by MoP to obtain approval of the NCT.

On similar lines, in order to proceed with phase-wise bidding of the Gadag scheme in Southern Region as well as for eliminating the 400/220 kV transformation capacity under Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F, approval of NCT was required to enable BPC to proceed with bidding of these schemes.

3.3. The details of the Transmission Schemes which needs to be implemented in phases is as follows:

3.3.1. Transmission system for evacuation of power from RE projects in Rajgarh (2500MW) SEZ in Madhya Pradesh:

Scheme	WRSCT	NCT meeting	BPC appointed By MoP	Status
Background:				
Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh	Discussed and agreed in 2nd meeting of WRSCT held on 21.05.2019	Recommended in 4th NCT meeting held on 31.07.2019 for implementation through TBCB	RECTPCL vide Gazette notification dated 24.01.2020	Under Bidding

3.3.1.1. The requirement of phasing of this scheme was agreed way back in March, 2020 when MPNRED requested for shifting of the planned pooling station from Rajgarh to Pachora. Accordingly, in a meeting held on 30.03.2020, the phasing of the scheme

for evacuation of power in two phases viz 1000 MW and 1500 MW respectively was agreed. The scope of works required under each phase were segregated in the form of two packages and were noted down by the NCT in its 3rd meeting held on 26th and 28th May 2020.

3.3.1.2.

Modification in Rajgarh Scheme	Agreed Phases	Transmission System	Remarks
Recent development:			
The Rajgarh scheme was agreed to be taken up in phases in two phases in the 2nd meeting of WRPC (TP) held on 04.09.2020. However there would be no change in the scope of work	Phase I-1500MW	•Establishment of 400/220 kV, 3x500 MVA at Pachora SEZ PP •Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line (Quad/HTLS)	The scheme was agreed to be taken up for evacuation of 1500 MW power instead of 1000 MW with a margin of 500 MW power under Phase-I for RE developers in Rajgarh area.
	PhaseII-1000MW	•Pachora – Shujalpur 400kV D/c line (Quad/HTLS)	

3.3.1.3. The 'Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh' would be implemented in two phases as two different transmission packages as tabulated below.

(A) Transmission system for evacuation of power from RE projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh : Phase-I

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 400/220 kV, 3x500 MVA at Pachora SEZ PP with 420 kV (125 MVAR) bus reactor <u>Future provisions</u>: Space for 400/220kV ICTs along with bays: 6 400kV line bays: 8 nos. 220kV line bays: 9 nos 420kV bus reactor along with bays: 1 no 220kV Bus sectionalizer bay: 2 nos. (One no. bay for each Main Bus)	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 220 kV ICT bays – 3 400 kV line bays – 2 220 kV line bays – 6 (4 nos. for Agar & Shajapur solar park interconnection & 2 nos. for other RE projects) 125 MVAr, 420 kV reactor 420 kV reactor bay – 1
2.	Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line (Quad/HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage) along with 80MVAr switchable line reactors on each circuit	Length – 160 km Switchable line Reactors (at Pachora end) – 420kV, 2x80MVAr Line reactor bays (at Pachora) – 2 nos.

	at Pachora end	
3.	2 no. of 400 kV line bays at Bhopal (Sterlite) for Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line (Quad/HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays – 2

Note*: (i) M/s BDTCL (Bhopal Dhule Transmission Company Limited) to provide space for 2 no. of 400 kV line bays at Bhopal (Sterlite)for termination of Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line.*

(ii) Space for future provisions for 400 kV line bays to be kept including the space for switchable line reactors.

(iii) The implementation schedule for the scheme is July' 2022 (the completion schedule to be reviewed before submission of RfP bids considering visibility of RE generators and sufficient implementation time for the TSP)

(B) Transmission system for evacuation of power from RE projects in Rajgarh (1000 MW) SEZ in Madhya Pradesh: Phase- II

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

Note: (i) *Powergrid to provide space for 2 no. of 400 kV line bays at Shujalpur for termination of Rajgarh SEZ PP – Shujalpur 400 kV D/c line.*

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

(ii) 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.

3.3.1.4. Expert Member, Shri P K Pahwa, enquired about the status of LTA by RE developers and their PPAs. He further stated that implementation of even Phase-I of the Rajgarh scheme can only be taken up after grant of LTA to RE developers.

3.3.1.5. CTU stated that phasing of the scheme was initially done on the basis of the Stage-II Connectivity application of 1000 MW of RUMS at Pachora P.S. As of now, on account of non- furnishing of BG on part of RUMS, their Stage-II Connectivity application has been closed. Therefore, presently there are no Stage-II Connectivity/ LTA applications from RE developers at Pachora P.S. Further, as far as availability of PPAs are concerned, the same is not required for grant of LTA as per applicable CERC Regulations and the RE developers can apply for LTA on 'target region basis'

3.3.1.6. MNRE stated that the proposal regarding change of location from Rajgarh to Pachora and the requirement of phasing of the scheme was initiated as per the information received from MPNRED and on their request to expedite the implementation of ISTS system at Rajgarh (Pachora). M/s RUMS carried out the necessary follow-up and were about to issue the tender for development of solar park at Agar (550 MW) and Shajpur (450 MW). In view of above, it is evident that M/s RUMS would re-apply for connectivity at Pachora P.S.

3.3.1.7. CTU requested MNRE to reach out to MPNRED regarding the status of their Agar/Shajpur Solar Park and apprise them of the necessity of expediting the submission of connectivity/LTA application alongwith fulfilment of requisite formalities to avoid any delay in implementation of ISTS system required for evacuation of power from their Agar/Shajpur Solar park. MNRE agreed for the same.

3.3.1.8. Expert Member, Shri P K Pahwa stated that the packaging of the transmission scheme is not within the purview of the reconstituted NCT. If, at all, the packages formulated for the transmission schemes have to be examined by NCT, then it needs to be done for all the schemes on uniform basis. He also stated that in the present case of phasing of Rajgarh scheme, wherein approval of NCT regarding phasing is sought by MoP, the implementation schedule is mentioned as July' 2022 which is not feasible considering the current status of the scheme. Further, he stated that in case any minor modification in scope of works is required after the schemes have been notified by the Ministry of Power, the same may be finalized by CEA in coordination with CTU so as to avoid any delay in implementation of the transmission scheme. In case of RE linked schemes, the scheme needs to be commissioned in the commensurate time frame of RE generation. Accordingly, waiting for the approval of the NCT in cases where some modification was required in the notified schemes for optimal utilization, might result in delay in completion of the bidding process and implementation of the scheme.

3.3.1.9. Chief Engineer, CEA stated that the timeline for implementation of Phase-I of the scheme would again be evolved based on the revised commissioning schedule that would be indicated by M/s RUMS in their connectivity and LTA application.

3.3.1.10. Director, CEA clarified that for all the transmission schemes which are currently under bidding (for implementation through TBCB route) implementation schedule of 18 months has been specified from the date of SPV acquisition.

3.3.1.11. Member from Niti Aayog agreed with the suggestion of the expert member that a uniform view with respect to packaging needs to be taken for all the transmission schemes instead of catering to phasing on case to case basis even though it was not specified in the ToR of NCT.

3.3.1.12. Member (E&C), CEA enquired about the recovery of transmission charges in case the transmission scheme was split into two phases. It was clarified that the two different phases of the Rajgarh Scheme would be implemented as two different transmission schemes.

3.3.1.13. Expert Member, Shri P K Pahwa enquired about the need to provide the choice of opting the Quad or HTLS conductor in case of the proposed Pachora SEZ PP - Bhopal (Sterlite) 400 kV D/c line, as losses would be different for both the conductor configuration. He suggested that the type of conductor needs to freezed at planning stage itself. It was clarified that in accordance with the Transmission Planning Criteria, transmission systems are planned to cater to peak conditions. Accordingly, at planning stage, the maximum current rating is specified for the transmission line. The same could be achieved through any conductor configuration. In the RfP documents for the scheme, DC resistance of the conductor is also specified.

3.3.1.14. Chairman, NCT stated that the intent to keep the Quad Moose/ HTLS conductor is to achieve 2100 MVA/ckt capacity. However, as rightly pointed out, as the losses for both the conductors differ and would be higher in case of HTLS conductor, accordingly, the option such as specifying DC resistance or freezing the type of conductor while furnishing the RfP inputs can be explored.

3.3.1.15. Member (E&C) stated that on account of intermittent availability of RE power, there should be provision of optimization of losses of the transformer by switching it off during the period of non-availability of RE generation. This would result in minimization of no load losses of transformer.

3.3.1.16. Chief Engineer, CEA clarified that frequent switching of the transformers would stress the switchgear. Further, the auxiliary power is drawn by the substation even in case of non-availability of generation. Therefore, the only consideration being done for optimization of transmission losses in the present planning for RE evacuation is by not going for (n-1) criteria at immediate RE connectivity level.

3.3.1.17. Expert Member, Shri P K Pahwa stated that steps to be taken for optimization of losses in case of low RE scenario is more of an operational issue rather than planning issue.

3.3.1.18. After detailed deliberations, the following was agreed:

1) **Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh to be taken up in two phases to ensure utilization of the transmission scheme. Both the phases needs to be taken up as two separate transmission schemes for ease of bidding.**

2) **The following scope of works to be taken up under Phase-I and Phase-II for evacuation of 1500 MW and 1000 MW RE from Rajgarh area:**

A. Transmission system for evacuation of power from RE projects in Rajgarh (1500 MW) SEZ in Madhya Pradesh : Phase-I

Sl. No.	Scope of the Transmission Scheme	Capacity /km
4.	Establishment of 400/220 kV, 3x500 MVA at Pachora SEZ PP with 420 kV (125 MVAR) bus reactor Future provisions: Space for 400/220kV ICTs along with bays: 6 400kV line bays: 8 nos. 220kV line bays: 9 nos 420kV bus reactor along with bays: 1 no 220kV Bus sectionalizer bay: 2 nos. (One no. bay for each Main Bus)	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 220 kV ICT bays – 3 400 kV line bays – 2 220 kV line bays – 6 (4 nos. for Agar & Shajapur solar park interconnection & 2 nos. for other RE projects) 125 MVAr, 420 kV reactor-1 420 kV reactor bay – 1
5.	Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line (Quad/HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage) along with 80MVAr switchable line reactors on each circuit at Pachora end	Length – 160 km Switchable line Reactors (at Pachora end) – 420 kV, 2x80MVAr Line reactor bays (at Pachora) – 2 nos.
6.	2 no. of 400 kV line bays at Bhopal (Sterlite) for Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line (Quad/HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays – 2

Note*: (i) M/s BDTCL (Bhopal Dhule Transmission Company Limited) to provide space for 2 no. of 400 kV line bays at Bhopal (Sterlite) for termination of Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line.*

(ii) Space for future provisions for 400 kV line bays to be kept including the space for switchable line reactors.

***(iii)** The implementation of the scheme to be taken up only after grant of LTA at Pachora P.S.*

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

B. Transmission system for evacuation of power from RE projects in Rajgarh

(1000 MW) SEZ in Madhya Pradesh: Phase- II

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

Note: *(i) Powergrid to provide space for 2 no. of 400 kV line bays at Shujalpur for termination of Rajgarh SEZ PP – Shujalpur 400 kV D/c line.*

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

(ii) 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.

3) In cases where phasing of the transmission schemes or tweaking of the transformation capacity/minor changes in scope of works of the transmission schemes already approved by NCT and notified by MoP is required to ensure optimal utilization, the same may be carried out by CEA & CTU so as to avoid any delay in the completion of the bidding process. The modifications/phasing done may be apprised to NCT in the next meeting.

3.3.2. Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka – Part A

Scheme	WRSCT	NCT meeting	BPC appointed By MoP	Status
Background:				
Transmission system for evacuation of power from RE projects in Gadag (2500 MW) SEZ in Karnataka <u>Scheme</u> • Establishment of 400/220 kV, 5x500	Discussed and agreed in 2nd meeting of SRSCT held on 19.06.2019	Recommended in 4th NCT meeting held on 31.07.2019 for implementation through TBCB	RECTPCL vide Gazette notification dated 24.01.2020	Under Bidding

MVA Gadag Pooling Station. • Gadag PS-Koppal PS 400 kV (QM/HTLS) D/C Line. •Gadag PS-Narendra (New) PS 400 kV (QM/HTLS) D/C Line.				

Modification in Gadag Scheme	**Agreed Phases**	**Transmission System**	**Remarks**
Recent development:			
SECI in its affidavit to CERC has submitted that implementation of transmission system for Gadag may be taken up in two phases. However there would be no change in the scope of work	Phase I-1000MW needs to be carried out after TSA signing	•Establishment of 400/220 kV, 3x500 MVA at Pachora SEZ PP •Pachora SEZ PP -Bhopal (Sterlite) 400 kV D/c line (Quad/HTLS)	The same was noted down in the meeting held on 16.10.2020 and it was agreed amongst CEA, CTU, MNRE and SECI. As there is no change in overall scope of the works involved in the scheme, the phases formulated for the scheme would be apprised in the next SRPC (TP) and NCT meeting.
	Phase II-1500MW (to be taken up for implementation after receipt of LTA beyond 1000 MW.	Pachora – Shujalpur 400kV D/c line (Quad/HTLS) (to be taken up only after receipt of connectivity/LTA applications beyond 1000 MW)	

3.3.2.1. The following phase-wise segregation to be implemented as two separate transmission schemes has been agreed :

A. Transmission scheme for evacuation of 1000 MW from Gadag SEZ under Phase-I

Sr. No.	**Scope of the Transmission Scheme**	**Capacity /km**
1.	Establishment of 400/220 kV, 2x500 MVA Gadag Pooling Station with 400 kV (1X125 MVAR) bus reactor Future provisions: • Space for 400 kV Line bay with switchable line reactor: 8 nos. • 400/220kV ICT along with associated bay: 4 nos. <u>220kV</u> • Bus sectionalizer bay: 2 nos. (One no. bay for each Main Bus)	400/220 kV, 500 MVA ICT – 2 400 kV ICT bays – 2 220 kV ICT bays – 2 400 kV line bays – 2 220 kV line bays – 4 125 MVAr, 420 kV reactor - 1 420 kV reactor bay – 1

	• Bus coupler bay: 2 nos. • Transfer Bus coupler bay: 2 nos. • Space for future 400/220kV ICT bay: 4 nos. • Space for future line bay: 8 nos.	
2.	Gadag PS-Narendra (New) PS 400 kV (high capacity equivalent to quad moose) D/C Line	Length - 100
3.	400 kV line bays at Narendra (new) for Gadag PS-Narendra (New) PS 400 kV D/c line.	400 kV line bays – 2

Note:

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

(ii) *The schedule of implementation would be matching with schedule of RE developers or 18 months from the date of transfer of SPV whichever is later.*

B. Transmission scheme for evacuation of 1500 MW from Gadag SEZ under Phase-II

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 – 3 400 kV line bays – 2 220 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 – 2

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) *Phase-II scheme to be taken up only after receipt of Connectivity/LTA applications beyond 1000 MW at Gadag or beyond 1500 MW at Koppal P.S*

(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.*

3.3.2.2. Regarding the status of connectivity/LTA application at Gadag pooling station, CTU informed that as of now, Stage-II Connectivity for 160 MW has been granted at Gadag P.S and Stage-II connectivity of 300 MW has been granted, so far, at Koppal

P.S

3.3.2.3. Director, CEA stated that for evacuation of power from Gadag and Koppal potential RE zones, pooling station of 2500 MW capacity at each Gadag and Koppal has been planned under ISTS. These pooling station are located about 50 kms apart therefore, it would be prudent to take up implementation of only one pooling station along with its 400 kV interconnection instead of taking up the development of both the pooling station simultaneously.

