



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

Date: 09.08.19

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. Chief Operating Officer, Central Transmission Utility POWERGRID, Saudamini, Plot No. 2, Sector-29, Gurgaon – 122 001.	6. Manoj Kumar Upadhyay Deputy Adviser NITI Aayog, Parliament Street, New Delhi – 110 001.
7. Shri P. K. Pahwa, Ex. Member (GO&D), CEA 428 C, Pocket -2, Mayur Vihar, Phase -1, Delhi – 110091.	8. Shri Prabhakar Singh, Ex. Director (Projects), POWERGRID D 904, Tulip Ivory, Sector-70, Gurgaon – 122 001.

विषय: 31st जुलाई 2019 को आयोजित "ट्रांसमिशन पर राष्ट्रीय समिति" (एनसीटी) की चौथी बैठक – मिनट्स ऑफ़ मीटिंग

Subject: 4th meeting of "National Committee on Transmission" (NCT) to be held on 31st July 2019 – Minutes of Meeting

Sir/Madam,

4th meeting of the "National Committee on Transmission" (NCT) was held on 31st July 2019 at 3:00 pm under the chairmanship of Shri P. S. Mhaske, Chairperson, CEA in conference Room of CEA (Chintan), 2nd Floor, Sewa Bhawan, R.K. Puram, New Delhi. Minutes of the meeting are available on CEA website <http://www.cea.nic.in>. (path to access: Home Page-Wing-Power System-PSPA I-National Committee on Transmission)

Yours faithfully,


(Goutam Roy)

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

Copy to:

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

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110001

- (ii) Chief Engineer (PSPA-II), CEA
- (iii) CEO, RECTPCL, ECE House, 3rd Floor, Annexe - II, 28A, KG Marg, New Delhi - 110001
- (iv) PFC Consulting Ltd, First Floor, "Urjanidhi", 1, Barakhmba Lane, Connaught Place, New Delhi -110001

Date and Time: 31st July, 2019 at 03:00 pm

Venue: CHINTAN Conference Room, CEA, 2nd Floor, Sewa Bhawan, R.K. Puram, New Delhi

List of Participants is enclosed as Annexure-I

Chairperson, CEA as Chairman of the National Committee on Transmission (NCT) welcomed the participants to the 4th meeting of the NCT and requested Chief Engineer (PSPA-I), CEA to take up the agenda for discussions.

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

1.1 CEA stated that the minutes of 3rd meeting of National Committee on Transmission held on 1st March, 2019 were issued vide CEA letter No. File No.CEA-PS-11-15(11)/1/2018-PSPA-I/4170/2019/1766-1773 dated 14th March 2019. No comment / observation has been received on the minutes of the meeting.

1.2 Members noted the same and confirmed the minutes of 3rd NCT.

2. Modifications in the transmission schemes already recommended by NCT and ECT

2.1 CEA stated that the transmission schemes associated with RE projects (excluding the ones identified for implementation on potential basis) along with recommendation of 2nd NCT and 3rd ECT regarding its implementation is as given below:

S. No.	Name of Scheme	Estd cost (Rs. Cr.)	NCT Recomd	ECT Recomd.	Allocated to BPC
1.	Additional 1x500MVA 400/220 kV (9 th) ICT, for injection from any additional RE project (other than 4000 MW injection under SECI bids upto Tranche IV) at Bhuj PS.	56.3	RTM	RTM (POWERGRID)	
2.	WRSS-21 Part-A –“ Transmission System Strengthening for relieving over loadings observed in Gujarat Intra state system due to RE injections in Bhuj PS”	856	TBCB	TBCB	REC
3.	WRSS-21 Part-A – “Conversion of existing 2x63 MVAR line reactors at Bhachau end of Bhachau – EPGL 400 kV D/c line to switchable line reactors”	19		RTM (POWERGRID)	
4.	WRSS-21 Part-B- Transmission system strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS:	1865	TBCB	TBCB	PFC
5.	Transmission system associated with RE generation at Bhuj-II Dwarka & Lakadia.	1075	TBCB	TBCB	REC
6.	Transmission system for providing connectivity to RE projects at Bhuj-II (2000 MW) in Gujarat.	645	TBCB	TBCB	PFC
7.	Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat)	229	TBCB	TBCB	REC
	Interconnection of Jam Khambhaliya Pooling station for providing connectivity		RTM		

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S. No.	Name of Scheme	Estd cost (Rs. Cr.)	NCT Recomd	ECT Recomd.	Allocated to BPC
	to RE projects (1500 MW) in Dwarka (Gujarat)	169			
	Installation of 400/220 kV ICT along with associated bays at M/s CGPL switchyard.	37	TBCB		
8.	400 kV line bay at Solapur PS for St-II connectivity to M/s Toramba	10	RTM	RTM (POWERGRID)	
9.	Transmission system associated with LTA application from Rajasthan SEZ Part-A	2312	RTM	RTM (POWERGRID)	
10.	Construction of Ajmer (PG)-Phagi 765 kV D/C line along with associated bays for Rajasthan SEZ	583 (509+74)		TBCB	REC
11.	Scheme Transmission system associated with LTA applications from Rajasthan SEZ Part-B	676	TBCB	TBCB	PFC
12.	Transmission system associated with LTA applications from Rajasthan SEZ Part-C	1365	TBCB	TBCB	REC
13.	Transmission system associated with LTA applications from Rajasthan SEZ Part-D	1208	TBCB	TBCB	PFC
14.	ICT Augmentation works at existing Moga (PG) ISTS S/S associated with LTA applications from SEZs in Rajasthan	73	RTM	RTM (POWERGRID)	
15.	ICT Augmentation works at Bhadla (PG) associated with 1630 MW LTA granted at Bhadla	105	RTM	RTM (POWERGRID)	
16.	ICT Augmentation works at existing Bhiwani (PG) ISTS S/S associated with LTA applications from SEZs in Rajasthan	65	TBCB	RTM (POWERGRID)	

2.2 Modifications in the Transmission Schemes recommended for implementation through TBCB route

2.2.1 ECT in its 3rd meeting held on 21.12.2019, has recommended implementation of nine nos. of transmission schemes related to RE through TBCB route. The schemes are under bidding stage. Subsequent to the 3rd meeting of ECT, the transmission schemes were deliberated in the 2nd WRSCT meeting and 3rd NRSCT meeting, held on 21.5.2019 and 24.5.2019 respectively wherein the following modifications in the scheme have been agreed:

Item No.	Name of the scheme	Table location	As recorded in the minutes of the meeting of 2 nd NCT	Modification agreed
5.2	WRSS-21 Part-A :Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS	Sl. No. 1 3 rd Column	2x1500MVA, 765/400kV 400kV ICT bay-2 765kV ICT bay-2 400kV line bay-4 765kV line bay-2 1x330MVA, 765 kV, 1x125MVA, 420 kV 765kV Reactor bay- 1	2x1500MVA, 765/400kV 400kV ICT bay-2 765kV ICT bay-2 400kV line bay-4 765kV line bay-2 1x330MVA, 765 kV, 1x125MVA, 420 kV

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				400kV Reactor bay -1	765kV Reactor bay- 1 400kV Reactor bay -1 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) 1x110 MVAR, 765 kV, 1 ph. reactor (spare unit) (for both 1x330 MVAR bus reactor under Part A and 1x330 MVAR line reactor on Lakadia-Vadodara line under Part B)
	5.3	WRSS-21 Part-B - Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS	Sl. No. 2 3 rd Column	330 MVAR reactor - 4 765kV Reactor bay - 4	330 MVAR reactor - 4 765kV Reactor bay - 4 1x110 MVAR, 765 kV, 1 ph. switchable line reactor (spare unit) at Vadodara end
	5.4	Transmission System associated with RE generations at Bhuj-II, Dwarka & Lakadia	S.no 3. 2 nd column	240MVAR switchable Line reactor at Lakadia PS end of Lakadia PS – Banaskantha PS 765kV D/c line	240MVAR switchable Line reactor at Banaskantha PS end of Lakadia PS – Banaskantha PS 765kV D/c line
			S.no 3. 3 rd column	2x240 MVAR 765kV reactor Bays -2	2x240 MVAR 765kV reactors along with bays -2 1x80 MVAR, 765 kV, 1ph. switchable line reactor (spare unit) at Banaskantha end
	5.5	Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat	Sl. No. 1 3 rd Column	765/400kV, 2x1500MVA, 400/220kV, 4x500MVA 765kV ICT bay-2 400kV ICT bay-6 220kV ICT bay- 4 765kV line bay-4 220kV line bays -7 1x330MVAR, 765kV, 1x125MVAR, 420kV 765kV reactor Bays -1 420kV reactor Bays -1	765/400kV, 2x1500MVA, 400/220kV, 4x500MVA 765kV ICT bay-2 400kV ICT bay-6 220kV ICT bay- 4 765kV line bay-4 220kV line bays -7 1x330MVAR, 765kV, 1x125MVAR, 420kV 765kV reactor Bays -1 420kV reactor Bays -1