Further the scope of works kept under Phase-I of the scheme is to meet the evacuation requirement of 1000 MW, however, the Stage—II connectivity for only 160 MW has been granted at Gadag P.S. till date. This would result in underutilisation of the transmission infrastructure being created under Phase-I. The power of RE developers coming up in Gadag area may be evacuated through the margins available at proposed 400/220 kV Koppal Pooling station. The scheme for evacuation of 2500 MW RE power from Koppal is under bidding and it interalia comprises of establishment of 400/220 kV, 5x500 MVA Koppal Pooling station. Koppal P.S. is appx 50-60 km away from that of the location of the proposed Gadag P.S. In view of above, instead of going with the implementation of Gadag PS-Narendra (New) PS 400 kV (high capacity equivalent to quad moose) D/C Line (100 km) in the first phase, the option of including Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/c line (60 km) in the initial phase would be optimal.

3.3.2.4. CTU stated that the segregation of the system to be taken up under Phase-I (for evacuation of 1000 MW) has been done in a manner to avoid any inter-dependency in the commissioning schedules of Gadag and Koppal P.S. This was done to ensure that the generators applying for LTA at either of the two pooling stations would be able to evacuate their power. Accordingly, decision to take up 2 X500 MVA, 400/220 kV transformation capacity along with Gadag PS-Narendra (New) PS 400 kV D/C Line under Phase-I was made.

3.3.2.5. Expert Member, Shri P K Pahwa stated that if the distance between Gadag and Koppal P.S is not considerable, the RE developer may be asked to apply for connectivity at Koppal P.S. only. He enquired whether SECI in their bid documents specifies any restriction over the length of the dedicated transmission line that can be developed by the RE generator. If not, then it would be prudent to firstly utilize the capacity of the Koppal P.S. by asking the generator to apply for connectivity at Koppal P.S. He further asked the reason for not phasing out the transformation capacity at Koppal, as the Stage-II connectivity at Koppal P.S. was also only 300 MW.

3.3.2.6. CTU stated that the applicants of the Stage-II Connectivity of 160 MW and 300 MW at Gadag and Koppal P.S. respectively are the successful RE generators under SECI bids. As the RE generators have the proposed coordinates of both the Gadag and Koppal P.S., they were seeking connectivity to the nearest pooling station to optimize the length of the dedicated lines connecting their RE projects to the ISTS pooling stations.

3.3.2.7. Expert Member, Shri P K Pahwa suggested that since the connectivity grantees have not yet applied for LTA, the chances of transmission system being created for evacuation lying stranded is high. Accordingly, the following options may be explored

to ensure the utilization of the system:

(i) Implementation of 220 kV switching station at Gadag alongwith Gadag-Koppal 400 kV D/c line (initially charged at 220 kV) under Phase-I under ISTS.
(ii) RE developer to construct dedicated line to get connected with 220 kV Gadag switching station or to get connected with 400/220 kV Koppal P.S directly.
(iii) Taking up the implementation of balance system proposed under Transmission scheme for evacuation of 1000 MW from Gadag SEZ under Phase-I as stipulated in the Agenda only after receipt of LTA beyond 600 MW.

3.3.2.8. MNRE stated that SECI has already invited location specific tender for Koppal P.S (RfS for 2500 MW ISTS-connected Solar PV Power Projects at UMREPP, Koppal District, Karnataka : ISTS-X). Accordingly, the need to phase out the Koppal P.S was not conveyed by SECI. Further SECI has floated RfS for Selection of Wind Power Developers for Setting up of 1200 MW ISTS-connected Wind Power Projects (Tranche-X). In the RfS the delivery points has been specified as Tamil Nadu (Karur 400/230 kV pooling station, Tuticorin (Tuticorin-II) 400/230 kV pooling station), Karnataka (Gadag 400/220 kV pooling station, Koppal 40/220 kV pooling station) , Madhya Pradesh(RajgarhAgar 400/220 kV pooling station) and Maharastra(Kallam 400/220 kV pooling station). Therefore, any addition / deletion in scope of works proposed in the phasing of the scheme could be taken after response to the RfS already floated by SECI.

3.3.2.9. After detailed deliberations, the following phase-wise segregation for Transmission scheme for evacuation of RE power from Gadag SEZ to be implemented as two separate transmission schemes was approved by NCT subject to the condition that the scope of works to be taken up under Phase-I may be reviewed as per the response to the SECI bids in Karnataka. NCT opined that the review of the scope of works required, if any, may be carried out by CEA & CTU and the same may be apprised to NCT in its next meeting. This proposition would ensure timely completion of the bidding process as well creation of optimum evacuation system.

A. Transmission scheme for evacuation of 1000 MW from Gadag SEZ under Phase-I

Sr. No.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 400/220 kV, 2x500 MVA Gadag Pooling Station with 400 kV (1X125 MVAR) bus reactor Future provisions: • Space for 400 kV Line bay with switchable line reactor: 8 nos. • 400/220kV ICT along with associated bay: 4 nos. 220kV • Bus sectionalizer bay: 2 nos. (One no. bay for each Main Bus) • Bus coupler bay: 2 nos. • Transfer Bus coupler bay: 2 nos.	400/220 kV, 500 MVA ICT – 2 400 kV ICT bays – 2 220 kV ICT bays – 2 400 kV line bays – 2 220 kV line bays – 4 125 MVAr, 420 kV reactor - 1 420 kV reactor bay – 1

	• Space for future 400/220kV ICT bay: 4 nos. • Space for future line bay: 8 nos.	
2.	Gadag PS-Narendra (New) PS 400 kV (high capacity equivalent to quad moose) D/C Line	Length - 100
3.	400 kV line bays at Narendra (new) for Gadag PS-Narendra (New) PS 400 kV D/c line.	400 kV line bays – 2

Note:

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

(ii) *The schedule of implementation would be matching with schedule of RE developers or 18 months from the date of transfer of SPV whichever is later.*

B. Transmission scheme for evacuation of 1500 MW from Gadag SEZ under Phase-II

Sl. No.	Scope of the Transmission Scheme	Capacity /km
4.	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 – 3 400 kV line bays – 2 220 kV line bays – 4(to be taken up as per Connectivity/LTA applications received)
5.	Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/c line	Length – 60
6.	400 kV line bays at Koppal PS for Gadag PS-Koppal PS 400 kV D/c line	line bays – 2

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) *Phase-II scheme to be taken up only after receipt of Connectivity/LTA applications beyond 1000 MW at Gadag or beyond 1500 MW at Koppal P.S*

(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.*

3.3.3. Transmission Scheme for Evacuation of power from RE sources in Karur/Tirrupur Wind Energy Zone (Tamil Nadu) (2500 MW)

Scheme	WRSCT	NCT meeting	BPC appointed By MoP	Status
Background:				

Transmission Scheme for Evacuation of power from RE sources in Karur/Tiruppur Wind Energy Zone (Tamil Nadu) (2500MW) Scheme • Establishment of 5x500 MVA, 400/230 kV Karur Pooling Station. •LILO of both circuits of Pugalur – Pugalur (HVDC) 400 kV(QM/ HTLS) D/C Line at Karur PS.	Discussed and agreed in 2nd meeting of SRSCT held on 19.06.2019	Recommended in 3rd meeting of NCT held on 31.07.2019 for implementation through TBCB	PFCCL vide Gazette notification dated 15.10.2019	Bidding Under hold as decided in the 12th meeting of the Monitoring Committee on ISTS for 66.5 GW REZs held under Secretary, MNRE on 22.10.2020,

3.3.3.1. Regarding status of connectivity/LTA application at Karur P.S., CTU informed that application for Stage-II connectivity was received from M/s JSW Renew Energy Ltd. for 310 MW in Tirrupur and the same was granted Stage-II connectivity as per the decision in the 48th SR LTA meeting held on 27.11.2020. Further, LTA application for 100 MW has also been received from M/s JSW Renew Energy Ltd. on 10.12.2020, which shall be taken-up for discussion in the forthcoming SR Connectivity/LTA meeting scheduled to be held in Jan'2021.

Modification in Kurur Scheme	**Agreed Phases**	**Transmission System**	**Remarks**
Recent development:			
Transmission Scheme for Evacuation of power from RE sources in Karur/ Tiruppur Wind Energy Zone (Tamil Nadu) (2500MW)" to be implemented in two phases	•Phase I- 500 MW	•Establishment of 1x500 MVA, 400/230 kV Karur PS •LILO of one circuit of Pugalur – Pugalur (HVDC) 400 kV D/c line (with QM ACSR Conductor) at Karur PS	So far only 310 MW Connectivity St-II received and granted and only 100 LTA application received. As such it was decided to take up the scheme in two Phases.
	Phase II- 2000 MW	•Augmentation of 4x500 MVA, 400/230 kV at Karur PS •LILO of 2nd ckt. of Pugalur – Pugalur (HVDC) 400 kV D/c line (with QM ACSR Conductor) at Karur PS	

A. Transmission Scheme for Evacuation of power from RE sources in Karur/ Tiruppur Wind Energy Zone (Tamil Nadu) (500MW) under Phase-I

Sr. No.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 1x500 MVA, 400/230 kV Karur PS 4 no. of 230 kV bays at Karur PS (to be implemented as part of ISTS) **Space provision for Phase-II :** 400/230kV ICTs along with bays: 4 nos. 400kV line bays: 2 nos. 230kV line bays: 5 nos. **Future provisions :** Additional Space for (i) 400/230kV ICTs along with bays: 3 nos. (ii) 400kV line bays: 6 nos. (iii) 230kV line bays: 7 nos.	400/220 kV, 500 MVA ICT – 1 400 kV ICT bays – 1 230 kV ICT bays – 1 400 kV line bays – 2 230 kV line bays – 4 125 MVAr, 420 kV bus reactor - 2 420 kV bus reactor bay – 2
2.	LILO of one circuit of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS	Length - 50

Note:

(i) *The schedule of implementation would be matching with schedule of RE developers or 18 months from the date of transfer of SPV whichever is later.*

B. Transmission Scheme for Evacuation of power from RE sources in Karur/ Tiruppur Wind Energy Zone (Tamil Nadu) (2000MW) under Phase-II

Sr. No.	Scope of the Transmission Scheme	Capacity /km
1.	Augmentation of 4x500 MVA, 400/230 kV Karur PS 5 no. of 230 kV bay at Kurur PS (to be implemented as part of ISTS)	400/220 kV, 500 MVA ICT – 4 400 kV ICT bays – 4 230 kV ICT bays – 4 400 kV line bays – 2 230 kV line bays – 5
2.	LILO of second circuit of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS	Length - 50

Note:

(i) *Phase-II scheme to be taken up only after receipt of Connectivity/LTA applications beyond 500 MW at Karur.*

As there is no change in overall scope of the works involved in the scheme, the phases formulated for the scheme would be apprised in the next SRPC (TP).

3.3.3.2. Regarding the availability of margin at Pugalur (existing) S/s, CTU informed that there

is space constraint at both Pugular (existing) and Pugalur (HVDC) S/stn. Accordingly, direct interconnection of the dedicated lines of the RE developers is not possible at these substations. To cater to the connectivity requirement of the connectivity granted and evacuation requirement, which was under process at Karur, the provision of keeping single transformer of 500 MVA capacity under Phase-I along with LILO of one 400 kV line at Karur was found to be sufficient and optimal.

3.3.3.3. Expert Member, Shri P K Pahwa stated that although the scheme proposed under Phase-I is optimal when seen from the availability of connectivity of only 300 MW at Karur P.S., however during its outage , no ISTS connectivity would be there, therefore, including an additional 500 MVA ICT under Phase-I may be deliberated.

3.3.3.4. AVP, PFCCL stated that the scheme prior to the decision regarding phasing comprised of broadly 5X500 MVA, 400/220 kV transformation capacity along with LILO of both the circuits of Pugalur-Pugalur (HVDC) 400 kV D/c line. In view of the severe RoW issues in Karur area, in the RfP inputs for the scheme, the provision of implementation of this LILO of D/c line on Multi-ckt tower was kept. Now, with phasing of the scheme and restricting the scope under Phase-I to single transformer alongwith LILO of single circuit would substantially reduce the estimated cost of the project and may result in poor response from the bidders. The substation forms the major cost of the scheme. The cost of the transmission line was less therefore, LILO of both circuits may be kept in phase-I as the bid provides for implementation of the line on multicircuit towers.

3.3.3.5. CTU stated that as (n-1) criteria is not applicable at immediate connectivity level for RE projects, therefore the provision of only single transformer has been kept under Phase-I. Further, as Pugalur-Pugalur (HVDC) 400 kV D/c line to be LILOed at Karur PS is a Quad Moose line, accordingly it was found to be sufficient to cater to the evacuation requirement of the connectivity applicants. As Tamil Nadu has been opposing this scheme on every forum citing non-availability of land commensurate to the identified potential at Karur, it was felt to keep the scope under Phase-I to be as small as possible. However, If the issues with respect to redundancy and unviability on account of cost reduction needs to be addressed, the provision of LILO of both the circuits on M/ckt tower can be kept under Phase-I.

3.3.3.6. SECI stated that keeping only one 500 MVA ICT under phase-I would result in no ISTS connectivity to the RE generators in case of outage of the ICT and also there would be very less margins for other RE generators in Phase-I of the scheme. Therefore, provision of alteast two nos. of 500 MVT ICTs may be kept under phase-I of the Karur scheme.