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Item No.	Name of the scheme	Table location	As recorded in the minutes of the meeting of 2 nd NCT	Modification agreed
				<p>1x500 MVA, 765/400 kV, 1 ph. ICT (spare unit)</p> <p>1x110 MVA, 765 kV, 1 ph. reactor (spare unit)</p>
		Additional scope to be added at Sl. No. 3 2 nd Column: Scope	-	1x240 MVA switchable line reactor for each circuit at Bhuj II PS end of Bhuj II - Lakadia 765 kV D/C line
		Additional scope to be added at Sl. No. 3 3 rd Column: Capacity	-	2x240 MVA, 765 kV with 400 ohm NGR 765 kV reactor bays- 2 nos. 1x80 MVA, 765 kV, 1 ph. switchable line reactor (spare unit) at Bhuj II end
6.1	Transmission system associated with LTA applications from Rajasthan SEZ Part-A	Sl. No. 1 3 rd Column	765/400kV – 3x1500 MVA, 765kV ICT bay-3 400kV ICT bay-3 400kV line bay-2 765kV line bay-2 240 MVA 765 kV reactor-2 no. 125 MVA 400 kV reactor-1 no. 765kV reactor bay-2 400kV reactor bay-1	765/400kV, 3x1500 MVA, 765kV ICT bay-3 400kV ICT bay-3 400kV line bay-2 765kV line bay-2 240 MVA 765 kV reactor-2 no. 125 MVA 400 kV reactor-1 no. 765kV reactor bay-2 400kV reactor bay-1
		Sl. No. 4 3 rd Column	765/400kV - 2x1500MVA 765kV ICT bay-2 400kV ICT bay-2 400kV line bay-2 765kV line bay-4 240 MVA bus reactor-2 125 MVA bus reactor-1	765/400kV, 2x1500MVA 765kV ICT bay-2 400kV ICT bay-2 400kV line bay-2 765kV line bay-4 240 MVA bus reactor-2

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Item No.	Name of the scheme	Table location	As recorded in the minutes of the meeting of 2 nd NCT	Modification agreed
			765kV reactor bay-2 400kV reactor bay-1	125 MVAr bus reactor-1 765kV reactor bay-2 400kV reactor bay-1 1x500 MVA, 765/400 kV, 1 ph. ICT (spare unit) 1x80 MVAr, 765 kV, 1 ph. reactor (spare unit) (for both 2x240 MVAr bus reactor and 2x240 MVAr line reactor on Bikaner-Bhadla II 765 kV D/C line (after LILO))
		Sl. No. 8 3 rd Column	330 MVAr reactor-2 765kV reactor bay-2	330 MVAr reactor-2 765kV reactor bay-2 1x110 MVAr, 765 kV, 1 ph. reactor (spare unit)
6.1	Transmission system associated with LTA applications from Rajasthan SEZ Part-A. Transmission elements at S.no 9 and 10 have been separated and are being implemented as separate scheme named as “Construction of Ajmer (PG)-Phagi 765 kV D/C line along with associated bays for Rajasthan SEZ”	Sl. No. 10 3 rd Column	765 kV line bay- 4	<ul style="list-style-type: none"> • 765 kV line bay (AIS)- 3 (2 bays at Ajmer (PG) S/stn and 1 bay at Phagi (RVPN) S/stn) • 1 complete GIS DIA 765 kV (2 Main Breakers and 1 Tie Breaker) at Phagi (RVPN) S/stn.
		Additional scope to be added as Sl no. 11 2 nd column Scope		1X240MVAr, 765 kV Bus Reactor with GIS bay at Phagi 765/400 kV S/stn 1x80MVAr, 765kV, 1 ph. reactor (Spare Unit)
		Additional scope to be added at Sl no. 11 3 rd column Capacity		1x240 MVAr, 765kV Reactor 765kV reactor Bay (GIS) -1 (2 nd Main bay of the new DIA being created for termination of 765 kV D/c line from Ajmer)

I/6436/2019	Item No.	Name of the scheme	Table location	As recorded in the minutes of the meeting of 2 nd NCT	Modification agreed
			Note (b)	<i>POWERGRID and RVPN to provide space for 2 nos. of 765kV bays at Ajmer(PG) and Phagi (RVPN) respectively for termination of Ajmer (PG)- Phagi 765kV D/c line</i>	<p><i>(b)POWERGRID to provide space for 2 nos. of 765kV bays (AIS) at Ajmer(PG) for termination of Ajmer (PG)- Phagi 765kV D/c line</i></p> <p><i>(c) RVPNL to provide space for 1 no. of AIS bay and 1 complete GIS DIA at Phagi (RVPN) for termination of Ajmer (PG)- Phagi 765kV D/c line and space for installation of bus reactor at Phagi (RVPN) along with space for spare reactor</i></p>
	6.3	Transmission system associated with LTA applications from Rajasthan SEZ Part-C	Sl. No. 1 2 nd Column	<p>Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri with 765kV (2x240MVAR) and 400kV (1x125 MVAR) bus reactor</p> <p><u>Future provisions:</u> Space for: 400/220 kV ICTs along with bays: 4 nos. 765kV line bays: 4nos 400kV line bays: 4nos. 220kV line bays: 7nos</p>	<p>Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri with 765kV (2x240MVAR) and 400kV (1x125 MVAR) bus reactor</p> <p><u>Future provisions:</u> Space for: 765/400 kV ICTs along with bays: 2 nos. 400/220 kV ICTs along with bays: 4 nos. 765kV line bays: 4nos 400kV line bays: 4nos. 220kV line bays: 7nos</p>
			Sl. No. 1 3 rd Column	<p>765/400kV - 2x1500MVA 765kV ICT bay-2 400kV ICT bay-2 400kV line bay-2 765kV line bay-2 240 MVAr (765kV) Bus Reactor -2 125MVAr (400 kV) Bus Reactor -1 765 kV Reactor bay - 2 400 kV Reactor bay -1</p>	<p>765/400kV - 2x1500MVA 765kV ICT bay-2 400kV ICT bay-2 400kV line bay-2 765kV line bay-2 240 MVAr (765kV) Bus Reactor -2 125MVAr (400 kV) Bus Reactor -1 765 kV Reactor bay - 2 400 kV Reactor bay -1</p>

I/6436/2019	Item No.	Name of the scheme	Table location	As recorded in the minutes of the meeting of 2 nd NCT	Modification agreed
					<p>1x500 MVA, 765/400 kV, 1 ph. ICT (spare unit)</p> <p>1x80 MVAR, 765 kV, 1 ph. reactor (spare unit)</p> <p>(for both 2x240 MVAR bus reactor and 2x240 MVAR line reactor on Bikaner-Khetri 765 kV D/C line at Khetri end)</p>
			Sl. No. 6 3 rd Column	240 MVAR Line reactor -2 765 kV Reactor bay -2	<p>240 MVAR Line reactor -2 765 kV Reactor bay -2</p> <p>1x80 MVAR, 765 kV, 1 ph. reactor (spare unit)</p> <p>(for 2x240 MVAR line reactor on Khetri-Jhatikara 765 kV D/C line at Jhatikara end)</p>
	6.4	Transmission system associated with LTA applications from Rajasthan SEZ Part-D	Sl. No. 3 3 rd Column	1x240 MVAR Line reactor -4 765 kV Reactor bay -4	<p>1x240 MVAR Line reactor -4 765 kV Reactor bay -4</p> <p>1x80 MVAR, 765 kV, 1 ph. reactor (spare unit)</p> <p>(for 2x240 MVAR line reactor on Bikaner-Khetri 765 kV D/C line at Bikaner end)</p>

2.2.2 The above proposed modifications have already been incorporated in the RfP documents of the respective schemes and have been agreed in the WRSCT and NRSCT meetings.

2.2.3 Members concurred with the modifications in the already approved transmission schemes.

2.3 Modifications in the Transmission Schemes recommended for implementation through RTM route

2.3.1 CEA stated that in the 2nd meeting of WRSCT and 3rd meeting of NRSCT held on 21.5.2019 and 24.05.2019 respectively, the following modifications in the transmission schemes have been agreed. The schemes have already been recommended in 1st and 2nd NCT meetings followed by 2nd and 3rd ECT meetings to be implemented through RTM route by POWERGRID.

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Item No.	Scheme name	Table location	As recorded in the minutes of 1 st meeting of NCT	Modifications agreed
6.8.2	Augmentation of transformation capacity in Western Region	S. no 6.8.2 2 nd column	<p>A) Jabalpur 400/220kV S/S of POWERGRID (i) 400/220kV, 500MVA ICT – 1 no (ii) 400kV ICT bay - 1 no (iii) 220kV ICT bay-1 no.</p> <p>B) Itarsi 400/220 kV S/S of POWERGRID (i) 400/220kV 500MVA ICT – 1 no. (ii) 400kV ICT bay -1 no. (iii) 220kV ICT bay-1 no.</p>	<p>A) Jabalpur 400/220kV S/S of POWERGRID (i) 400/220kV 500MVA ICT - 1 no (ii) 400kV ICT bay - 1 no (iii) 220kV ICT bay-1 no.</p> <p>B) Itarsi 400/220 kV S/S of POWERGRID (i) 400/220kV 500 MVA ICT – 1 no. (ii) 400kV ICT bay -1 no. (outdoor GIS bay adopting 2 CB scheme) (iii) 220kV ICT bay-1 no.</p>
		Sl. No. 6.8.2 3 rd Column	68	71

Item No.	Scheme name	Table location	As recorded in the minutes of the 2 nd meeting of NCT	Modifications agreed
5.1.4	Additional 1x500MVA 400/220kV (9th) ICT, for injection from any additional RE project (other than 4000MW injection under SECI bids upto Tranche IV) at Bhuj PS	Sl. No. 1 2 nd Column	Additional 1x500MVA 400/220kV (9th) ICT, for injection from any additional RE project (other than 4000MW injection under SECI bids upto Tranche IV) in existing Bhuj PS with associated 400 kV GIS bay and 220kV AIS bay	Additional 1x500MVA 400/220kV (9th) ICT, for injection from any additional RE project (other than 4000MW injection under SECI bids upto Tranche IV) in existing Bhuj PS with associated 400 kV GIS bay and 220kV Hybrid/MTS bay
6.5	ICT Augmentation works at existing Moga (PG) ISTS S/S associated with LTA applications from SEZs in Rajasthan	Sl. No 1, 3rd Column	1x1500MVA, 765/400kV 765kV ICT bay-1 400kV ICT bay-1	Deleted from scheme.

2.3.2 Members concurred the same.

I/6436/2019 Denotification/Dropping of the Transmission Scheme “Connectivity System for Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) and Inter State Transmission system strengthening in Chhattarpur area in Madhya Pradesh”

3.1 CEA stated that the implementation of the Inter State Transmission system strengthening in Chhattarpur area in Madhya Pradesh was taken as a part of the transmission scheme “Connectivity System for Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) and Inter State Transmission system strengthening in Chhattarpur area in Madhya Pradesh” through TBCB route with PFCCCL as the Bid Process Coordinator for the scheme.

Empowered Committee in its 37th meeting held on 20.09.2017 had decided that the bidding process for the scheme may be taken up after resolution of financial issue and after ascertaining the progress of the generation project.

3.2 In the 2nd NCT (National Committee on Transmission) meeting held on 04.12.2018, the progress of the transmission scheme “Connectivity System for Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) and Inter State Transmission system strengthening in Chhattarpur area in Madhya Pradesh” was reviewed. In the meeting CEA had stated that there was no progress in resolution of financial issue by the developer of LVTPPL, therefore, the bidding of the scheme is still on hold. The scheme with reduced scope (Inter State Transmission system strengthening in Chhattarpur area in Madhya Pradesh) would be put up in the next WRSCT and based on the deliberations, the bidding process of the scheme could be resumed with the reduced scope of works.

Accordingly, in the 2nd meeting of WRSCT held on 21.05.2019, the transmission scheme “Inter State Transmission system strengthening in Chhattarpur area in Madhya Pradesh’ was discussed and it was agreed to drop the transmission scheme.

3.3 Members agreed that the scheme may be denotified.

4. Status of transmission schemes under bidding process - briefing by BPCs

4.1 BPCs - PFCCCL and RECTPCL presented the status of the transmission schemes under bidding process. The same is enclosed at Annexure-II.

5. Cost estimates for the transmission projects to be implemented through tariff based competitive bidding (TBCB)

5.1 CEA stated that in the 3rd meeting of NCT held on 1st March, 2019, Cost Committee was constituted with the representatives from CEA, Powergrid / CTU and BPCs to work out a cost matrix for different transmission schemes based on survey report of BPCs.

5.2 The cost committee met two times i.e on 14.03.2019 and 06.06.2019 and worked out the cost of the following transmission schemes based on the preliminary route survey carried out by the BPCs:

Sl. No.	Independent Transmission Projects	Empowered Committee Cost (in Rs. Crore)	Estimated Cost of the Project as per Cost Committee (including RoW compensation) (in Rs. Crore)
1.	Western Region Strengthening Scheme – XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme – IX (NERSS-IX) – PFCCCL (BPC)	586	1223.24
2.	400 kV Udupi (UPCL) – Kasargode D/C Line-RECTPCL (BPC)	620	754.87

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Sl. No.	Independent Transmission Projects	Empowered Committee Cost (in Rs. Crore)	Estimated Cost of the Project as per Cost Committee (including RoW compensation) (in Rs. Crore)
3.	Western Region Strengthening Scheme – 21 (WRSS-21) Part-A - Transmission System Strengthening for relieving over loadings observed in Gujarat Intra-State System due to RE Injections in Bhuj PS - RECTPCL (BPC)	856	1089.89
4.	WRSS-21 Part-B - Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS- PFCCL (BPC)	1865	2002.56
5.	Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat - PFCCL (BPC)	645	1409.17
6.	Transmission system associated with LTA applications from Rajasthan SEZ Part-D - PFCCL (BPC)	1208	1630.58
7.	Transmission system associated with LTA application from Rajasthan SEZ (Part -C) - RECTPCL (BPC)	1365	1448.15

- 5.3 Members enquired about high cost variation in Empowered Committee cost and the cost worked out by the Cost Committee in case of “Western Region Strengthening Scheme –XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme – IX (NERSS-IX)” and “Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat”.
- 5.4 CEA stated the estimated cost also includes the RoW cost. In case of “Western Region Strengthening Scheme –XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme – IX (NERSS-IX)”, on account of severe RoW issues, choice was left with the bidders to use technological options like underground cable, GIL, monopoles to overcome RoW problem. While estimating the cost of the scheme, provision of 400 kV cable in about 2 km section from Navi Mumbai 400 kV substation has been assumed along with RoW cost based on detailed survey done by BPC’s. However, even with estimated cost of Rs 1223 crores, levelised tariff that has been discovered after E-RA (electronic Reverse Auction) is on the higher side as compared to levelised tariff calculated on CERC norms. The BEC (Bid Evaluation Committee) for the scheme has referred it to Cost Committee to review/re-assess the estimated cost of the scheme.
- 5.5 CEA further stated that the reason behind high cost variation for “Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat” is the change in the location of Bhuj-II PS to the western side of Bhuj (PG), which resulted in longer lengths of associated transmission lines and requirement of line reactors.
- 5.6 Members noted the same.

6. New Inter-State Transmission Schemes in Western Region

I/6436/2019 Transmission schemes for evacuation of Power from potential Solar and Wind Energy Zones (17.5 GW) in Western Region under Phase-II

CEA stated that in the 2nd meeting of WRSCT held on 21.05.2019, following transmission schemes for evacuation of 17.5 GW (17 GW Solar + 0.5 GW Wind) RE in Western Region under Phase-II of “ Transmission schemes for Integration of 66.5 GW RE into ISTS “ has been technically agreed .

6.1.1 Name of the Scheme: Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part A



Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 765/400 kV, 3x1500 MVA & 400/220kV, 6x500MVA Kutch (Rapar) SEZ Pooling Point with 765kV (1x330MVAR) and 400kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for 765/400kV ICTs along with bays: 1 no. 400/220kV ICTs along with bays: 2 nos. 765kV line bays: 4 nos. 400kV line bays: 8 nos. 220kV line bays: 4 nos.	765/400 kV, 1500 MVA ICT – 3 400/220 kV, 500 MVA ICT – 6 765/400 kV, 500 MVA spare ICT (1-phase) – 1 765 kV ICT bays – 3 400 kV ICT bays – 9 220 kV ICT bays – 6 765 kV line bays – 4 220 kV line bays - 10 330 MVA r , 765 kV bus reactor 125 MVA r, 420 kV bus reactor 765 kV reactor bay – 1 420 kV reactor bay – 1	604

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	765kV bus reactor along with bays: 1no 400kV bus reactor along with bays: 1no	110 MVAR, 765 kV, 1 ph Reactor (spare unit) -1	
2.	LILO of Lakadia – Banaskantha 765kV D/c line at Kutch (Rapar) SEZ PP	LILO Route Length - 70	328
		Total	932

Note: Space for future provisions for 400 kV and 765 kV line bays to kept including the space for switchable line reactors.