3.3.3.7. After detailed deliberations, NCT agreed for inclusion of two 500 MVA ICTs and LILO of both 400 kV circuits at Karur pooling station. NCT approved the scheme to be implemented in two phases. NCT opined that in case of requirement in revision of the scope of works covered under phase-I before submission of the bid, based on the LTA granted at Karur pooling station, may be carried out by CEA & CTU and the same may be apprised to NCT in its next meeting. This would ensure timely completion of the bidding process as well creation of optimum evacuation system

A. Transmission Scheme for Evacuation of power from RE sources in Karur/ Tiruppur Wind Energy Zone (Tamil Nadu) (1000MW) under Phase-I

Sr. No.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 2x500 MVA, 400/230 kV Karur PS 4 no. of 230 kV bays at Karur PS (to be implemented as part of ISTS) **Space provision for Phase-II:** 400/230kV ICTs along with bays: 3 nos. 230kV line bays: 5 nos. **Future provisions :** Additional Space for (i) 400/230kV ICTs along with bays: 3 nos. (ii) 400kV line bays: 6 nos. (iii) 230kV line bays: 7 nos.	400/220 kV, 500 MVA ICT –2 400 kV ICT bays – 2 230 kV ICT bays – 2 400 kV line bays – 4 230 kV line bays – 4 125 MVAr, 420 kV bus reactor - 2 420 kV bus reactor bay – 2
2.	LILO of both circuits of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS	Length - 50

Note:

(i) *The schedule of implementation would be matching with schedule of RE developers or 18 months from the date of transfer of SPV whichever is later.*

B. Transmission Scheme for Evacuation of power from RE sources in Karur/ Tiruppur Wind Energy Zone (Tamil Nadu) (1500MW) under Phase-II

S.no	Scope of the Transmission Scheme	Capacity /km
1	Augmentation of 3x500 MVA, 400/230 kV Karur PS 5 no. of 230 kV bay at Karus PS (to be implemented as part of ISTS)	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 230 kV ICT bays – 3 230 kV line bays – 5

Note:

(i) *Phase-II scheme to be taken up only after receipt of Connectivity/LTA applications beyond 1000 MW at Karur.*

3.4. The details of the transmission schemes wherein reduction in the scope of works is required:

3.4.1. Transmission system strengthening scheme for evacuation of power from solar

energy zones in Rajasthan (8.1 GW) under Phase-II- Part F:

3.4.1.1. Background: The transmission scheme "**Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F"** was discussed in 4th meeting of NRSCT held on 25.07.2019 and recommended for implementation through TBCB in the 6th meeting of erstwhile NCT held on 30.09.2019. M/s PFCCL has been appointed as BPC for the scheme by MoP vide Gazette notification dated 24.01.2020. It broadly comprises of the following elements:

- Establishment of 400/220kV, 6x500MVA Pooling Station at Bikaner –II PS
- Bikaner-II PS – Khetri 400 kV 2xD/c line
- Khetri- Bhiwadi 400 kV D/c line

3.4.1.2. Recent development: In the meeting held on 16.10.2020 amongst CEA, CTU, MNRE and SECI, it was discussed that since none of the connectivity/LTA applications have been received, so far, at Bikaner-II P.S, continuing with the bidding of the scheme might lead to creation of stranded asset. However, 400 kV transmission corridor included in the scheme was required for onward disbursal of power being pooled at Bikaner (PG) and other pooling stations at Fatehgarh and Bhadla . Accordingly, it was agreed that bidding of this scheme may be continued, however RfP submission may be done after deleting the scope of 400/220 kV transformation capacity at Bikaner-II PS

3.4.1.3. Further, in meeting held on 04.11.2020 to deliberate over Phasing/tweaking of some of the RE linked schemes which are presently under bidding the following was inter-alia agreed.

- RfP submission for the "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F" needs to be done after deletion of the 400/220 kV transformation capacity and associated bays from the scope. Accordingly, the scope of works after carrying out necessary deletion would be as follows**:**

Sr. No.	Name of the Transmission Element
1.	Establishment of 400 kV switching station at Bikaner –II PS with 420kV (2x125 MVAR) bus reactor 400 kV line bays – 4 125 MVAr, 420 kV bus reactor-2 400 kV bus reactor bay – 2 400 kV, 80MVAr switchable line reactor on each circuit at Bikaner-II end of Bikaner-II – Khetri 400 kV 2xD/c Line — 4 nos Switching equipment for 400 kV switchable line reactor –4 Future provisions: Space for 400/220 kV ICTs along with bays:10 400 kV line bays:6 220 kV line bays:16 420 kV reactors along with bays: 2 Suitable bus sectionaliser arrangement at 400 kV and 220 kV

2.	Bikaner-II PS – Khetri 400 kV 2xD/c line (Twin HTLS* on M/c Tower)
3.	1x80MVAr, 400 kV Fixed Line reactor on each circuit at Khetri end of Bikaner-II – Khetri 400 kV 2xD/c Line- 4 nos
4.	4 no. of 400 kV line bays at Khetri for Bikaner –II PS – Khetri 400kV 2xD/c line
5.	Khetri- Bhiwadi 400 kV D/c line (Twin HTLS)*
6.	2 no. of 400 kV line bays at Khetri for Khetri - Bhiwadi 400kV D/c line
7.	2 no of 400 kV (GIS) line bays at Bhiwadi for Khetri- Bhiwadi 400 kV D/c line
8.	STATCOM at Bikaner II S/s ± 300 MVAr, 2x125 MVAr MSC, 1x125 MVAr MSR

**with minimum capacity of 2200 MVA on each circuit at nominal voltage*

Note:

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

ii) Developer of Khetri substation to provide space for 6 no of 400 kV bays at Khetri for Bikaner-II –Khetri 400 kV 2x D/c line along with space for line reactors & Khetri-Bhiwadi 400 kV D/c line (Twin HTLS)

3.4.1.4. Shri P K Pahwa, Expert Member enquired about the need to keep the provision of the planned 400 kV transmission lines beyond Bikaner-II intact while the transformation capacity at Bikaner-II has been dropped.

3.4.1.5. CTU stated that it did not receive any Connectivity/LTA applications at the proposed Bikaner-II P.S. Accordingly, keeping the provision of 400/220 kV transformation capacity at Bikaner-II PS would have resulted in creation of a stranded asset, therefore the same was agreed to be dropped. However, at Bikaner-I Pooling station (existing), the Stage-II Connectivity and LTA for 2.86 GW has been granted which is in excess of the potential that was envisaged to be pooled at Bikaner-I (PG) i.e 1.85 GW. Accordingly, the 400 kV transmission corridor beyond Bikaner-II is required for onward disbursal of power being pooled at Bikaner (PG) and also other pooling stations at Fatehgarh and Bhadla. Therefore, instead of keeping the bidding process of the entire scheme in abeyance, it was agreed to delete the scope of 400/220 kV transformation capacity alongwith 220 kV bays at Bikaner-II PS and proceed with the bidding of the remaining scheme to avoid any delay in the implementation of the 400 KV transmission corridor beyond Bikaner-II.

CTU further stated that as Bikaner-II P.S. was envisaged for injection of 2.95 GW RE, accordingly if any RE developer turns up for connectivity at Bikaner-II in future, the options of commensurate implementation of 400/220 kV transformation capacity at Bikaner-II or asking the developer to seek connectivity at 400 kV level was available.

CEA clarified that in the future space provisions of Bikaner-II pooling station, space requirement for installation of 10 nos. 400/220 kV ICTs alongwith associated ICT bays and 220 kV line bays has been kept. Thus, there would be no difficulty in converting the Bikaner switching station to pooling station, if required, in future.

3.4.1.6. Director CEA stated that as per the earlier scope, 1x80MVAr switchable Line reactor on each circuit at Khetri end of Bikaner-II – Khetri 400 kV 2xD/c Line was agreed in the transmission scheme. However, POWERGRID Khetri Transmission System Limited (TSP implementing Khetri substation), had informed that space was available for installation of fixed line reactors only. Installation of switchable Line

reactors for Bikaner-II – Khetri 400kV 2xD/c would require procurement of contiguous land by the developer of the line. It was opined that procurement of contiguous land and obtaining clearances from statutory authorities may unnecessarily delay the project and it would be difficult to meet tight timelines. Accordingly, the 1x80MVAr switchable Line reactor on each circuit at Khetri end of Bikaner-II – Khetri 400 kV 2xD/c Line was changed to fixed line reactor. Further, in the 2nd meeting of NRPCTP held on 1.09.2020, 1x80MVAr fixed line reactors were agreed be installed in place of 1x80MVAr switchable Line reactor on each circuit at Khetri end of Bikaner-II – Khetri 400 kV 2xD/c Line, under the scheme "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under "Phase-II Part-F".

3.4.1.7. After detailed deliberations, NCT approved the deletion of 400/220 kV ICTs and conversion of switchable line reactors to fixed line reactors under the transmission scheme **"**Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under "Phase-II Part-F". The scope covered under the scheme is as given below:

Sr. No.	Name of the Transmission Element
1.	Establishment of 400 kV switching station at Bikaner –II PS with 420kV (2x125 MVAR) bus reactor 400 kV line bays – 4 125 MVAr, 420 kV bus reactor-2 400 kV bus reactor bay – 2 400 kV, 80MVAr switchable line reactor on each circuit at Bikaner-II end of Bikaner-II – Khetri 400 kV 2xD/c Line — 4 nos Future provisions: Space for 400/220 kV ICTs along with bays:10 400 kV line bays:6 220 kV line bays:16 420 kV reactors along with bays: 2 Suitable bus sectionaliser arrangement at 400 kV and 220 kV
2.	Bikaner-II PS – Khetri 400 kV 2xD/c line (Twin HTLS* on M/c Tower)
3.	1x80MVAr, 400 kV Fixed Line reactor on each circuit at Khetri end of Bikaner-II – Khetri 400 kV 2xD/c Line- 4 nos
4.	4 no. of 400 kV line bays at Khetri for Bikaner –II PS – Khetri 400kV 2xD/c line
5.	Khetri- Bhiwadi 400 kV D/c line (Twin HTLS)*
6.	2 no. of 400 kV line bays at Khetri for Khetri - Bhiwadi 400kV D/c line
7.	2 no of 400 kV (GIS) line bays at Bhiwadi for Khetri- Bhiwadi 400 kV D/c line
8.	STATCOM at Bikaner II S/s ± 300 MVAr, 2x125 MVAr MSC, 1x125 MVAr MSR

**with minimum capacity of 2200 MVA on each circuit at nominal voltage*

Note:

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

ii) Developer of Khetri substation to provide space for 6 no of 400 kV bays at Khetri for

Bikaner-II –Khetri 400 kV 2x D/c line along with space for line reactors & Khetri-Bhiwadi 400 kV D/c line (Twin HTLS)

B. Evaluation of functioning of national grid in previous quarter:

4. On account of time constraints, it was decide that POSOCO may present the functioning of National Grid of previous quarter in the next meeting of NCT.

C. Schemes agreed in Regional Power Committees (Transmission Planning)

5. New Inter-State Transmission Schemes in Western Region:

5.1 Evacuation system from the RE potential areas in Madhya Pradesh after the Reassessment of RE potential by MNRE:

5.1.1. The RE potential of 5 GW (SEZ) in Madhya Pradesh was included in the total 66.5 GW RE potential for which evacuation system have already been discussed and approved by 2nd Western Region Standing Committee on Transmission held on 21.05.2019 as well as by the erstwhile NCT in its 4th meeting of held on 31st July 2019.

S.No	Scheme	Status
a.	Transmission system for evacuation of power from RE projects in Rajgarh (2500MW) SEZ in Madhya Pradesh.	MoP notified the scheme vide gazette notification date 24.01.2020. Under bidding, require MoP approval for proposed phasing
b.	Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) SEZ in Madhya Pradesh.	Not notified by MoP due to uncertainty of development.

5.1.2. Subsequently, MNRE vide letter dated 15.04.2020 granted approval for revised RE potential zones totaling **6850 MW** in the state of Madhya Pradesh as under and requested CEA to plan the ISTS network in consultation with the Govt. of MP in the allotted/earmarked land:

i) Agar-Shajapur region - new Rajgarh substation: 1000 MW
ii) Further potential identified by SECI in the region surrounding the new Rajgarh substation: 1500 MW
iii) Chhatarpur (Bijawar and NTPC-Barethi): 1500 MW
iv) Neemuch: 1000 MW (500 MW RfP already issued by MP in Singoli tehsil)
v) Khandwa (floating solar power project and others): 600 MW
vi) Morena: 1250 MW - land identified in Jhiniya village.

5.1.3. The transmission schemes for evacuation of power (2500 MW) in Rajgarh area has been agreed to be implemented in two phases (I-1500 MW, II-1000 MW). The transmission scheme for Neemuch (1000 MW) is still under discussion whereas the transmission system for Khandwa (600 MW) and Morena (1250 MW) has been proposed to taken up as intra-state schemes by MPPTCL. WRPC (TP) in its 2nd meeting had approved the following Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW).

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

(i) Establishment of 3x500MVA, 400/220kV Pooling Station at Chhatarpur
(ii) LILO of Satna - Bina 400kV (1st) D/c line at Chhatarpur PS*~ 60 km
(iii) 1X125 MVAR, 420 kV bus reactor at Chhatarpur PS
(iv) 5 nos. 220 kV line bays for solar park interconnection.

**out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina.*

Note:

(i) Space to accomodate 4 nos. of 220 kV bays in future would be made at 400/220kV Pooling Station at Chhatarpur.
(ii) MPPTCL, MPNRED and RUMS would facilitate in providing land for the proposed Chhatarpur P.S. at Bijawar.
(iii) Both MPNRED and NTPC would apply for Stage-II Connectivity for their respective solar plants proposed to be connected at Chhatarpur P.S.

5.1.4. Regarding status of Connectivity/LTA application at the proposed Chattarpur PS, CTU informed that as of now, no connectivity/LTA application has been received.

5.1.5. Shri P K Pahwa, Expert member enquired about the conductor of the Satna-Bina 400 kV D/c line and whether any constraints would be there with redistribution of power after the proposed LILO.

5.1.6. CTU/CEA stated that the Satna-Bina 400 kV D/c line has been implemented with twin moose conductor and accordingly, the proposed LILO of both circuits would be able to cater to evacuation of 1500 MW power from Chattarpur pooling station.

5.1.7. POSOCO stated that with implementation of the proposed LILO, the only issue that needed to be examined was loading of 400/220 kV ICTs at Satna. However, the same was discussed in the 2nd meeting of WRPC (TP) held on 04.09.2020 wherein it was informed that at present, the load of area around Rewa is being fed from Satna. With implementation of the planned intrastate Rewa (RUMS) – Rewa (PG) 220 kV D/c line, 400/220 kV ICTs at Satna would get relieved.