6.1.1.1 CEA stated that the Kutch (Rapar) Pooling Station has been proposed with 4500 MVA, 765/400 kV transformation capacity and 3000 MVA, 400/220 kV transformation capacity along with 10 no. of 220 kV line bays for evacuation of power from the entire 3 GW of RE potential in Rapar SEZ. In addition, 2 GW was being integrated at Lakadia 765/400/220 kV Pooling Station which would be evacuated through Rapar- Ahmedabad 765 kV D/c line. Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ has been segregated into three packages namely, Part A, B and C.

6.1.1.2 Regarding the implementation time for the scheme NCT members of the opinion that a minimum period of 18 months needs to be given for implementation of the scheme by the successful bidder (Transmission Service Provider). As per the Transmission Service Agreement (TSA) of the schemes being implemented through TBCB route, normally the zero date of the project is the SPV acquisition date by the successful bidder. Considering a period of 6 months required for the bidding process, a period of atleast 24 months (bidding plus implementation time) for the scheme was required from the date of Gazette notification of the scheme. As the scheme is for evacuation of 3 GW of RE power (out of 66.5 GW of RE projects to be implemented by December' 2021), therefore, completion time of the scheme can be considered as December' 2021. Also the Part A, B and C of the Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ needs to be implemented in the same time frame.

6.1.1.3 After deliberations, NCT recommended the following:

- i) **Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part A** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 5 GW capacity in Rapar (3 GW injection at Rapar and 2 GW injection at Lakadia) and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.
- iv) For implementation purpose, Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ has been segregated into three packages namely, Part A, B and C and all needs to be implemented in the same time frame.

6.1.2 **Name of the Scheme: Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ– Part B**

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
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I/6436/2019	1.	Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line	Length – 250	1171
	2.	765 kV, 240 MVA _r switchable line reactor on each circuit at both ends of Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line	765 kV, 240 MVA _r reactor – 4 nos. 765 kV, 80 MVA _r reactor (1-ph) spare unit – 1 no at Rapar end. Switching equipments for line reactor- 4	122
	3.	2 no. of 765 kV line bays at Kutch (Rapar) end and 2 no. of 765 kV line bays at Ahmedabad end for Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line	765 kV line bays – 4	80
			Total	1373

Note :Developer of Kutch(Rapar)PS and Ahmedabad PS to provide space for 2 nos of 765kV line bays & space for 2 nos. of 240 MVAR Switchable Line reactors at their respective PS for termination of Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line

6.1.2.1 NCT recommended the following:

- i) **Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part B** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 5 GW capacity in Rapar (3 GW injection at Rapar and 2 GW injection at Lakadia) and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.
- iv) For implementation purpose, Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ has been segregated into three packages namely, Part A, B and C and all needs to be implemented in the same time frame.

6.1.3 **Name of the Scheme: Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C**

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 765/400kV, 2X1500 MVA at suitable location near Ahmedabad (towards eastern side of Ahmedabad) with 765kV (1x330MVAR) and 400kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for 765/400kV ICTs along with bays: 2 nos.	765/400 kV, 1500 MVA ICT – 2 765/400 kV, 500 MVA spare ICT (1-phase) – 1 765 kV ICT bays – 2 400 kV ICT bays – 2 765 kV line bays – 2 330 MVA _r , 765 kV reactor	263

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	400/220kV ICTs along with bays: 4 nos. 765kV line bays: 10 nos. 400kV line bays: 8 nos. 220kV line bays: 8 nos. 765kV bus reactor along with bays: 1no 400kV bus reactor along with bays: 1no	125 MVAR, 420 kV reactor 765 kV reactor bay – 1 420 kV reactor bay – 1 110 MVAR, 765 kV, 1 ph switchable Reactor (spare unit) -1 (for both 1x 330 MVAR bus reactor and 1x330 MVAR line reactor on Ahmedabad – Indore 765 kV D/c line)	
2.	Ahmedabad – Indore 765 kV D/c line	Length - 370	1733
3.	2 no. of 765 kV line bays at Indore for termination of Ahmedabad – Indore 765 kV D/c line	765 kV line bays – 2	40
4.	330 MVAR, 765 kV switchable Line reactor for each circuit at both ends of Ahmedabad – Indore 765 kV D/c line	330 MVAR, 765 kV Reactor - 4 Switching equipments for 765 kV reactor - 4 80 MVAR, 765 kV, 1 line Reactor (spare unit) at Ahmedabad end -1 (for 240 MVAR line reactor on Kutch (Rapar) SEZ PP - Ahmedabad 765kV D/c line)	132
		Total	2168

Note: (i) Powergrid to provide space at Indore(PG) S/s for 2 nos. of 765kV line bays & space for 2 nos. of 330 MVAR Switchable Line reactors for termination of Ahmedabad – Indore 765 kV D/c line

(ii) Space for future provisions for 400 kV and 765 kV line bays to kept including the space for switchable line reactors.

6.1.3.1 NCT recommended the following:

- i) **Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 5 GW capacity in Rapar (3 GW injection at Rapar and 2 GW injection at Lakadia) and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.
- iv) For implementation purpose, Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ has been segregated into three packages namely, Part A, B and C and all needs to be implemented in the same time frame.

I/6436/2019 Name of the Scheme: Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C (Ahmedabad 400 kV interconnection).

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	LILO of Pirana(T) – Pirana(PG) 400kV D/c line at Ahmedabad with twin HTLS along with reconductoring of Pirana – Pirana(T) line with twin HTLS conductor	LILO route length – 44 Reconductoring length - 6	81.39
2.	4 nos. of 400 kV line bays at Ahmedabad for termination of LILO of Pirana(T) – Pirana(PG) 400kV D/c line at Ahmedabad with twin HTLS (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays – 4	35.96
		Total	117.35

Note: Developer of Ahmedabad PS to provide space for 4 nos. of 400 kV line bays at Ahmedabad for termination of LILO of Pirana(T) – Pirana(PG) 400kV D/c line at Ahmedabad.

6.1.4.1 CTU stated that Pirana (T)- Pirana (PG) 400 kV D/c line is an existing line of Powergrid with Twin Moose conductor configuration and LILO of this line at Ahmedabad has been proposed with HTLS conductor. Therefore, reconductoring of the existing twin moose conductor with HTLS conductor would also be required.

6.1.4.2 After deliberations, NCT recommended the following:

- i) **Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C (Ahmedabad 400 kV interconnection)** to be implemented through RTM route, as it involves reconductoring as well as reconfiguration of an existing line.
- ii) The scheme to be implemented in matching time frame of Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C

6.1.5 **Name of the Scheme: Augmentation of transformation capacity at Lakadia PS for providing connectivity to RE projects (2000 MW) SEZ**

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Augmentation of 765/400 kV transformation capacity at Lakadia PS by 1x1500MVA, 765/400kV ICT. Augmentation of 400/220 kV transformation capacity by 4x500MVA, 400/220kV ICTs (400kV AIS and 220kV GIS) for interconnection with SEZ in case of injection from RE	765/400 kV, 1500 MVA ICT – 1 400/220 kV, 500 MVA ICT – 4 765 kV ICT bays – 1 400 kV ICT bays – 5 220 kV ICT bays – 4(GIS) 220 kV line bays – 8 (GIS)	247

I/6436/2019	projects are at 220 kV level at Lakadia		
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6.1.5.1 CEA stated that Establishment of Lakadia 765/400 kV, 2x1500 MVA S/stn along with Bhuj PS – Lakadia PS 765 kV D/c line is being implemented as part of RE linked transmission scheme under Phase-I i.e. **“Western Region Strengthening Scheme – 21 (WRSS-21) Part-A – Transmission System strengthening for relieving overloading observed in Gujarat Intra-State System due to RE Injections in Bhuj PS”**. The same has already been awarded to M/s Adani Transmission Ltd with implementation timeframe of December’ 2020.

In the 3rd meeting of NCT, the transmission scheme identified on potential basis under Phase-I i.e., **“Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000 MW)] for WEZ”** which involved Establishment of 4x500 MVA, 400/220 kV ICTs at Lakadia PS (GIS) was agreed to be implemented through TBCB route.

The proposed scheme involves Augmentation of transformation capacity at Lakadia PS (already awarded) by 1x1500MVA, 765/400kV and 4x500MVA, 400/220 kV (400 kV AIS and 220 kV GIS) for enabling injection of power from SEZ in Rapar. The scheme of Establishment of 4x500 MVA, 400/220 kV ICTs at Lakadia PS (GIS) would enable injection of power from WEZ in Lakadia. The 400/220 kV transformation capacity augmentation at Lakadia would enable interconnection of entire 4 GW quantum of RE (Solar: 2 GW and Wind: 2 GW) at Lakadia PS.

6.1.5.2 After deliberations, NCT recommended the following:

- i) Transmission Scheme **“Augmentation of transformation capacity at Lakadia PS for providing connectivity to RE projects (2000 MW)”** to be implemented through RTM route as it involves Upgradation of S/stn /addition of transformation capacity in under implementation S/stn.