5.1.8. POSOCO further stated that the proposed Chhatarpur PS is appx 200 km from Bina and there is a high power test lab at Bina where the short circuit test of transformers is conducted. In this context, the voltage dip at Chattarpur P.S. needs to be examined to avoid any constraints in evacuation during the day slots when the tests are conducted. Despite the fact that there is SVC installed at Satna as well as Bina is a strong source, still collective behavior of the system in the scenario when the tests are being conducted needs to be studied and mitigation strategy, if any, required can be evolved.

5.1.9. After detailed deliberations, NCT approved the following **Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW)**

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

(i) Establishment of 3x500 MVA, 400/220 kV Pooling Station at Chhatarpur
(ii) LILO of Satna - Bina 400 kV (1st) D/c line at Chhatarpur PS*~ 60 km
(iii) 1X125 MVAR, 420 kV bus reactor at Chhatarpur PS
(iv) 5 nos. 220 kV line bays for solar park interconnection.

**out of Satna – Bina 2xD/c lines, one circuit of 2nd D/c line has been LILOed at Sagar (MPPTCL) substation. The proposed LILO is to be made on the other (1st) D/c line between Satna & Bina.*

Note:

(i) Space to accomodate 4 nos. of 220 kV bays in future would be made at 400/220kV Pooling Station at Chhatarpur.

(ii) MPPTCL, MPNRED and RUMS would facilitate in providing land for the proposed Chhatarpur P.S. at Bijawar.

(iii) Both MPNRED and NTPC would apply for Stage-II Connectivity for their respective solar plants proposed to be connected at Chhatarpur P.S.

Scheme Implementation to be taken up only after grant of LTA. Implementation time: 18 months or RE project commissioning schedule whichever is later

5.2 System Strengthening at Shujalpur on account of operational constraints ((n-1) non compliance):

5.2.1 The operation feedback of NLDC for the period October 15- March 16 was discussed in the 40th meeting of SCMPSPWR held on 01/06/2016, which interalia included the issue of ICT constraint at Shujalpur (PG). It was observed that loading on ICTs at Shujalpur (2X315 MVA) are above 200 MW and additional ICT has to be proposed. In the meeting, MPPTCL suggested that the issue of ICT overloading would be resolved with coming of RE generations in Shujalpur area. However, if sustained overloading of ICT is observed, then augmentation may be taken up.

5.2.2 Subsequently, in the 2nd meeting of WRPC(TP) held on 04.09.2020, based on POSOCO's inputs regarding persistence of (n-1) non-compliance at Shujalpur (PG), 1x500MVA, 400/220kV ICT augmentation at 2x315 MVA, 400/220 kV Shujalpur (PG) has been agreed. Also, it was observed that with additional ICT at Shujalpur, loading on the Shujalpur (PG) - Shujalpur (MPPTCL) 220 kV D/C line would further increase. Therefore, Reconductoring of Shujalpur (PG)-Shujalpur (MP) 220kV D/c line (conductor with ampacity equivalent to ACSR twin moose at nominal voltage) under Intra-state by MPPTCL has also been agreed. The following System Strengthening at Shujalpur on account of operational constraints ((n-1) noncompliance) has been agreed in 2nd meeting of WRPC(TP):

A. ICT Augmentation of 2x315 MVA, 400/220 kV Shujalpur(PG) substation under ISTS by 1x500MVA, 400/220kV ICT augmentation at Shujalpur (PG)

B. Re-conductoring of Shujalpur (PG)-Shujalpur (MP) 220kV D/c line (conductor with ampacity equivalent to ACSR twin moose at nominal voltage) under Intra –state by MPPTCL.

5.2.3 Director, CEA informed that MPPTCL vide its letter dated 01.12.2020 has enquired whether the above proposed system strengthening works was associated with Phase-II works of power evacuation from Rajgarh SEZ or it was to be taken up independently. MPPTCL has further submitted that HTLS conductor equivalent to ACSR twin moose capacity for 220 kV may not be available in Indian Market and it may not be possible to use conductor with ampacity equivalent to ACSR twin moose at nominal voltage on the existing towers of 220 kV Shujalpur (PG)-Shujalpur (MP) 220kV D/c line. MPPTCL has requested for confirmation of conductor capacity requirement whether ACSR twin moose or twin Zebra.

5.2.4 Members deliberated and agreed that both the schemes (ICT augmentation at Shujalpur under inter-state and 220 kV line reconductoring under intra-state) was required to overcome operational constraints and were not to be linked with Rajgarh SEZ evacuation

system. Further, both the scheme needs to be implemented in similar time frame.

5.2.5 Director, CEA stated that the confirmation of the conductor ampacity requirement whether ACSR twin moose or twin Zebra would be deliberated and confirmed to MPPTCL in the next WRPC-TP.

5.2.6 After detailed deliberations, NCT approved the following transmission scheme to be implemented under ISTS

ICT Augmentation at 2x315 MVA, 400/220 kV Shujalpur(PG) substation under ISTS by 1x500MVA, 400/220kV ICT augmentation at Shujalpur (PG) alongwith associated bays

Implementation time frame: In matching time frame of Reconductoring of Shujalpur (PG) Shujalpur (MP) 220kV D/c line by MPPTCL.

5.3 Connectivity to 325 MW Wind Project of M/s SBESS Services Projectco Pvt Ltd at 220 kV level of existing Indore (PG) S/s:

5.3.1 SBESS Services Projectco Two Pvt. Ltd. applied for connectivity/LTA for its 325MW wind project at Indore (existing) S/s of POWERGRID. The following connectivity and LTA system has been approved in the 2nd meeting of WRPC(TP) held on 04.09.2020 for 325 MW Wind Project of M/s SBESS Services Projectco Pvt Ltd at 220 kV level of existing Indore (PG) S/s.

Sr.No	RE developer	Connectivity point	LTA system
	M/s SBESS Services Projectco Pvt Ltd : Stage-II Connectivity for 324.4 MW already granted at existing 220 kV bus of Indore. LTA for 324.4 MW already granted	220 kV level of existing Indore (PG) 765/400/220 kV S/s. Connectivity system under ISTS scope: i) 220 kV bus extension of Indore 765/400/220 kV substation. ii) 220kV Hybrid /MTS line bay	i) 1x500MVA, 400/220kV ICT (3rd) at Indore S/s along with associated ICT bays (400kV AIS & 220kV Hybrid/MTS) with 220kV ICT bay on extended bus. ii) Bus sectionaliser (Hybrid/ MTS) between extended and existing 220 kV bus at Indore S/s [*so that the 220kV bus section with dedicated line of SBESS as well as 3rd ICT may be segregated from the existing 220kV bus at Indore S/s, whenever required, in order to control the overloading of 220kV outlets from Indore S/s depending on the injection of power from SBESS*]

5.3.2 The following system has been approved in the 2nd meeting of WRPC (TP) to be implemented under ISTS:

i) 1x500MVA, 400/220kV ICT (3rd) at Indore S/s along with associated ICT bays (400kV AIS & 220kV Hybrid/MTS) with 220kV ICT bay on extended bus.

ii) Bus sectionaliser (Hybrid/MTS) between extended and existing 220 kV bus at Indore S/s [*so that the 220kV bus section with dedicated line of SBESS as well as 3rd ICT may be segregated from the existing 220kV bus at Indore S/s, whenever required, in order to control the overloading of 220kV outlets from Indore S/s depending on the injection of power from SBESS*]

5.3.3 CTU stated that the start date of LTA for M/s SBESS for transfer of power from its wind power project through the approved transmission system is 01/08/2021 or the availability of the transmission system whichever is later. In view of the commissioning timeline of the generator, it is necessary to expedite the implementation of the scheme.

5.3.4 Shri P K Pahwa, Expert member stated that when the generator provides such short commissioning schedule, then in those cases, CTU may ask the generator itself to implement the 220 kV bay required for termination of their dedicated line at ISTS S/stn instead of taking the same for implementation as an ISTS scheme.

5.3.5 CTU informed that the developer was granted stage-II connectivity at 220 kV level at Indore 765/400/220 kV ISTS substaion vide their intimation dated 09.01.2020. However, MPPTCL has raised objection over injection of 325MW power at 220kV level of Indore (PG) S/s as it was causing overloading of 220kV lines emanating from Indore S/s. The connectivity and LTA system was finalized after lot of deliberations in the 2nd meeting of WRPC(TP) held on 04.09.2020. Accordingly, M/s SBESS has been issued revised stage-II connectivity and LTA intimation vide their letter dated 12/11/2020.Further as per Procedure for grant of connectivity to RE projects, the terminal bays at the ISTS substation needs to be implemented by licensee owning the sub-station.

5.3.6 SECI stated that the aforesaid connectivity and LTA system has been freezed and approved after detailed deliberations amongst stakeholders and at WRPC(TP) forum. In view of the time already elapsed in getting its concurrence, it is now necessary to expedite its implementation. As per the updated commissioning schedule intimated by M/s SBESS, it would be commissioning appx 150 MW of generation by April' 2021 itself followed by commissioning of complete project by 15/08/2021. M/s SBESS as well as SECI have intimated CEA to convene a meeting to identify any interim evacuation arrangement for its 150 MW generation scheduled for commissioning by April' 2021

5.3.7 Director, CEA informed that to identify interim evacuation arrangement for M/s SBESS till the availability of planned evacuation system, a meeting would be soon convened for discussion with the stakeholders.

5.3.8 After detailed deliberations, NCT approved the following :

Transmission scheme for providing connectivity and LTA to M/s SBESS for its 325 MW Wind Project in Dhar, Madhya Pradesh to be implemented under ISTS:

I.	**Connectivity system for 325 MW Wind Project of M/s SBESS Services Projectco Pvt Ltd**

	i) 220 kV bus extension of Indore 765/400/220 kV substation. ii) 220kV Hybrid /MTS line bay
II.	**LTA system for 325 MW Wind Project of M/s SBESS Services Projectco Pvt Ltd**
	iii) 1x500MVA, 400/220kV ICT (3rd) at Indore S/s along with associated ICT bays (400kV AIS & 220kV Hybrid/MTS) with 220kV ICT bay on extended bus. iv) Bus sectionaliser (Hybrid/MTS) between extended and existing 220 kV bus at Indore S/s [so that the 220kV bus section with dedicated line of SBESS as well as 3rd ICT may be segregated from the existing 220kV bus at Indore S/s, whenever required, in order to control the overloading of 220kV outlets from Indore S/s depending on the injection of power from SBESS]

Implementation time frame: In compressed time schedule

6. New Inter-State Transmission Schemes in Southern Region:

6.1. Overloading of 400 kV NP Kunta-Kolar S/C line:

6.1.1. Overloading of N.P. Kunta-Kolar 400 kV S/c line was discussed in the 2nd SRSCT meeting, 1st SRPC (TP) meeting and 2nd SRPC (TP) meetings held on 10.06.2019, 16.12.2019 and 01.10.2020 respectively. In the 2nd SRPC(TP) meeting, the following scheme was agreed to mitigate the overloading of 400 kV NP Kunta-Kolar S/C line as Regional System Strengthening scheme:

(i) Cudappah – NP Kunta 400 kV S/c line and NP Kunta – Kolar 400 kV S/c line shall be temporarily bypassed with suitable arrangement at NP Kunta sub-station to form Cudappah – Kolar 400 kV S/c line

(ii) Re-conductoring of the NP Kunta – Kolar 400 kV S/c line (twin Moose) section with high capacity conductors (like twin HTLS equivalent or Quad Moose).

(iii) Upgradation of 400 kV bays equipments at NP Kunta and Kolar for NP Kunta – Kolar 400 kV line section (if required).

(iv) Restoration of LILO arrangement to form Cuddapah – NP Kunta 400 kV S/c line and NP Kunta – Kolar 400 kV S/c line upon completion of re-conductoring works of NP Kunta – Kolar line.

6.1.2. Members enquired about the need of restoring the LILO arrangement after reconductoring when bypassing the line at NP Kunta (thus making Cudappah – Kolar 400 kV S/c line) also solves the overloading of NP Kunta – Kolar 400 kV S/c line.

6.1.3. POSOCO stated that NP Kunta is connected with Hindupur and Cuddapah through 400 kV D/C line. Hindupur being RE generation pooling station, the only outlet for evacuation of RE generation at Hindupur and NP Kunta would be NP Kunta – Cuddapah 400 kV D/C line. LILO of Cudappah – Kolar 400 kV S/c line at NP Kunta provides addition outlet from NP Kunta. As Kolar is connected with load centers, the flow on NP Kunta- Kolar section was high. Cudappah – Kolar 400 kV S/c line being very old line and designed for 75 degree ambient temperature, the scheme as proposed was required as it would provide additional path from NP Kunta and would enhance reliability in evacuation of power from NP Kunta solar park.

6.1.4. CTU stated that the following Upgradation of 400 kV bays equipments at NP Kunta and Kolar for NP Kunta – Kolar 400 kV line section would be required:

Kolar Substation: Bay equipments (Circuit Breaker, Isolators, CT, Wave traps, Erection hardware etc.) of complete 400kV diameter is to be upgraded to 3150A rating.

NP Kunta substation: 7 nos. 400KV, 2000A DBR existing Isolators and existing erection hardware needs to be upgraded to suit proposed high capacity conductors (current rating of 3150A).

6.1.5. After detailed deliberations NCT approved the following scheme to mitigate overloading of 400 kV NP Kunta-Kolar S/C line as Regional System Strengthening scheme under ISTS:

Regional System Strengthening scheme to mitigate the overloading of 400 kV NP Kunta-Kolar S/C line:

(i) Cudappah – NP Kunta 400 kV S/c line and NP Kunta – Kolar 400 kV S/c line shall be temporarily bypassed with suitable arrangement at NP Kunta sub-station to form Cudappah – Kolar 400 kV S/c line

(ii) Re-conductoring of the NP Kunta – Kolar 400 kV S/c line (twin Moose) section with high capacity conductors (like twin HTLS equivalent or Quad Moose).

(iii) Upgradation of 400 kV bays equipments at NP Kunta and Kolar for NP Kunta – Kolar 400 kV line section:

Kolar Substation: Bay equipments (Circuit Breaker, Isolators , CT, Wave traps, Erection hardware etc.) of complete 400kV diameter is to be upgraded to 3150A rating.

NP Kunta substation: 7 nos. 400KV, 2000A DBR existing Isolators and Existing erection hardware needs to be upgraded to suit proposed high capacity conductors (current rating of 3150A).

(iv) Restoration of LILO arrangement to form Cuddapah – NP Kunta 400 kV S/c line and NP Kunta – Kolar 400 kV S/c line upon completion of re-conductoring works of NP Kunta – Kolar line.

Implementation time frame: 15 months.