S.No	Transmission system along with scope	Recomm . of 3 rd NCT	Modified scope	Recomm.of 4 th NCT
1.	Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000 MW)] Establishment of 4x500MVA, 400/220kV ICTs at Lakadia PS (GIS) 4x500MVA, 400/220kV 400kV ICT bay-4 220kV ICT bay- 4 220kV line bays -7	TBCB	Establishment of 4x500MVA, 400/220kV ICTs at Lakadia PS (400kV AIS and 220kV GIS) 4x500MVA,400/220kV 400kV ICT bay-4(AIS) 220kV ICT bay- 4 (GIS) 220kV line bays -7 (GIS)	RTM
2.	Augmentation of transformation capacity at Lakadia PS for providing connectivity to RE projects (2000 MW) SEZ Augmentation of 765/400 kV transformation capacity at Lakadia	-	No Change	RTM

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	<p>PS by 1x1500MVA, 765/400kV ICT. Augmentation of 400/220 kV transformation capacity by 4x500MVA, 400/220kV ICTs (400kV AIS and 220kV GIS) for interconnection with SEZ in case of injection from RE projects are at 220 kV level at Lakadia</p> <p>765/400 kV, 1500 MVA ICT – 1 400/220 kV, 500 MVA ICT – 4</p> <p>765 kV ICT bays – 1 400 kV ICT bays – 5 220 kV ICT bays – 4(GIS) 220 kV line bays – 8 (GIS)</p>		
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ii) The completion schedule for both the scheme is December’ 2021.

iii)SECI to invite bids for setting up of Solar RE projects for the entire potential of 4 GW RE (2 GW solar in Rapar + 2 GW wind in Lakadiya) capacity whose injection has been planned at Lakadia and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

6.1.6 **Name of the Scheme: Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ.** This scheme involves two parts namely, 400/220 kV ICT augmentation works at under construction Radhanesda PS substation by POWERGRID and associated lines. The scheme can be split into two parts as given below:



i) **Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ - Part A (Augmentation of transformation capacity at Radhanesda PS)**

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Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Augmentation of transformation capacity at Radhanesda PS by 5X500 MVA, 400/220kV ICTs for interconnection with SEZ	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 220kV line bays- 9 nos	193
		Total	193

ii) Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ- Part B

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Radhanesda PS - Banaskantha 400 kV D/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length – 95	161
2.	2 no. of 400 kV line bays at Radhanesda for Radhanesda PS - Banaskantha 400 kV D/c line	400 kV line bays – 2	18
3.	Banaskantha –Zerda 400 kV D/c line	Length – 50	75
4.	4 no. of 400 kV line bays at Banaskantha For both Radhanesda PS - Banaskantha 400 kV D/c line (Twin HTLS) and Banaskantha –Zerda 400 kV D/c line	400 kV line bays – 4	36
5.	2 no. of 400 kV line bays at Zerda for Banaskantha –Zerda 400 kV D/c line	400 kV line bays -2	18
		Sub-total	308

Note: (a) Powergrid to provide space at Banaskantha (PG)765/400 kV S/s for 4 nos. of 400 kV line bays & space for 2 nos. 400 kV line bays at Radhaneshda PS.

(b) GETCO to provide space at Zerda 400/220 kV substation for 2 nos. 400 kV line bays (AIS/GIS).

6.1.6.1 CTU stated that 2X500 MVA, 400/220 kV S/stn at Radhanesda for evacuation of RE power from Radhanesda Ultra Mega Solar Park (700 MW) was already under implementation by Powergrid. The proposed scheme involves augmentation of transformation capacity by 5X500 MVA at Radhanesda 400/220 kV S/stn (under implementation) along with 9 no. of 220 kV line bays for evacuation of power from the entire 2.5 GW of RE potential in Banaskantha SEZ (out of 66.5 GW of RE projects to be implemented by December' 2021).

I/6436/2019.2 After deliberations, NCT recommended the following:

- i) **Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ-Part A (Augmentation of transformation capacity at Radhanesda PS)** to be implemented through RTM route as it involves Upgradation of S/stn /addition of transformation capacity in under construction S/stn.
- ii) **Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ-Part B** to be implemented through TBCB route
- iii) The completion schedule for both the scheme is December' 2021.
- iv) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW capacity in Banaskantha and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

6.1.7 Name of the Scheme: Transmission System for evacuation of power from RE projects in at Jamnagar (2500 MW) REZ.

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Lalpur (Jamnagar) SEZ PP with 400kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for: 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 4 nos. 220kV line bays: 6 nos 400kV bus reactor along with bays: 1 no	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 400 kV line bays – 6 220kV line bays-9 125 MVA _r , 420 kV reactor 420 kV reactor bay – 1	265
2.	Lalpur (Jamnagar) SEZ PP - Rajkot 400 kV 2xD/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length - 100	340
3.	Lalpur (Jamnagar) SEZ PP – Jam Khamabliya PS 400 kV D/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length - 50	85
4.	2 no. of 400 kV line bays (GIS) at Jam Khamabliya PS for Lalpur (Jamnagar) SEZ PP – Jam Khamabliya PS 400 kV D/c line (Twin HTLS)	400 kV (GIS) line bays – 2	27

I/6436/2019	Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
	6.	Establishment of 400kV switching station at Rajkot with 420 kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for 400/220kV ICTs along with bays: 4 nos. 400kV line bays: 4 nos. 220kV line bays: 10 nos 400kV bus reactor along with bays: 1no	400 kV line bays – 10 125 MVAR, 420 kV reactor 420 kV reactor bay – 1	107
	7.	LILO of CGPL-Jetpur 400 kV D/C(triple) at Rajkot	Route Length – 40	68
	8.	Rajkot – Ahmedabad 400 kV D/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length – 230	391
	9.	2 no. of 400 kV line bays at Ahmedabad for Rajkot – Ahmedabad 400 kV D/c line (Twin HTLS)	400 kV line bays – 2	18
	10	63 MVAR, 400 kV switchable line reactor on each circuit at both ends of Rajkot – Ahmedabad 400 kV D/c line (Twin HTLS)	63 MVAR, 420 kV Reactor - 4 Switching equipments for 400 kV reactor- 4	46
			Sub-total	1347

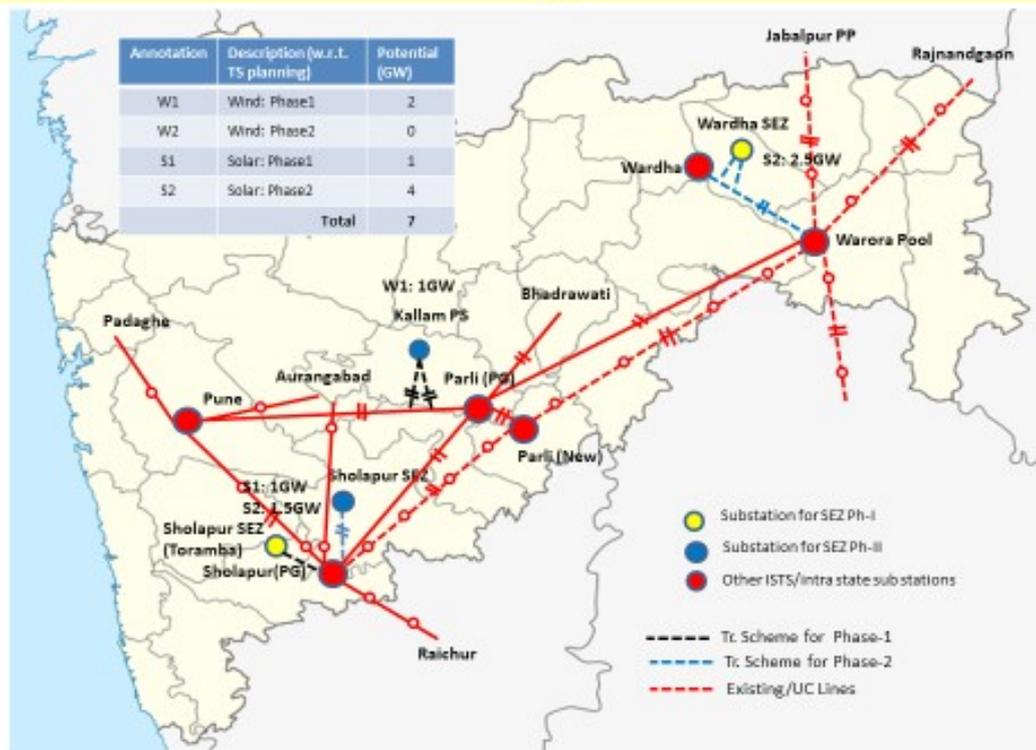
- Note: (i) Developer of Jam Khamabliya PS to provide space for 2 no. of 400 kV line bays for termination of Lalpur (Jamnagar) SEZ PP – Jam Khamabliya PS 400 kV D/c line (Twin HTLS)
- (iii) Developer of Ahmedabad PS to provide space for 2 no. of 400 kV line bays and space for 2 no. of 63 MVAR, 400 kV switchable line reactor for termination of Rajkot – Ahmedabad 400 kV D/c line (Twin HTLS).
- (iv) Space for future provisions for 400 kV line bays to kept including the space for switchable line reactors.

6.1.7.1 After deliberations, NCT recommended the following:

- i) The scheme to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW RE capacity in Jamnagar and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

6.1.8 Name of the Scheme: Transmission system for evacuation of power from RE projects in Sholapur (1000 MW under Ph-I+ 500 MW under Ph-II) SEZ and Osmanabad area (1 GW) in Maharashtra.

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Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
Transmission system for evacuation of power from RE projects in Sholapur (1000 MW under Ph-I+ 500 MW under Ph-II) SEZ			
1.	Establishment of 400/220 kV, 3x500 MVA at Solapur PP (near Mohol) Future Provisions: Space for 400/220 kV ICTs along with bays: 3 nos. 400 kV line bays: 6 nos. 220kV line bays: 5 nos. 400 kV bus reactor along with bays: 1 no.	500MVA, 400/220kV ICT -3 400kV ICT bay -3 220kV ICT bay -3 400kV line bay -2 220 kV line bays- 5	132
2.	Solapur pooling point - Solapur (PG) 400 kV D/c line (twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	50km	85
3.	2 nos. of 400kV bays at Solapur PG for Solapur pooling point - Solapur (PG) 400 kV D/c line	400kV line bay -2	18
4.	1x125 MVAR, 420 kV Bus Reactor at Solapur PP	1x125 MVAR, 420kV bus reactor 420kV reactor bay	18
Sub Total Rs (in Crore)			253
Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1 GW)			
1.	Establishment of 2x500MVA, 400/220kV near Kallam PS Future Provisions: Space for	2x500MVA, 400/220kV 400kV ICT bay-2 220kV ICT bay-2 400kV line bay-4	179

I/6436/2019	400/220 kV ICTs along with bays: 4 nos. 400 kV line bays: 6 nos. 220kV line bays: 7 nos. 400 kV bus reactor along with bays: 1 no.	220kV line bay- 4	
2.	1x125MVA bus reactor at Kallam PS	1x125 MVA 400kV reactor bay -1	18
3.	LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS	10km	55
4.	Provision of new 50MVA switchable line reactor at Kallam PS end of Kallam – Pune(GIS) 400kV D/c line	2x50 MVA 400kV Reactor bays -2	30
		Sub Total Rs (in Crore)	245
		Total	527

Note:

- The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- Powergrid to provide space for 2 nos. of 400kV bays at Solapur PG for termination of Solapur pooling point - Solapur (PG) 400 kV D/c line.
- Space for future provisions for 400 kV line bays to kept including the space for switchable line reactors.

6.1.8.1 CEA stated that **Transmission system for evacuation of power from RE projects in Sholapur (1000 MW under Ph-I+ 500 MW under Ph-II) SEZ and Osmanabad area (2 GW) in Maharashtra** has been discussed in 2nd and 3rd meeting of NCT held on 04.12.2018 and 01.03.2019 respectively. The schemes were agreed to be implemented through TBCB route only after receipt of connectivity/ LTA applications from RE generation developers/SECI. Subsequently, the schemes were further discussed in 2nd meeting of WRSCT held on 21.05.2019, wherein it was agreed that in view of evacuation system for 1 GW of RE projects being planned by MSETCL, the capacity of Kallam 400/220 kV Pooling Station agreed as part of ISTS (under Ph-I) to be reduced to 1000 MW (from 2000 MW already planned) as the total potential identified in Osmanabad area was only 2 GW.

6.1.8.2 After deliberations, NCT recommended the following:

- Transmission system for evacuation of power from RE projects in Sholapur (1000 MW under Ph-I + 500 MW under Ph-II) SEZ and Osmanabad area (1 GW) in Maharashtra** to be implemented through TBCB route.
- The completion schedule for the scheme is December' 2021

- I/6436/2019 iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 1.5 GW in Solapur and 2 GW wind RE capacity in Jamnagar in similar time frame and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

6.1.9 **Name of the Scheme: Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1 GW) - Conversion of 50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable line reactors**

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1	Conversion of 50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable.	400kV Reactor bays -2	19

6.1.9.1 After deliberations, NCT recommended the following:

- i) Conversion of **50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable line reactors** to be implemented through RTM route, as it qualifies under technical upgradation of an existing transmission facility.
- ii) The scheme to be implemented in matching time frame of **Transmission system for evacuation of power from RE projects in wind energy zones in Osmanabad area of Maharashtra (1 GW)**

6.1.10 **Name of the Scheme: Transmission system for evacuation of power from RE projects in Wardha (2500 MW) SEZ in Maharashtra**

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Wardha SEZ PP with 400kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 6 nos. 220kV line bays : 6 nos 400kV bus reactor along with bays: 1no	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 400 kV line bays – 4 220 kV line bays - 9 125 MVAR, 420 kV reactor 420 kV reactor bay – 1	247
2.	LILO of Wardha - Warora Pool 400 kV D/c (Quad) line at Wardha SEZ PP	Length - 85	219.84
		Total	467

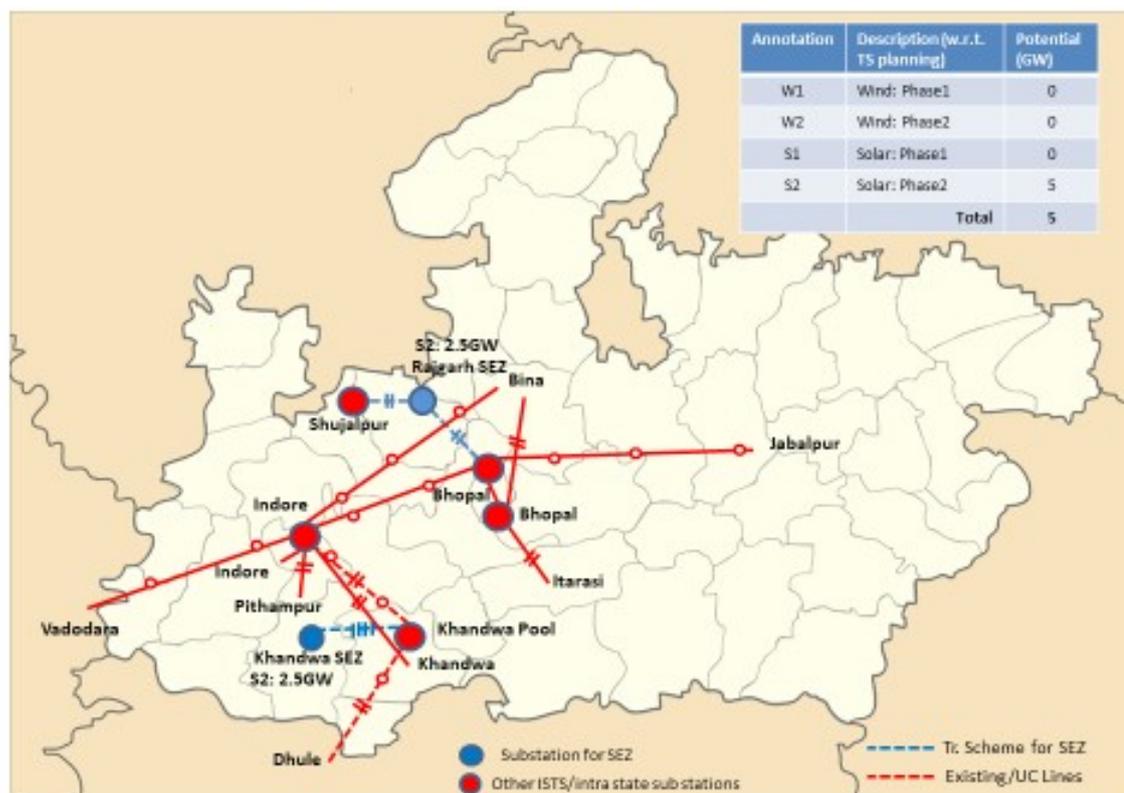
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- (i) Space for future provisions for 400 kV line bays to be kept including the space for switchable line reactors.

6.1.10.1 After deliberations, NCT recommended the following:

- i) **Transmission system for evacuation of power from RE projects in Wardha (2500 MW) SEZ in Maharashtra** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW in Wardha in Maharashtra and ensure that entire capacity is bid out to avoid underutilization/non-utilization of ISTS scheme

6.1.11 **Name of the Scheme: Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh**



Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Rajgarh SEZ PP with 420kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 6 nos. 220kV line bays: 6 nos	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 400 kV line bays – 4 220 kV line bays - 9 125 MVAR, 420 kV reactor 420 kV reactor bay – 1	247

I/6436/2019

	400kV bus reactor along with bays: 1 no		
2.	Rajgarh SEZ PP -Bhopal (Sterlite) 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length – 130	220.78
3.	2 no. of 400 kV line bays at Bhopal (Sterlite) for Rajgarh SEZ PP -Bhopal (Sterlite) 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays – 2	17.98
4.	Rajgarh SEZ PP – Shujalpur 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length -80	135.86
5.	2 no. of 400 kV line bays at Shujalpur for Rajgarh SEZ PP – Shujalpur 400 kV D/c line (HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	400 kV line bays – 2	17.98
		Total	640

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

(ii) 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.