6.2. Augmentation of transformation capacity at Hiriyur by 1x500 MVA, 400/220 kV ICT

6.2.1. Augmentation of ICT at Hiriyur substation by 1x500 MVA, 400/220 kV ICT (3rd ICT) was agreed in the 2nd SRPC(TP) meeting held on 01.10.2020 , as Regional System strengthening scheme , to overcome the operational constraint (non-compliance of N-1 criteria of ICT outage) at the existing 2x315 MVA, 400/220 kV Hiriyur substation of PGCIL.

6.2.2. NCT approved the following scheme to be implemented as regional strengthening scheme under ISTS.

ICT Augmentation at 2x315 MVA, 400/220 kV Hiriyur (PGCIL) substation

(i) 1x500MVA, 400/220kV ICT augmentation at Hiriyur (PGCIL) alongwith associated bays

Implementation time frame: 15 months

6.3. Augmentation of transformation capacity at Kochi by 1x500 MVA, 400/220 kV ICT:

6.3.1. In the 2nd SRPC(TP) meeting held on 01.10.2020, it was brought out that with the commissioning of Tirunelveli - Kochi 400 kV (quad) D/c line, loadings on 2x315 MVA,

400/220 kV ICTs at Kochi S/s has increased significantly. Presently both ICTs are loaded to about 80-90 % of their transformation capacity and are not complying N-1 criteria. Both SRPC and SRLDC were of the view that the loadings on ICTs were expected to further increase with the commissioning of 2000 MW, ±320 kV Pugalur – Trichur VSC based HVDC system. Therefore, augmentation of transformation capacity at Kochi S/S by 1x500 MVA, 400/220 kV ICT (3rd ICT) was agreed in the 2nd SRPC(TP) meeting for implementation as Regional System strengthening scheme on urgent basis.

6.3.2. NCT approved the following scheme to be implemented as regional strengthening scheme under ISTS.

ICT Augmentation at 2x315 MVA, 400/220 kV Kochi (PGCIL) substation

(i) 1x500MVA, 400/220kV ICT augmentation at Kochi (PGCIL) alongwith associated bays

Implementation time frame: 15 months

6.4. Restoring of one circuit of Kudankulam – Tuticorin PS 400 kV (quad) D/c line at Tirunelveli to control loadings/un-balancing on Kudankulam – Tirunelveli 400 kV (quad) lines:

6.4.1. In the 41st Southern Region constituents meeting regarding connectivity/LTA applications held on 13.04.2020, SRLDC had informed that in real time operation with full generation of Coastal Energen, Tuticorin JV and high wind generation at Tuticorin-II GIS, the tendency of power flow is from Tuticorin PS to Kudankulam in place of Kudankulam to Tuticorin PS. Due to this, entire power of Kudankulam Unit 1&2 and power coming from Tuticorin PS is flowing through Kudankulam – Tirunelveli 400 kV (quad) D/c line and results in high loading in case of outage of one circuit of Kudankulam – Tirunelveli 400 kV (quad) D/c line. With the increase in RE generation at Tuticorin-II, loading on the Kudankulam – Tirunelveli 400 kV (quad) D/c line was to increase further.

6.4.2. To address the high/unbalance loading on Kudankulam – Tirunelveli 400 kV (quad) D/c line, re-arrangement of circuits at Tirunelveli had been agreed in the 2nd SRPC(TP) meeting held on 01.10.2020. Restoration of one circuit of Kudankulam – Tuticorin PS 400 kV D/c line at Tirunelveli substation, would provide one additional 400 kV quad circuit and is expected to address the above issues. With this re-arrangement, there will be three 400 kV (quad) circuits from Kudankulam to Tirunelveli, one 400 kV (quad) circuit from Kudankulam to Tuticorin PS and one 400 kV (quad) circuit between Tirunelveli and Tuticorin PS. From the study results, it was also observed that the arrangement addresses issue of high loading under N-1 contingency conditions. Diagram of the proposed re-arrangement is below:

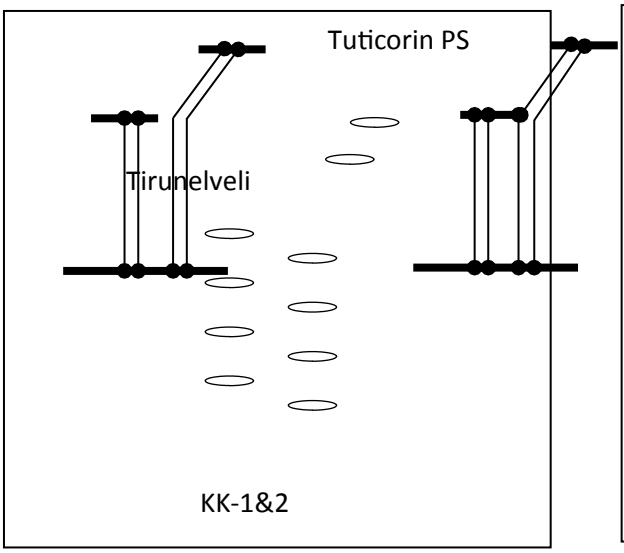


Fig: Existing arrangement

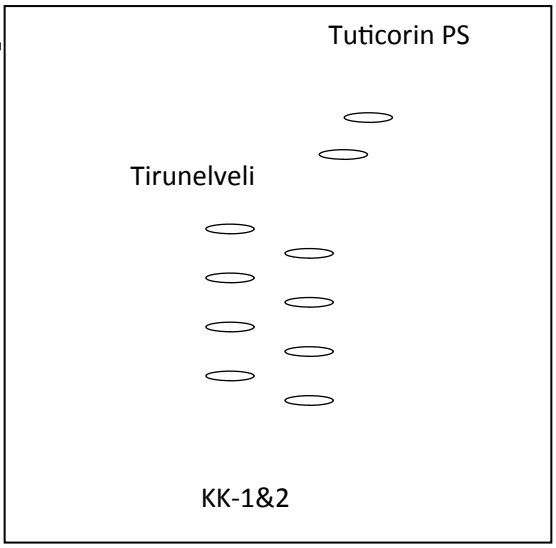


Fig: Proposed re – arrangement

6.4.3. After detailed deliberations, NCT approved the restoration of one circuit of Kudankulam – Tuticorin PS 400 kV (quad) D/c line at Tirunelveli so as to establish Kudankulam – Tirunelveli 400kV three circuits (quad moose), Kudankulam -Tuticorin PS 400 kV one circuit (quad moose) and Tirunelveli -Tuticorin PS 400 kV one circuit (quad moose).

6.5. Upgradation of Narendra New to its rated voltage of 765 kV level under the scheme Gadag Solar Energy Zone, Karnataka (2500 MW) Part – B

6.5.1. Upgradation of Narendra New to its rated voltage of 765 kV along with installation of 2x1500 MVA, 765/400 kV ICTs and 1x330 MVAr Bus Reactor under the scheme Gadag Solar Energy Zone, Karnataka (2500 MW) had been agreed in the 2nd SRSCT meeting held on 10.06.2019.

Narendra New GIS substation is operating at 400 kV level and proposed upgradation to 765 kV was also agreed to be GIS. As per CTU, after survey at site, it has been found that land adjacent to 400 kV GIS switchyard is available and can be acquired for establishment of 765 kV AIS switchyard instead of 765kV GIS.

Considering the techno-economic aspects, CTU had proposed in the 2nd SRPC(TP) meeting held on 01.10.2020 that the upgradation of Narendra New S/s may be carried out as 765 kV AIS instead of 765 kV GIS. With the proposed change of configuration from GIS to AIS, additional land required would be about 350x530 Sqm approx. However, the overall cost of upgradation to 765 kV AIS is lesser than that of 765 kV GIS. The CTU proposal for upgradation of Narendra New S/S as 765 kV AIS instead of 765 kV GIS had been agreed in the 2nd SRPC (TP) meeting.

6.5.2. Shri P K Pahwa, Expert Member enquired about the need to perform the proposed upgradation of Narendra (new) as well as Narendra (new) – Kolhapur (PG) to 765 kV at this stage, when there are uncertainities with respect to materialization of RE generations in Gadag and Koppal to the envisaged full potential.

6.5.3. CTU stated that the proposed upgradation to 765 kV of Narendra (new) – Kolhapur (PG) D/c line was planned alongwith the Transmission Scheme for evacuation of power from Gadag (2500 MW) REZ and Koppal 2500 MW) REZ. At present Stage-II Connectivity of 160 MW and 300 MW has only been granted at Gadag and Koppal P.S respectively.The scope of works pertaining to upgradation has been notified by MoP for implementation

through RTM route by PGCIL. In view of the lean progress of RE generations in Gadag REZ, phasing of the Gadag Scheme (under TBCB) has been approved by the NCT. Accordingly, the timeframe of the Narendra upgradation to 765 kV level can also be delayed and the same can be taken up after certainty with repect to materialization of RE generations in Gadag and Koppal area.

6.5.4. POSOCO 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 is a need for not only upgradation of Narendra (new) – Kolhapur (PG) D/c section but also further augmentation beyond Kolhapur (PG).

6.5.5. Director, CEA stated that if the operational constraints is faced in Kolhapur (PG)-Kolhapur (MSETCL) 400 kV section , then its augmentation can be taken up independently.

6.5.6. Shri P K Pahwa, Expert Member stated that based on POSOCO's submission, it can be observed that until the strengthening/augmentation beyond Kolhapur (PG) is not carried out, the 765 kV upgradation of Narendra (new) – Kolhapur (PG) section would not be fruitful.

6.5.7. CTU stated that in All-India study with RE surplus in SR, constraints were observed in Kolhapur (PG)- Kolhapur (MSETCL) 400 kV section. Accordingly, 765 kV corridors beyond Kolhapur (PG) towards Pune / Sholapur has also been studied. However, the proposal has not yet put in the WRPCTP, as there was lot of uncertainty with respect materialization of RE generations against envisaged potential in SR.

6.5.8. Chief Engineer (PSPA-II) opined that once a scheme has been approved and submitted for Regulatory Approval of CERC, further changes in the scheme like conversion from GIS to AIS must not be allowed. As far as taking up of the implementation of the scheme was concerned, it should only be taken up after receipt of regulatory approval from CERC.

6.5.9. COO (CTU) stated that the upgradation had been proposed as GIS at it was envisaged that sufficient land for construction of AIS substation would not be available. Subsequently, it has been found that land adjacent to 400 kV GIS switchyard is available and can be acquired for establishment of 765 kV AIS switchyard. The proposed land has been identified and land acquisition is yet to be done.

6.5.10. Director (PSPA-I), CEA stated that CTU has been requested to furnish the details of overall savings (GIS vs AIS) for their proposal of upgradation of Narendra New S/s as 765 kV AIS instead of 765 kV GIS but the same is yet to be received.

6.5.11. After detailed deliberations, following was agreed:

(i) NCT opined that the transmission scheme involving upgradation of Narendra (new) – Kolhapur (PG) 400 kV D/c line to 765 kV level i.e. "Transmissison scheme for Solar Energy Zone in Gadag- Part B" may be taken up based on RE projects developments in the Gadag and Koppal REZ.

(ii) Decision regarding Upgradtion of Narendra New S/S as 765 kV AIS instead of 765 kV GIS is deferred for now. In the meantime, CTU can furnish the comparative cost details (GIS vs AIS) to CEA which can be deliberated in the next meeting of NCT.

(iii) Strengthening of Kolhapur (PG) - Kolhapur (MSETCL) 400 kV section may be taken in RPCTP based on the operational constraint reported by POSOCO.

6.6. Implementation of 1 no. of 230 kV bay at Tuticorin-II GIS PS under ISTS:

6.1.1. NTPC Ltd. is implementing 230 MW solar Project at Ettayapuram, Tuticorin, Tamil Nadu. The solar plant would be connected to Tuticorin –II GIS PS (ISTS) through 230 kV S/C dedicated transmission line. Stage-II connectivity has already been granted by CTU to NTPC in September 2020, as given below:

Application No.	Applicant	Location	Stage-II Connectivity (MW)	Start Date of Stage-II connectivity	Proposed location for grant of Stage-II Connectivity	Dedicated Transmission System
1200002503	NTPC Ltd.	Tuticorin, Tamil Nadu	230	01-Sept-21	Tuticorin-II GIS	NTPC Limited (Tuticorin) – Tuticorin-II 230 kV S/c line (high capacity conductor enabling at least 380 MW power transfer at nominal voltage) along with bay at NTPC end.

The Detailed Procedure for "Grant of Connectivity to projects based on Renewable Sources to Inter-State Transmission System" under para 5.3.1 provides that "For the connectivity transmission system, the dedicated transmission line including line bays at generation pooling station shall be under the scope of the applicant and the terminal bays at the ISTS sub-station shall be under the scope of transmission licensee owning the ISTS sub-station subject to compliance of relevant provision of tariff policy."

NTPC had requested that the implementation of 230 kV bay at ISTS substation may kept under the scope of ISTS licensee.

Accordingly, the proposal of 1 no. of 230 kV bay at Tuticorin-II GIS PS to be implemented under ISTS for termination of dedicated transmission line from NTPC's Tuticorin Solar generation project had been agreed in the 2nd SRPC(TP) meeting.

6.1.2. After deliberations, NCT approved the implementation of 1 no. of 230 kV bay at Tuticorin-II GIS PS under ISTS.

7. New Inter-State Transmission Schemes in Northern Region:

7.1. Implementation of 400/132kV transformer at Kishtwar Pooling Station

7.1.1. Establishment of 400 kV switching station at Kishtwar (GIS) under ISTS was agreed in the 3rd meeting of NCT held on 26th and 28th May, 2020. Subsequently, JKPDD had requested to implement 2x200 MVA, 400/132 kV transformer at Kishtwar Pooling Station along with 4 no. of 132 kV line bays which was discussed and agreed as system strengthening scheme in the 2nd meeting of NRPCTP held on 1.09.2020.

Sl. No	Scope of the Transmission Scheme	Capacity / line length km
1.	2x200 MVA, 400/132 kV ICT along with associated bays at Kishtwar Pooling station	200 MVA, 400/132 ICT- 2 400 kV ICT bays – 2 132 kV ICT bays – 2
2.	4 no. of 132 kV bays	132 line bays- 4

7.1.2. Chief Engineer PSPA-I stated that establishment of 400 kV switching station at Kishtwar by LILO of one circuit of Kishenpur-Dulhasti 400 kV Quad line is part of " Transmission system for evacuation of power from Pakaldul HEP in Chenab Valley HEPs - Connectivity System." The scheme was approved by NCT in its 3rd meeting held on 26th and 28th May 2020. This scheme has already been notified by MoP in Gazette of India dated 25.09.2020 for implementation through TBCB with M/s PFCCL as BPC. As the bidding of the scheme has not yet started, the proposed scope of works may be clubbed with the earlier notified scheme.