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

6.1.11.1 After deliberations, NCT recommended the following:

- i) **Transmission system for evacuation of power from RE projects in Rajgarh (2500 MW) SEZ in Madhya Pradesh** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW in Rajgarh in Madhya Pradesh and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

6.1.12 Name of the Scheme: Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 400/220 kV, 5X500 MVA at Khandwa SEZ PP with 420kV (125 MVAR) bus reactor <u>Future provisions:</u> Space for 400/220kV ICTs along with bays: 3 nos. 400kV line bays: 6 nos. 220kV line bays: 6 nos 400kV bus reactor along with bays: 1no	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 400 kV line bays – 4 220 kV line bays - 9 125 MVAr, 420 kV reactor 420 kV reactor bay – 1	247
2.	Khandwa SEZ PP - Khandwa Pool 400 kV 2XD/c line (Twin HTLS) (with minimum capacity of 2100 MVA/ckt at nominal voltage)	Length – 100	170
3.	4 no. of 400 kV line bays at Khandwa Pool for Khandwa SEZ PP - Khandwa Pool 2XD/c line (Twin HTLS)	400 kV line bays – 4	36
		Total	453

Note: (i) M/s KTL (Khargone Transmission Limited) to provide space for 4 no. of 400 kV line bays at Khandwa Pool (Sterlite) for termination of Khandwa SEZ PP - Khandwa Pool 2xD/c line.

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

6.1.12.1 After deliberations, NCT recommended the following:

- i) **Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021.
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW in Khandwa in Madhya Pradesh and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

6.1.13 Name of the Scheme: Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh – ICT augmentation at Khandwa Pool

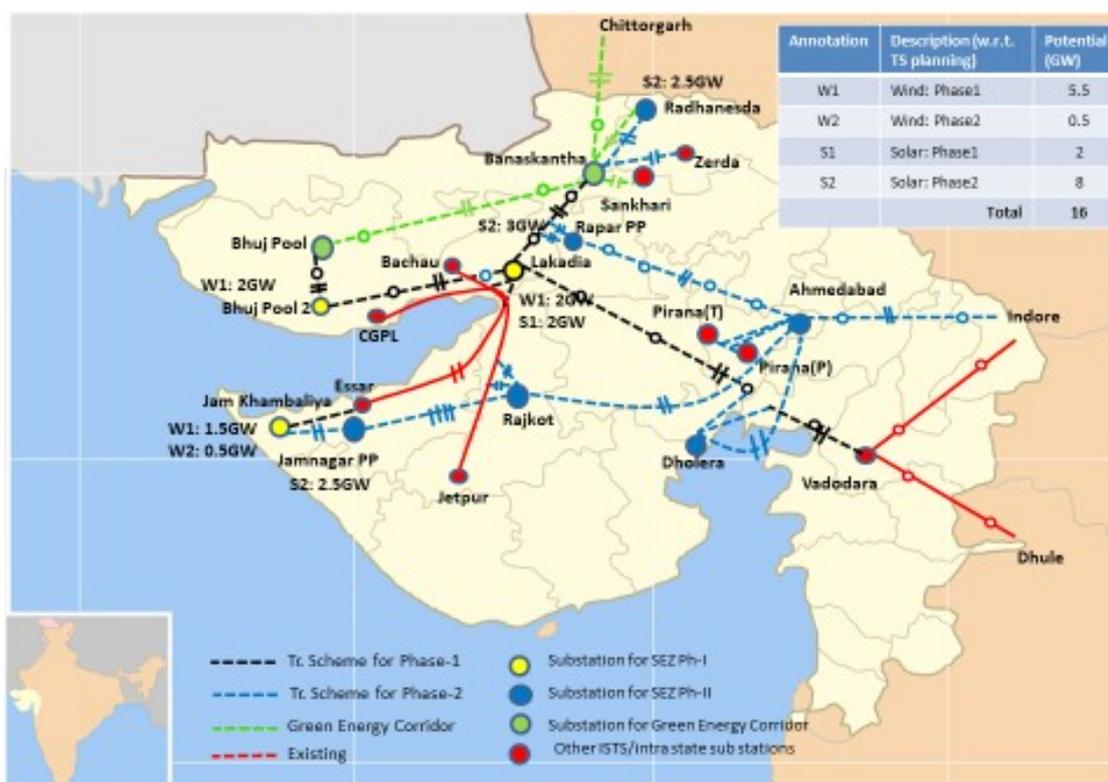
Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Augmentation of 1X1500 MVA, 765/400kV ICT at Khandwa Pool (Sterlite)	765/400 kV, 1500 MVA ICT – 1 765 kV ICT Bays- 1	72.79

I/6436/2019		400 kV ICT Bays -1	
		Total	72.79

6.1.13.1 After deliberations, NCT recommended the following:

- i) **ICT augmentation at Khandwa Pool** to be implemented through RTM route, as it involves Upgradation of an existing S/stn /addition of transformation capacity in an existing S/stn.
- ii) The scheme to be implemented in matching time frame of **Transmission system for evacuation of power from RE projects in Khandwa (2500 MW) in Madhya Pradesh.**

6.1.14 **Name of the Scheme: Transmission System for providing immediate connectivity to Dholera UMSP (4000 MW)**



Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 765/400kV, 3X1500 MVA at Dholera Pooling station with 765kV (1x330MVAR) and 400kV (125 MVAR) bus reactor	765/400 kV, 1500 MVA ICT – 3 765/400 kV, 500 MVA spare ICT (1-phase) – 1 765 kV ICT bays – 3 400 kV ICT bays – 3 765 kV line bays – 6 400 kV line bays - 6 330 MVA _r , 765 kV reactor 125 MVA _r , 420 kV reactor 765 kV reactor bay – 1	469

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		420 kV reactor bay – 1 110 MVAR, 765 kV, 1 ph Reactor (spare unit) -1	
2.	LILO of Lakadia – Vadodara 765 kV D/c line at Dholera UMSP	LILO Route Length -80	375
3.	Dholera UMSP – Ahmedabad 765kV D/c line	Length - 100	468
4.	2 no. of 765 kV line bays at Ahmedabad for termination of Dholera UMSP – Ahmedabad 765kV D/c line	765 kV line bays – 2	40
5.	765 kV, 240 MVA switchable line reactor at Dholera PS end on each circuit of Dholera – Ahmedabad 765kV D/c line	240 MVA, 765 kV line Reactor- 2 Switching equipments for Line Reactor- 2 1x80 MVA, 765 kV switchable line reactor (1-ph), spare unit – 1 (at Dholera end)	64
		Total	1416

Note: Developer of Ahmedabad PS to provide space for 2 no. of 765 kV line bays at Ahmedabad for termination of Dholera UMSP – Ahmedabad 765kV D/c line

6.1.14.1 CEA stated that Dholera Ultra Mega Solar Park (5000 MW) is being implemented by **Gujarat Power Corporation Limited**. Dholera UMSP has been split into two different projects :

Dholera UMSP (Phase -I): 1000 MW Solar Power Park would be developed by Gujarat Power Corporation Limited (GPCL). The scheme of power evacuation would be carried out by GETCO.

Dholera UMSP (Phase - II): 4000 MW would be developed by Solar Energy Corporation of India (SECI) . SECI would act as SPPD and would apply for LTA to CTU.

6.1.14.2 CEA further stated that this 4 GW capacity to be integrated at Dholera PS would be in addition to 66.5 GW RE capacity (50 solar + 16.5 GW wind).

6.1.14.3 After deliberations, NCT recommended the following:

- i) **Transmission System for providing immediate connectivity to Dholera UMSP (4000 MW)** to be implemented through TBCB route.
- ii) Implementation of the transmission scheme to be taken up only after receipt of connectivity/LTA applications from the SPPD
- iii) The completion schedule for the scheme is December' 2021 or SCOD of RE project, whichever is later.