Regarding the query whether the 132 kV side would AIS or GIS, Chief Engineer (PSPA-1) clarified that the Kishtwar 400 kV switching station is to be established as GIS, therefore, 132 kV side would also be implemented as GIS to take care of space constraints, if any.

7.1.3. Member (E&C) stated that as per CERC's recent Sharing Regulations, the transformer component has been segregated and its charges have to be borne by States. In this context, he enquired about the need to implement the 400/132 kV transformation capacity under ISTS.

CTU stated that in the present case, if the transformers would be utilized for the drawl requirement of J& K, the Yearly Transmission Charges for the transformers shall be apportioned to J& K only.

7.1.4. After detailed deliberations, NCT approved the following:

i) Implementation of 400/132kV transformer at Kishtwar Pooling Station with scope of works as given below to be implemented as an ISTS scheme.

Sl. No	Scope of the Transmission Scheme	Capacity / line length km
1.	2x200 MVA, 400/132 kV ICT along with associated bays at Kishtwar Pooling station	200 MVA, 400/132 ICT- 2 400 kV ICT bays – 2 132 ICT bays – 2

2.	4no. of 132 kV bays	132 kV line bays (GIS)- 4

ii) Implementation of 400/132kV transformer at Kishtwar Pooling Station is recommended to be combined with "Transmission system for evacuation of power from Pakaldul HEP in Chenab Valley HEPs -Connectivity System" which has already been notified by MoP in Gazette of India dated 25.09.2020 for implementation through TBCB.

7.2. Grant of 400kV bays to RE generators at Bhadla-II PS, Fatehgarh-II, & Fatehgarh-III (erstwhile Ramgarh-II) PS under ISTS

7.2.1. The Transmission system for SEZ in Rajasthan under Phase-I & II were planning keeping in view that the RE generation projects would get connected to ISTS at 220 kV level. Subsequently, SECI has come out with manufacturing linked tenders with bulk capacities of RE generation projects. RE generators who have won bids under SECI manufacturing linked tender, have applied for stage-II connectivity at 400 kV level. These RE generators have been granted Stage-II Connectivity at 400 kV level instead of 220 kV level for optimum utilization of bays after deliberations in NR LTA & Connectivity meetings. The details are as below:

Sl.	Applicant	Date of Application	Stage-II Connectivity Sought (MW)/date	Connectivity Point	Dedicated Tr. system
1.	NTPC Ltd.	08/11/2019 + 26/02/2020	250 + 300 (01/09/2021) CPSU solar tender	Bhadla-II PS	NTPC Ltd. 300 MW Power plant – Common PS of NTPC's 250MW& 300 MW Solar Project located at Kolayat through 220 kV S/c line and Common PS -– Bhadla-II PS through 400 kV S/c line (already granted for 250 MW plant) (suitable to carry 900 MW under nominal voltage) – to be implemented by applicant along with bay at generation switchyard & Common PS. (400 kV Bay already granted for 250 MW plant at Bhadla-II PS is proposed under the scope of ISTS)
2.	Azure Power India Private Limited	18/12/19	500 (07/04/2022) Mfg. linked	Bhadla-II PS	Azure Power India Pvt. Ltd. Power Plant (For appl. No. 1200002401 & 1200002403 being combined together)- Bhadla-II P.S 400 kV S/c line (suitable to carry 1000 MW under nominal voltage) – to be implemented by applicant along with bay at generation switchyard. 400 kV Bay at Bhadla-II PS is proposed under the scope of ISTS.
3.	Adani Green Energy Four Limited	08/01/20	500/ 31/01/2022 Mfg. linked	Bhadla-II PS	Adani Green Energy Four Ltd. Power Plant- Bhadla-II P.S 400 kV S/c line (suitable to carry minimum capacity of 900 MW under nominal voltage) – to be implemented by applicant along with bay at generation switchyard. 400 kV Bay at Bhadla-II PS is proposed under the scope of ISTS.
4.	Azure Power India Private Limited	18/12/19	500 (07/04/2024) Mfg. linked	Fatehgarh-II PS	Azure Power India Pvt. Ltd. Power Plant-Fatehgarh-II P.S 400 kV S/c line (suitable to carry minimum capacity of 1000 MW under nominal voltage) – to be implemented by applicant along with bay at generation switchyard. 400 kV Bay at Fatehgarh-II PS is proposed under the scope of ISTS.
5.	Azure Power India Private Limited	18/12/19	500 (07/04/2025) Mfg. linked	Fatehgarh-III PS (erstwhile Ramgarh-II)	Azure Power India Pvt. Ltd. Power Plant-Fatehgarh-III (erstwhile Ramgarh-II) 400 kV S/c line (suitable to carry 900 MW under nominal voltage) – to be implemented by applicant along with bay at generation switchyard. 400 kV Bay at Fatehgarh-III PS is proposed under the scope of ISTS.

Accordingly, 5 nos. of 400 kV bays (Bhadla II- 3 nos., Fatehgarh-II- 1 no. & Fathegarh-III-1 no.) were agreed in the 2nd meeting of NRPCTP held on 1.09.2020, for implementation under ISTS with time frame indicated above is:

Sl. No.	Scope of the Transmission Scheme
1.	3 no. of 400 kV bays at Bhadla
2.	1 no. of 400 kV bay at Fatehgarh-II
3.	1 no. of 400 kV bay at Fatehgarh-III

7.2.2. Director, CEA stated that as can be seen, the successful bidders of manufacturing liked tenders of SECI have sought connectivity at 400 kV level of the ISTS pooling station. As the identified SEZ potential in Bhadla and Fatehgarh area has not changed, this can lead to non-utilisation of the 400/220 kV transformation capacity and the 220 kV line bays for termination of the RE generators, that are presently under implementation at Bhadla –II and Fatehgarh-II. The ICT augmentation at Fathehgarh-II and Bhadla-II alongwith the requisite 220 kV line bays are under implemention through RTM route, NCT also needs to deliberate the 400/220 kV transformation capacity and 220 kV bays that would be required in view grant of connectivity to RE developers at 400 kV level.

7.2.3. CTU stated that out of the above five applicants, only NTPC connectivity is based on the LoA from CPSU solar tender of SECI and the other applicants LoA are from manufacturing linked tender of SECI. Further, NTPC has sought connectivity from September'2021. Implementation of 400 kV line bay by September 2021 (8 months time) would not be possible. There was a need to access the timeline by which connectivity would be required by the above applicants as well as PSA signing status for the manufacturing schemes by SECI. None of the manufacturing linked applicant have applied for LTA and they were likely to do so after signing of the PSA by SECI.

7.2.4. SECI stated that as far as the date of connectivity as mentioned in the table is concerned, the same would be extended by maximum five months in line with the extension granted by MNRE on account of Covid pandemic.

7.2.5. Chief Engineer (PSPA-II) stated that it is upto RE developers to avail the extension of 5 months granted by MNRE or not. Accordingly, the dates intimated by the developers to the CTU while seeking connectivity/LTA and during JCC meetings are the ones that needs to be relied upon.

7.2.6. Shri P K Pahwa, Expert Member stated that CTU is responsible for grant of connectivity to the developers. If CTU feels that the connectivity bays required to be implemented at ISTS pooling station would not be able to get commissioned in the timeline as intimated by the applicant/developer, then CTU may ask the developer to implement the same at its own cost.

7.2.7. CTU stated that in all connectivity meetings, the applicants are apprised regarding the timeline required for implementation of any transmission element under ISTS, for effecting their connectivity / LTA. The developers are well aware of approval process of schemes under ISTS i.e., RSCT and NCT approval followed by Gazette Notification of the schemes by MoP. The mode of implementation and the execution schedule of any transmission works to be implemented under ISTS is decided by the Ministry of Power. Therefore, CTU cannot give any firm schedule for implementation of ISTS scheme. Despite that, the developers have requested the implementation of 400 kV bays at ISTS pooling station under ISTS in the timeline as specified in the table given above. CTU requested SECI to update the status of PSA/PPA signed for the manufacturing linked projects. This would help in assessing the timeline in which these projects would get materialized. In case of NTPC, they have applied

for part LTA which would be effective with commissioning of RE linked transmission schemes of Rajasthan Phase-II.

7.2.8. SECI stated that identification of beneficiary and signing of PSA is under process. This would be followed by signing of PPA between SECI and developer. The developer would be required to commission its project within maximum of 18 months from signing of PPA.

7.2.9. CTU stated that as far as implementation of 400 kV line bays at ISTS pooling station for providing connectivity to developers at Bhadla-II and Fatehgarh-II is concerned, it would take around 15 months from MoP approval, therefore it was not possible to provide connectivity in the timeline requested by the applicants no. 1 to 4.

7.2.10. Shri P K Pahwa, Expert Member opined that the implementation timeframe for different transmission works should remain uniform across all the schemes. This would also assist CTU in informing the implementation timeframe for the specific transmission work to the developer seeking connectivity/LTA.

7.2.11. After detailed deliberations, NCT approved the implementation of the following 400 kV bays under ISTS:

Implementation of 400kV bays to RE generators at Bhadla-II PS, Fatehgarh-II, & Fatehgarh-III (erstwhile Ramgarh-II) PS under ISTS

Sl. No.	Scope of the Transmission Scheme	Implementation time
1.	3 no. of 400 kV bays at Bhadla-II	15 months or RE generator commissioning schedule whichever is later.
2.	2 no. of 400 kV bay at Fatehgarh-II	15 months or RE generator commissioning schedule whichever is later.
3.	1 no. of 400 kV bay at Fatehgarh-III	15 months or RE generator commissioning schedule whichever is later.

7.3. 1 no. of 220kV bay at Shahjahanpur (PG) under ISTS:

7.3.1. Construction 220/132/33 kV, 2x200,2x63 MVA Sitapur substation along with utilization of 6 no. 220 kV existing Bays at Shahjahanpur and implementation of 1 no. of 220 kV bay(7^{th}) under ISTS at Shahjahanpur PG S/s was agreed in the 1^{st} meeting of NRPCTP held on 24.01.2020 with the following connectivity :-

(i) Construction of 220/132/33 kV, 2x200,2x63 MVA Sitapur substation

- 400/220 kV Kursi Road, Lucknow- Kundini 220 kV D/c line – 60 Km. (Each ckt on moose) (220 kV Bays – 2 no. already exists at Kursi Road PGCIL substation).
- LILO of Sitapur – Nighasan 220 kV S/c existing line at Kundni 220 kV s/s -30 Km
- LILO of Sitapur – Shahjahanpur 220 kV S/c line at Shahjahanpur PGCIL 400 kV substation- 10 Km.

(For LILO one no. of existing 220 kV bay at Shahjahanpur PGCIL would be utilized)

- Construction of one no. of 220kV bay at Shahjahanpur PGCIL under ISTS for LILO of Sitapur – Shahjahanpur 220 kV S/c line at Shahjahanpur PGCIL 400 kV (taken up under ISTS in matching timeframe of LILO of Sitapur – Shahjahanpur220 kV S/c line at Shahjahanpur)

The timeframe of the 220 kV bay under ISTS at Shahjahanpur (PG) as informed by UPPTCL in the 2^{nd} meeting of NRPCTP is May, 2021.

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	220 kV bay at Shahjahanpur(PG)	220 bay- 1 no.

7.3.2. NCT after deliberation approved the following scheme under ISTS:

Implementation of 220 kV bay at Shahjahanpur 400/220 substation (PGCIL)

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	220 line bay at Shahjahanpur 400/220 kV substation (PGCIL)	220 kV line bay(AIS) - 1 no.

Implementation time: 12 months or matching timeframe of LILO of Sitapur – Shahjahanpur220 kV S/c line at Shahjahanpur by UPPTCL whichever is later.

7.4. Additional 80 MVAR, 765kV Spare Reactor at Bhadla-II S/s:

7.4.1. Fatehgarh II – Bhadla II 765kV D/C(2nd) line along with 2x240 MVAr switchable line Reactors at both ends were planned without additional spare reactor under Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II. During 1stNRPC (TP) meeting held on 24.01.2020, it was agreed that 1x80 MVAr spare reactor (Identified under Rajasthan SEZ Ph-I) each at Fatehgarh-II and Bhadla-II to be used as spare for Fatehgarh-II – Bhadla-II765kV D/c line (2nd).

Subsequently, PGCIL had informed that 80 MVAR spare Reactor proposed under Rajasthan SEZ, Phase-I at Bhadla-II 765/400 kV substation was on the opposite side of switchyard w.r.t. the bays being proposed for termination of Bhadla II – Fatehgarh II 765kV D/c(2nd) line at Bhadla-2 S/S. Further, in order to utilize the same 80 MVAR spare reactor under present scope, the 765kV and 145kV Auxiliary Buses needs to be extended from one side of switchyard to the other side (approx. 750 meters) involving crossings under the 765kV lines inside the substation.

The issue was deliberated in the 2nd meeting of NRPCTP held on 1.09.2020 wherein implementation of additional 1x80 MVAR, 765kV Spare Reactor at Bhadla-II S/s was agreed as strengthening scheme.

Sl. No	Scope of the Transmission Scheme	Capacity / line length km
1.	1x80 MVAR, 765kV Spare Reactor at Bhadla-II S/s	80 MVAR, 765kV reactor-1

7.4.2. NCT approved the implementation of the following scheme under ISTS:
Implementation of 1x80 MVAR, 765kV Spare Reactor at Bhadla-II S/s

Sl. No	Scope of the Transmission Scheme	Capacity / line length km
1.	1x80 MVAR, 765kV Spare Reactor at Bhadla-II S/s for 2x240 MVAR switchable line reactors associated with Fatehgarh-II – Bhadla-II 765 kV 2nd D/C line.	1X80 MVAR, 765kV reactor-1

Implementation time: Matching time frame of Fatehgarh-II – Bhadla-II 765 kV 2nd D/C line.

7.5. Additional 1x500 MVA, 400/220kV ICT (8th) at Bhadla Pooling Station:

7.5.1. At present, evacuation of 3380MW power from Solar Generation Projects/Solar Parks near Bhadla, 7 nos. of 500 MVA ICTs are being implemented at Bhadla Pooling Station. Subsequently, 150MW LTA to Tata Power has also been granted in 14th Connectivity/LTA meeting of NR held on 17.08.2018. Thus total LTA from Bhadla including evacuation of power from solar generation projects/solar parks along with this LTA shall become 3530 MW against already planned transformation capacity of 3500 MW.
Therefore, additional 1x500 MVA, 400/220kV ICT (8th) at Bhadla Pooling Station was agreed in the 2nd meeting of NRPCTP as strengthening scheme for meeting the n-1 criteria.

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	1x500 MVA, 400/220kV ICT (8th) at Bhadla Pooling Station	500 MVA, 400/220kV ICT – 1 no. 400 kV ICT bay- 1 no. 220 kV ICT bay- 1 no.

7.5.2. Shri P K Pahwa, Expert Member stated that in CEA's Transmission Planning Criteria, the maximum substation capacity of 400/220 kV S/stn has been specified as 2000 MVA whereas, at Bhadla Pooling station, with implementation of the 8th ICT, the transformation capacity would sum up to 4000 MVA. He enquired about further ICT augmentation at Bhadla pooling station.

7.5.3. CEA clarified that the maximum substation capacity of 2000 MVA for 400/220 kV substation was meant for substation feeding loads whereas, Bhadla pooling station is for injection of power from RE developers. CTU stated that normally the pooling station are implemented with multiple sections at 220 kV level with maximum 8 no of feeder bays in each section.

7.5.4. CTU stated that no more ICT augmentation would be done at Bhadla pooling station beyond 8th 400/220 kV ICT.

7.5.5. After deliberations, NCT approved the implementation of the additional 1x500 MVA, 400/220kV ICT (8th) at Bhadla Pooling Station under ISTS:
Implementation of the 1x500 MVA, 400/220kV ICT (8th) at Bhadla Pooling Station

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	1x500 MVA, 400/220kV ICT (8th) at Bhadla Pooling Station	500 MVA, 400/220kV ICT – 1 no. 400 kV ICT bay- 1 no. 220 kV ICT bay- 1 no.

Implementation time: 15 months.

7.6. Addition in the scope of the transmission scheme "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part C" to be taken up through Tariff Based Competitive Bidding (TBCB)

7.6.1. CTU has intimated some additional scope for inclusion in the transmission scheme "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part C" to be taken up through Tariff Based Competitive Bidding (TBCB). CTU has mentioned that

7.6.2. In a meeting held on 04.11.2020 with BPC, CEA, SECI and CTU to deliberate over Phasing/ tweaking of some of the RE linked schemes which are presently under bidding, CTU has informed that the 4th 765/400kV, 1500 MVA ICT augmentation to be carried out at Bhadla-

II PS under RTM by PGCIL is to be kept on hold for now and has to be resumed based on progress of LTA applications at Bhadla-II. However, putting this augmentation on hold would imply that the 765 kV ICT bay to be implemented by PGCIL whose half diameter would have been utilized for termination of one of the circuit of Bhadla-II- Sikar 765 kV D/c line would not be available. Bhadla-II- Sikar 765 kV D/c line is under bidding through TBCB route as part of the scheme "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part C". Accordingly, minor addition in the scope of works such as creation of a tie bay alongwith 765 kV bus extension needs to be incorporated in the RfP document of this scheme prior to its RfP submission. The proposal of CTU was agreed.

Accordingly, the following amendment was proposed by CTU in the scope of transmission scheme "Transmission System Strengthening Scheme for Evacuation of power from Solar Energy Zones in Rajasthan (8.1 GW) under Phase II (Part C)" and same was also incorporated in the Bidding document of the scheme.

Sl. No.	Clause No.	Existing Clause	New/Revised Clause
1.0	Scope of work for 765kV Bhadla-II PS Extn.	1. SLD of Bhadla-II PS Drg. No.: C/ENGG-SS/TBCB/BHADLA-II P.S /SLD/01, REV-00 2. GA of Bhadla-II PS Drg.No.: C/ENGG-SS/ TBCB/ BHADLA-II P.S/GA/01, REV-00 *(Scope comprises of 2 nos. 765kV line bays on existing half diameter)*	1. SLD of Bhadla-II PS Drg. No.: C/ENGG-SS/TBCB/BHADLA-II P.S /SLD/01, REV-01 (Annex-A) 2. GA of Bhadla-II PS Drg.No.: C/ENGG-SS/TBCB/ BHADLA-II P.S/GA/01, REV-02 (Annex-B) ***(Scope comprises of 1 nos. 765kV line bay on existing half diameter + 1 nos. 765kV line bay on new diameter along with associated tie bay including bus extension)***

7.6.3. NCT noted and approved the aforementioned amendments in the scope of transmission scheme "Transmission System Strengthening Scheme for Evacuation of power from Solar Energy Zones in Rajasthan (8.1 GW) under Phase II (Part C)"

8. New Inter-State Transmission Schemes in North Eastern Region:

8.1. Interconnection of 132kV substations in upper Assam (below Brahmaputra) with neighboring substations in Arunachal Pradesh

8.1.1. For interconnection of 132kV substations in upper Assam (below Brahmaputra) with neighboring substations in Arunachal Pradesh,, the following transmission system was agreed

to be implemented as North Eastern Region Strengthening Scheme-XV (NERSS-XV) under ISTS in the 2nd meeting of NERPC-TP held on 25th September 2020:

a) Upgradation of existing 132kV Namsai (POWERGRID) S/s to 220 kV (with 220kV side as GIS)

220kV:

- ICTs: 220/132kV, 2x160MVA
- ICT bay: 2 no.
- Bus reactor: 220kV, 1x31.5MVAr
- Bus reactor bay: 1 no.
- Line bays: 2 no. [for termination of Kathalguri (NEEPCO) – Namsai
- (POWERGRID) 220kV D/c line]
- Space for future line bays: 4 no.

132kV:

- ICT bays: 2 no.
- Space for future line bays: 4 no.

b) Kathalguri (NEEPCO) – Namsai (POWERGRID) 220kV D/c line

c) Extension at Kathalguri (NEEPCO) switchyard: 2 nos. of GIS line bays for termination of Kathalguri (NEEPCO) – Namsai (POWERGRID) 220kV D/c line

d) Estimate Cost of the Project : Rs. 130 Crores

e) Expected completion schedule : 36 months from Date of Allocation from MoP

8.1.2. CEA stated that the Transformer Manual issued by CEA in December 2020 specifies the Standard specifications and Technical parameters for transformers and Reactors (66 kV and above voltage class). The standard rating mentioned in the manual for 245 kV shunt reactor is 25 MVAR and 50 MVAR whereas in the scheme proposed the 31.5 MVAR shunt reactor has been proposed. This deviation from the standardized rating will defeat the very purpose of standardization, accordingly the possibility of opting for one of the two standard ratings (25 MVAr or 50 MVAr) may be explored based on system studies.

8.1.3. CTU stated that in view of the need to opt for standard rating of Shunt Reactor, it would be better to opt for 50 MVAr shunt reactor for the present scheme. The studies for Low Hydro Peak Demand case shows a drop about 2.4 kV and 5 kV with switching on 25 MVAR and 50 MVAR shunt reactor respectively.

8.1.4. After detailed deliberations, NCT approved the aforesaid scheme for implementation under ISTS with the rating of Bus reactor on 220 kV side as 50 MVAr. The scheme as approved by NCT is reproduced below:

North Eastern Region Strengthening Scheme-XV (NERSS-XV)

a) Upgradation of existing 132kV Namsai (POWERGRID) S/s to 220 kV (with 220kV side as GIS)

220kV:

- ICTs: 220/132kV, 2x160MVA
- ICT bay: 2 no.
- Bus reactor: 220kV, 1x50 MVAr
- Bus reactor bay: 1 no.
- Line bays: 2 no. [for termination of Kathalguri (NEEPCO) – Namsai

- (POWERGRID) 220kV D/c line]
- Space for future line bays: 4 no.

132kV:

- ICT bays: 2 no.
- Space for future line bays: 4 no.

b) Kathalguri (NEEPCO) – Namsai (POWERGRID) 220kV D/c line

c) Extension at Kathalguri (NEEPCO) switchyard: 2 nos. of GIS line bays for termination of Kathalguri (NEEPCO) – Namsai (POWERGRID) 220kV D/c line

d) Estimate Cost of the Project : Rs. 130 Crores

e) Expected completion schedule : 36 months from Date of Allocation from MoP

8.2. Surajmaninagar (India) – Comilla (Bangladesh) 400kV cross border link:

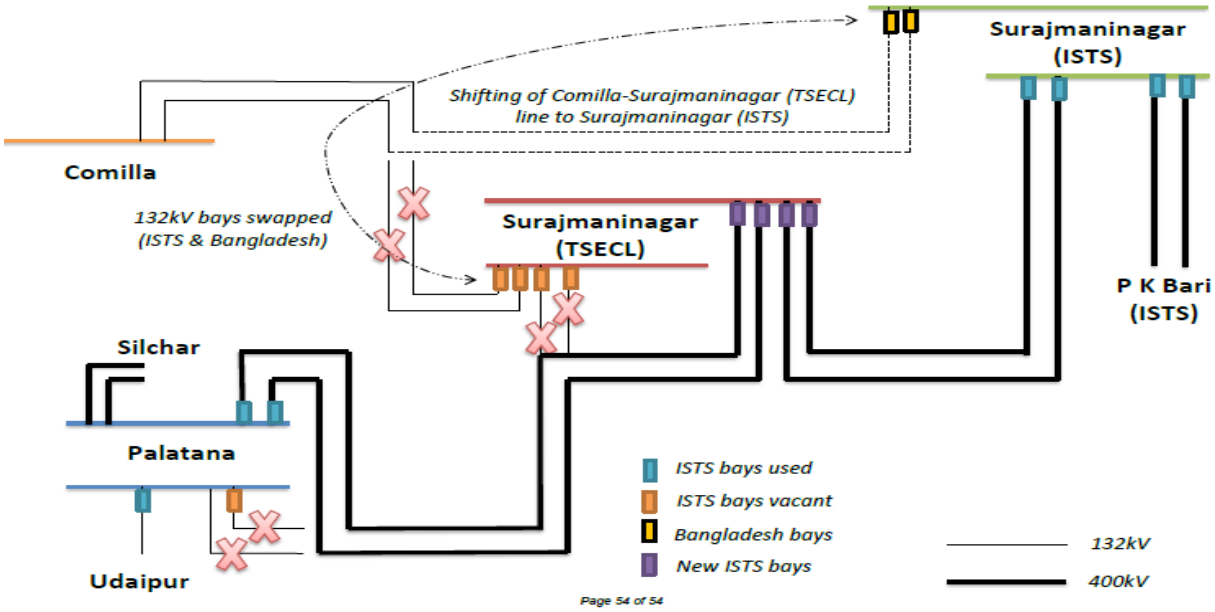
8.2.1. In the 1st meeting of NERPC(TP), it was agreed by all constituents except TSECL, that Comilla (Bangladesh)-Surajmaninagar (TSECL) 400kV D/c line (operated at 132kV) Cross Border link should be shifted to 400/132kV S/s at Surajmaninagar (ISTS) along with 2 no. 132 kV line bays at Surajmaninagar (ISTS), as ISTS scheme. However, this work would be scheduled for completion in April 2021 i.e. after expiry of existing contract of Tripura for sale of power to Bangladesh. The scheme was also put up for discussion in the 3rd meeting of NCT held on 26th -28th May 2020. NCT directed for re-deliberation of scheme in NERPC-TP.

8.2.2. In 2nd meeting of NERPC-TP held on 25th September 2020, the scheme was deliberated and the following has been concluded:

Considering the views of the states and the fact that connecting Comilla with ISTS will not only create level playing field for all states who want to export their surplus power but also brings the cross border link in the jurisdiction of NERLDC/NLDC, it was agreed to shift Comilla (Bangladesh) interconnection at Surajmani Nagar (ISTS). However, to save the interest of TSECL Tripura, it was also decided that this shifting will be carried out after expiry of present contract (i.e. March 2021) of export of 160 MW from Tripura to Bangladesh.

The scheme of shifting is depicted below:

[Shifting of Comilla – Surajmaninagar (TSECL) line to Surajmaninagar (ISTS)]



8.2.3. NCT enquired about the status of Government of Tripura's proposal to extend Power Supply Agreement for sale of 160 MW power to Bangladesh Power Development Board (BPDB) for a further period of five years and whether MoP has granted the extension or not.

8.2.4. CEA informed that as per recent development, MoP is considering granting the extension of PSA to Tripura citing that shifting of Comilla interconnection to Surajmaninagar (ISTS) would result in additional expenditure.

8.2.5. NCT opined that in case MoP has considered approving the proposal of Govt of Tripura to extend Power Supply Agreement for sale of 160 MW power to Bangladesh Power Development Board (BPDB) for a further period of five years, further deliberations are not required.

8.3. Conversion of 132kV bus bar at Nirjuli substations and North Eastern Region Strengthening Scheme-IX (NERSS-IX)

8.3.1. In the 6th SCMPSPNER held on 03-10-2016, LILO of one circuit of Pare HEP - North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra) at Nirjuli S/s had been agreed and the same is under-implementation through TBCB route by M/s Vapi-II-North Lakhimpur Transmission Ltd. as part of works under NERSS-IX scheme. However, the 2 no. of 132 kV bays at Nirjuli required for the termination of LILO at Nirjuli S/s is to be provided by PGCIL.

8.3.2. In the 1st meeting of NERPC-TP held on 08-11-2019, conversion of 132 kV level of 400/132 kV Imphal and 132/33 kV Nirjuli substations to Double Main Transfer bus scheme preferably with Bus Sectionalisation on AIS depending on layout or alternatively on GIS/ Hybrid GIS if layout does not permit AIS Bus sectionalisation was agreed under ISTS. The scheme was also approved in the 3rd meeting of NCT held on 26th& 28th May 2020. Further, MoP has allocated the above works under RTM to POWERGRID with implementation schedule of 30 months.

8.3.3. Subsequently, in the 2nd meeting of NERPC-TP held on 25th September 2020, POWERGRID requested that due to space constraints, construction of 2 nos.132 kV bays at Nirjuli S/s for termination of LILO of one circuit of Pare HEP - North Lakhimpur (AEGCL) 132 kV D/c line may be agreed through GIS. Accordingly, the following has been agreed in the 2nd meeting of NERPC-TP:

Modification for NERSS-IX: 2 no. 132kV GIS bays at Nirjuli S/s for termination of LILO of one circuit of Pare HEP - North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra) to be provided by Powergrid.

6.1.6. NCT noted and approved the modification of the two of 132 kV bays from AIS to GIS in view space constraints at Nirjuli S/s for termination of LILO of one circuit of Pare HEP - North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra).

9. New Inter-State Transmission Schemes in Eastern Region:

9.

9.1. Transmission system for connectivity to Teesta-IV HEP (520MW)

9.1.1. In the 2nd meeting of ERPC-TP held on 30th September 2020, the following transmission system has been agreed for grant of connectivity to Teesta-IV (4x130MW) HEP of M/s NHPC:

(a) LILO of Teesta-III HEP – Rangpo 400kV D/c (Quad) line at Teesta-IV HEP generation switchyard: under ISTS.
(b) Establishment of 400kV Teesta-IV generation switchyard: by NHPC
  (i) Generation step-up to 400kV level
  (ii) 04 nos. of 400kV line bays for 400kV 2xD/c (Quad moose) lines (LILO lines mentioned above)
  (iii) 1x80MVAr, 420kV bus reactors along with bay

CTU has granted connectivity to NHPC for Teesta-IV (4x130MW) HEP w.e.f 28.02.2027.

9.1.2. NCT approved the connectivity system for Teesta-IV (4x130MW) HEP. NCT opined that as this system is required in the timeframe of 2027, its implementation may be taken up at an appropriate stage so as to match its commissioning with that of the generation project.

9.2. Eastern Region Strengthening Scheme-XXV (ERSS-XXV)

9.2.1. In the 2nd meeting of ERPC-TP held on 30th September 2020, for creation of 220kV bus at existing Banka (POWERGRID) 400/132kV S/s, following scope of works were approved to be implemented in ISTS under Eastern Region Strengthening Scheme-XXV (ERSS-XXV):

(a) Creation of 220kV GIS bus at Banka (POWERGRID) S/s
(b) 400/220kV, 2x500MVA ICTs along with associated bays (220kV bays in GIS)
(c) 2 nos. of 220kV GIS line bays at Banka (POWERGRID) for termination of Banka (POWERGRID) – Goradih (Sabour New) 220kV D/c line of BSPTCL
(d) Space for future 220kV GIS bays: 6 no.

The above scheme would create 220 kV voltage for feeding power to BSPTCL 220 kV substations.

9.2.2. Members enquired about the availability of 400 kV equipped bays at the existing Banka 400/132 kV substation to terminate the 400/220 kV ICTs proposed in the scheme.

9.2.3. CTU stated that space was available in the existing Banka 400/132 kV substation for implementation of the 400/220 kV ICTs. In addition to the scope of works proposed above, 400 kV bus extension alongwith 2 nos. of 400 kV bays would also be required.

9.2.4. NCT approved the Eastern Region Strengthening Scheme-XXV (ERSS-XXV) with following scope of works:

Eastern Region Strengthening Scheme-XXV (ERSS-XXV)
(i) Creation of 220kV GIS bus at Banka (POWERGRID) S/s
(ii) 400 kV bus extension works at Banka (PGCIL) 400/132 kV substation.
(iii) 400/220kV, 2x500MVA ICTs along with associated bays (220kV bays in GIS and 400 kV bays in AIS)
(iv) 2 nos. of 220kV GIS line bays at Banka (POWERGRID) for termination of Banka (POWERGRID) – Goradih (Sabour New) 220kV D/c line of BSPTCL
(v) Space for future 220kV GIS bays: 6 no.

D. CTU inputs/presentation for development of an efficient, co-ordinated and economical inter – State transmission system for smooth flow of electricity.

On account of time constraint, it was decided that the inputs from CTU pertaining to development of an efficient, co-ordinated and economical inter – State transmission system for smooth flow of electricity may be presented in the next meeting of NCT.

Annexure-A

List of Participants of the 4th meeting of Reconstituted National Committee on Transmission (NCT) held on 20.01.2021 & 28.01.2021.

Sr.No.	Name of the participants	Designation	Organization
1.	P.S.Mhaske	Chairperson- in chair	CEA
2.	Gorityala Veera Mahendar	Member (E&C)	CEA
3.	Goutam Roy	Chief Engineer	CEA
4.	Pradeep Jindal	Chief Engineer	CEA
5.	Ishan Sharan	Chief Engineer	CEA
6.	Awdhesh Kumar Yadav	Director	CEA
7.	Manjari Chaturvedi	Director	CEA
8.	B.S.Bairwa	Director	CEA
9.	Goutam Ghosh	Director (Trans)	Ministry of Power
10.	Irfan Ahmad	Director	MNRE
11.	Dilip Nigam	Adviser	MNRE
12.	Rohit Thakwani	Scientist-C	MNRE
13.	Prabhakar Singh	Technical Expert	-
14.	P.K.Pahwa	Technical Expert	-
15.	R.K.Agarwal	Consultant	SECI
16.	Rajnath Ram	Adviser (E)	NITI Aayog
17.	Subir Sen	COO (CTU-Plg)	CTU
18.	Ashok Pal	CGM (CTU-Plg)	CTU
19.	Kashish Bhambani	Sr. DGM	CTU
20.	P.S. Das	General Manager	CTU
21.	S.R. Narsimhan	Director (SO)	POSOCO
22.	Rajiv Porwal	Chief General Manager	NLDC (POSOCO)
23.	Sanjay Nayak	Vice President	PFCCL
24.	Ankit Kumar	Deputy Manager	RECTPCL
25.	Hariharan	-	RECTPCL

Annexure-I

Summary of the ISTS projects presently under bidding through TBCB (as on 20.01.2021)

S. No.	Name of Transmission Scheme	Gazette Notification dated	BPC	Status/ Pace of bidding	Reason behind holding/phasing/tweaking
1	Evacuation of power from RE sources in Karur / Tiruppur Wind Energy Zone (Tamil Nadu)(2500MW)	09.10.2019	PFCCL	Bidding on hold	• No Connectivity/LTA application • Implementation to be kept on hold till receipt of connectivity/ LTA applications (SECI's submission in affidavit to CERC) • Regulatory Approval yet to be granted by CERC
2	Evacuation of power from RE sources in Koppal Wind Energy Zone (Karnataka) (2500MW)	09.10.2019	PFCCL	Under Bidding	RfP submission only after TSA signing and Regulatory approval
3	Transmission system for evacuation of power from RE projects in Osmanabad area (1 GW) in Maharashtra.	24.01.2020	RECPTCL	Under Bidding	RfP submission only after TSA signing
4	Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh.	24.01.2020	RECTPCL	Under Bidding Splitting of the scheme into two phases suggested by CEA/CTU	Submission held up for want of MoP approval for phasing of scheme into Phase-I (1500 MW) and Phase-II (1000 MW)
5	Transmission scheme for Solar Energy Zone in Ananthpuram (Ananthapur) (2500 MW) and Kurnool (1000 MW), Andhra Pradesh	24.01.2020	PFCCL	Bidding on hold	• No LTA/Connectivity application • SECI's submission in affidavit to CERC:

					Implementation may be taken up on receipt of Stage-II/ Conn application by CTU or when SECI conducts location specific bidding (SECI's submission in affidavit to CERC)
6	Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka – Part A	24.01.2020	RECTPCL	Under Bidding Splitting of the scheme into two phases suggested by SECI with 1000 MW under phase-I.	• SECI in its affidavit to CERC has submitted that land available at Gadag is not sufficient for 2500 MW evacuation. • SECI has requested scheme to be implemented in phases for evacuation of 1000 MW and 1500 MW respectively. Phase-I may be taken up for implementation. Phase –II to be taken up only after receipt of connectivity LTA application beyond 1000 MW. Submission after CERC regulatory approval and MoP approval for phasing of scheme

7	Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka	24.01.2020	RECTPCL	Bidding on hold	• No Connectivity/ LTA applications. • Non availability of land as submitted by SECI
8	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part A	24.01.2020	RECTPCL	Under Bidding	
9	Transmission system strengthening for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II –Part B	24.01.2020	RECTPCL	Under Bidding	
10	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase-II- Part C	24.01.2020	RECTPCL	Under Bidding	
11	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part D	24.01.2020	PFCCL	Under Bidding	
12	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part E	24.01.2020	PFCCL	Bidding on hold	No utilisation as of now
13	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part F	24.01.2020	PFCCL	Under Bidding	• RfP submission after deleting the scope of 400/220 kV transformer • No Connectivity /LTA application at Bikaner-II P.S. • CERC while granting Regulatory

					approval has entrusted CTU to phase out the construction of transmission systems according to the progress of the RE generating stations.
14	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II- Part G	24.01.2020	PFCCL	Under Bidding	No utilisation as of now

Annexure-II

Status of on-going Transmission Projects on TBCB route as on 28.01.2021 with RECTPCL as BPC

S. N.	Name of the project	Status
1	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II - Part A	• Bid process initiated on 11.05.2020 • Bid submitted on 21.12.2020 • 4 bidders participated • **PGCIL emerged as the L1 bidder after e-RA**
2	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II - Part B	• Bid process initiated on 05.03.2020 • Bid submitted on 21.12.2020 • 4 bidders participated • **PGCIL emerged as the L1 bidder after e-RA** • **TSA yet to be signed by NBPDCL & SBPDCL**
3	Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II - Part C	• Bid process initiated on 05.03.2020 • Bid submitted on 21.12.2020 • 5 bidders participated • **PGCIL emerged as the L1 bidder after e-RA** • **TSA yet to be signed by NBPDCL & SBPDCL**
4	Transmission system for evacuation of power from RE projects in Osmanabad area (1 GW) in Maharashtra	• Bid process initiated on 05.03.2020 • **As per directions of CEA, bids to be submitted upon availability of LTTCs for the Project** • Present bid deadline 18.02.2021 • **No LTTCs identified till date**
5	Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh	• Bid process initiated on 05.03.2020 • Directions regarding bidding process awaited from MoP due to phasing (in 2 phases) of Project by CEA.
6	Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka - Part – A	• Bid process initiated on 05.03.2020 • Directions regarding bidding process awaited from MoP due to phasing (in 2 phases) of Project by CEA
7	Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka	• Bid process initiated on 05.03.2020 • **Bidding process on hold due to non-availability of Sub-station land**
8	Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part A, Gujarat	CEA vide its letter dated 16.11.2020 advised to resume the bidding after confirmation by it on submission of LTA by Developers/ Generators. Bidding process to be initiated after further directions.
9	Transmission scheme for evacuation of 4.5 GW RE injection at Khavda	

S. N.	Name of the project	Status
	P.S. under Phase-II – Part B, Gujarat	
10	Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part C, Gujarat	
11	Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part D, Gujarat	
12	Transmission scheme for evacuation of 4.5 GW RE injection at Khavda P.S. under Phase-II – Part E, Gujarat	

Status of on-going Transmission Projects on TBCB route as on 20.01.2021 with PFCCL as BPC

Sl.No.	Name of ITP	Status of Bid Process	Present Status
1	Transmission System Strengthening Scheme for Evacuation of Power from Solar Energy Zones in Rajasthan (8.1GW) under Phase-II Part-D	Bids under evaluation	• Single Stage RfP bid process (RfQ & RfP combined) initiated on 06.03.2020; • RfP bid submission was originally scheduled on 08.05.2020 which has been extended 9 times up to 28.12.2020; • 5 Bidders have submitted bids by due date i.e. 28.12.2020; • **RfP evaluation is under process.**
2.	Transmission System Strengthening Scheme for Evacuation of Power from Solar Energy Zones in Rajasthan (8.1GW) under Phase-II Part-F	Bids under evaluation	• Single Stage RfP bid process (RfQ & RfP combined) initiated on 06.03.2020; • RfP bid submission was originally scheduled on 08.05.2020 which has been extended 9 times up to 28.12.2020; • 4 Bidders have submitted bids by due date i.e. 11.01.2021; • **RfP evaluation is under process**.
3.	Transmission System Strengthening Scheme for Evacuation of Power from Solar Energy Zones in Rajasthan (8.1GW) under Phase-II Part-E	RfP Bid submission extended upto 11.02.2021	• Single Stage RfP bid process (RfQ & RfP combined) initiated on 06.03.2020; • RfP bid submission was originally scheduled on 08.05.2020 which has been extended 9 times up to 11.02.2021; • Regulatory Approval has been received on 12.05.2020; • **List of LTTCs are not available**.
4.	Transmission System Strengthening Scheme for Evacuation of Power from Solar Energy Zones in Rajasthan (8.1GW) under Phase-II Part-G	On Hold	• Single Stage RfP bid process (RfQ & RfP combined) initiated on 06.03.2020; • RfP bid submission was originally scheduled on 08.05.2020 which has been extended 8 times up to 11.01.2021; • Regulatory Approval has been received on 12.05.2020; • **List of LTTCs are not available**.
5.	Evacuation of Power from RE Sources in Koppal Wind Energy Zone (Karnataka) (2500 MW)	02.02.2021	• Bid process was initiated with the issuance of RfQ documents on 21.10.2019 and RfP documents on 20.12.2019; • RfP bid submission was originally scheduled on 20.02.2020 which has been extended 12 times up to 02.02.2021; • During the meeting held on 16.10.2020, it was decided that submission of RfP

			bids shall be taken only after signing of TSA and receipt of regulatory approval; • **Regulatory Approval is not available;** • **List of LTTCs are not available;**
6.	Evacuation of Power from RE Sources in Karur/ Tiruppur Wind Energy Zone (Tamil Nadu) (2500 MW)	Bid Process kept in abeyance	• Bid process was initiated with the issuance of RfQ documents on 21.10.2019 and RfP documents on 20.02.2020; • RfP bid submission was originally scheduled on 24.04.2020 which has been extended 7 times up to 01.12.2020; • Further, on advice of CEA and MNRE, the bid process has been kept in Abeyance as no Connectivity/LTA applications are received; • **Regulatory Approval is not available;** • **List of LTTCs are not available;**
7.	Transmission scheme for Solar Energy Zone in Ananthpuram (Ananthapur) (2500 MW) and Kurnool (1000 MW), Andhra Pradesh	Bid Process kept in abeyance	• Single Stage RfP bid process (RfQ & RfP combined) initiated on 06.03.2020; • RfP bid submission was originally scheduled on 08.05.2020 which has been extended 6 times up to 01.12.2020; • Further, on advice of CEA and MNRE, the bid process has been kept in Abeyance as no Connectivity/LTA applications are received; • **Regulatory Approval is not available;** • **List of LTTCs are not available;**
8.	Transmission scheme for evacuation of 3 GW RE injection at Khavda P.S. under Phase-I	On Hold	• Gazette Notification from MoP received on 01.10.2020; • **SPV under incorporation;** • **On the advice of MNRE and CEA no action are to be initiated till further advise;**
9.	Transmission system for evacuation power from Pakaldul HEP in Chenab Valley HEPs - Connectivity System	Bid process yet to be initiated	• Gazette Notification from MoP received on 01.10.2020; • **SPV under incorporation;** • **RfP document will be issued shortly;**
10.	Establishment of new 220/132kV substation at Nangalbibra	Bid process yet to be initiated	• Gazette Notification from MoP received on 01.10.2020; • **SPV under incorporation;** • **RfP document will be issued shortly;**