I/6436/2019 Name of the Scheme: Conversion of 80 MVAR fixed line reactor at Boisar end of Aurangabad- Boisar 400 kV D/c line to switchable line reactor alongwith NGR bypass arrangement

- 6.2.1 MSETCL's proposal for "Establishment of 400/220 kV Intra State substation at Pimpalgaon (Nashik) by MSETCL" was agreed in the 2nd meeting of WRSCT held on 21.05.2019. The above proposal inter-alia involves LILO of Aurangabad-Boisar 400 kV D/C quad line at proposed 400/220 kV, 2X500 MVA Pimpalgaon S/stn , which is an ISTS line. With LILO Boisar-Pimpalgaon section length gets reduced and the associated line reactors at Boisar were agreed to be converted to switchable. Accordingly, the following transmission element under the scheme was agreed to be implemented as Inter State Transmission Scheme:

Sl. No.	Scope of the Transmission Scheme	Capacity	Estimated Cost (Rs.) Cr
a.	Conversion of 80 MVAR fixed line reactor at Boisar end of Aurangabad- Boisar 400 kV D/c line to switchable line reactor alongwith NGR bypass arrangement	400 kV Switching equipments for line reactor-2	8.9

- 6.2.2 NCT recommended the implementation of the above scheme through RTM, as it qualifies under technical upgradation of an existing transmission facility.

6.3 Name of the Scheme: Connectivity system for NTPC Lara STPP 2x800MW Stage-II generation project

- 6.3.1 The transmission scheme "Connectivity system for NTPC Lara STPP 2x800MW Stage-II generation project" was agreed in the 2nd meeting of WRSCT held on 21.05.2019. The transmission scheme inter-alia includes the following transmission element to be implemented under ISTS:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
	Reconductoring of Lara STPP I – Raigarh (Kotra) 400kV D/c line with HTLS conductor (Quad Moose capacity)	20	30
	Total Rs (in Crore)		

- 6.3.2 NCT recommended the implementation of the above scheme through RTM as it involves Reconductoring of an existing line.

6.4 Name of the Scheme: Navsari (PG) – Bhestan/Popada (GETCO) 220 kV D/C line

- 6.4.1 Navsari (PG) – Bhestan/Popada (GETCO) 220 kV D/C line was planned as a part of the transmission scheme "Transmission System associated with DGEN TPS (1200 MW) of Torrent Power Ltd." which was awarded to M/s Instalaciones Inabensa through TBCB route. The implementation schedule of the scheme was 38 months i.e. May, 2018. M/s DGENTPL has not taken up the implementation of the scheme. The issue of non-implementation of scheme by M/s DGENTPL has been deliberated in earlier standing committee meetings as well as separate meetings.

I/6436/2019 ii) Implementation time frame: 10 months from the date of issue of OM by MoP allocating the project under RTM.

7. New Inter-State Transmission Schemes in Southern Region

7.1 CEA stated that Transmission system for evacuation of power from Phase-II Solar Energy Zones in Andhra Pradesh and Karnataka were agreed to be implemented as ISTS system in the 2nd SRSCT meeting held on 10.06.2019 at Bengaluru.

While approving these schemes, the SRSCT mentioned that these transmission system are a broad master plan to serve integration of RE generation potential assessed in Tamil Nadu, Karnataka and Andhra Pradesh for period upto 2021-22. As such, it was agreed that the scheme would be implemented as ISTS, consequent to grant of LTA by CTU. The transformation capacity at various sub-stations and certain elements may be required to be reviewed based on LTA applications.

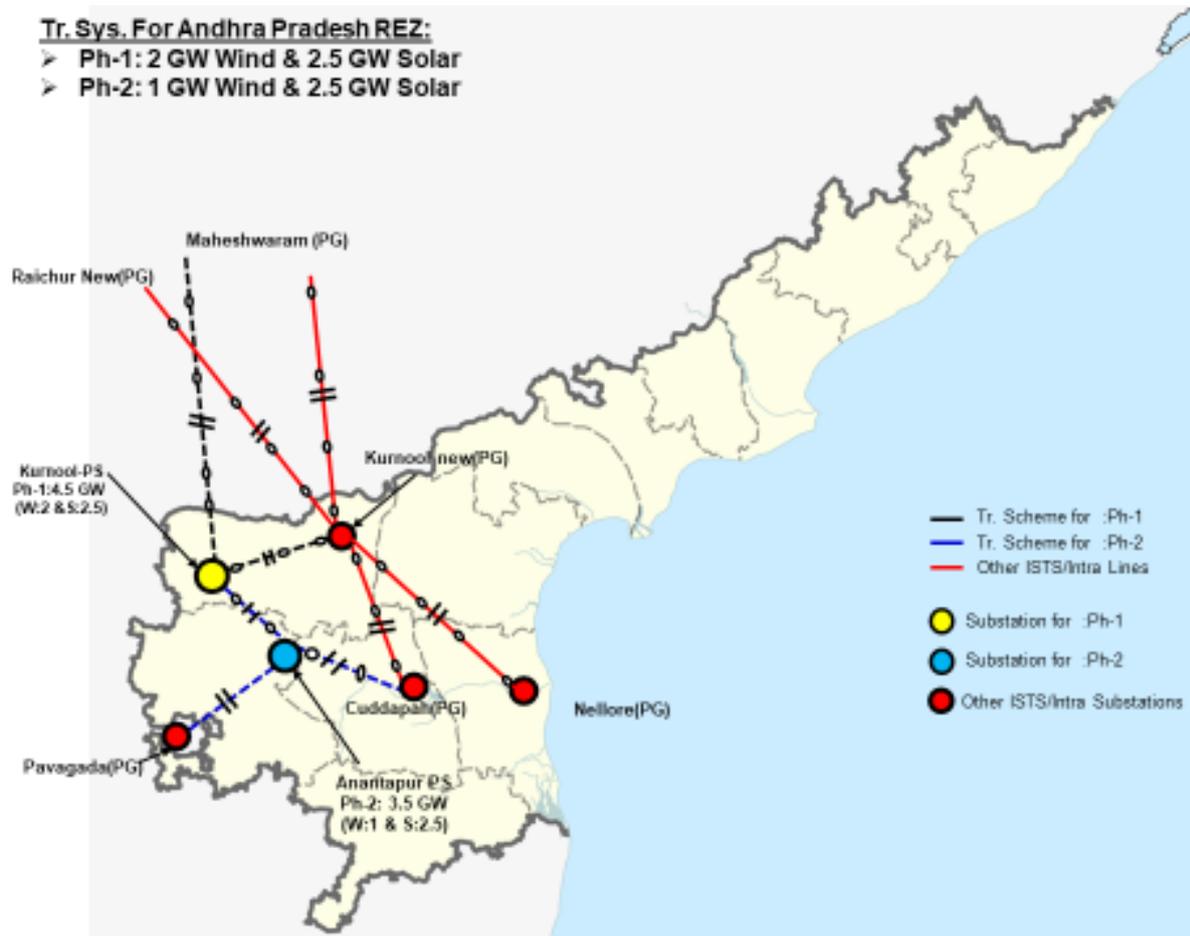
7.1.1 Name of the Scheme: Transmission scheme for Solar Energy Zone in Ananthpuram (Ananthapur) (2500 MW) and Kurnool (1000 MW) , Andhra Pradesh

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Cost
1.	Establishment of 400/220 kV, 7x500 MVA pooling station at suitable border location between Ananthpuram & Kurnool Distt with 400kV (2x125 MVAR) bus reactor <u>Future provisions:</u> Space for 400/220kV ICTs along with bays: 1 nos. 400kV line bays: 6 nos. 220kV line bays: 4 nos.	400/220 kV, 500 MVA ICT – 7 400 kV ICT bays – 7 220 kV ICT bays – 7 400 kV line bays – 4 220 kV line bays – 12 125 MVA, 420 kV reactor - 2 420 kV reactor bay – 2	339.46
2.	Ananthpuram PS-Kurnool-III PS 400 kV (High capacity equivalent to quad moose) D/c Line	Length – 100	169.83
3.	400 kV line bays at Kurnool-III PS for Ananthpuram PS-Kurnool-III PS 400 kV D/c line	400 kV line bays – 2	17.98
4.	Ananthpuram PS-Cuddapah 400 kV (High capacity equivalent to quad moose) D/c Line	Length - 150	254.75
5.	400 kV line bays Cuddapah PS for Ananthpuram PS-Cuddapah 400 kV	400 kV line bays – 2	17.98
6.	80 MVA, 420 KV switchable line reactor for Ananthpuram PS-Cuddapah 400 kV D/c line	420 kV, 80 MVA reactor – 2 nos. Switching equipments for line reactor- 2	8.91
		Total	823

I/6436/2019 Note: (i) Developer of Kurnool PS to provide space for 2 no. of 400 kV line bays at Kurnool PS for termination of Ananthapuram PS-Kurnool-III PS 400 kV (High capacity equivalent to quad moose) D/c Line.

(ii) Powergrid to provide space for 2 no. of 400 kV line bays at Cuddapah PS for termination of Ananthapuram PS-Cuddapah 400 kV (High capacity equivalent to quad moose) D/c Line.

(iii) Space for future provisions for 400 kV and 765 kV line bays to kept including the space for switchable line reactors.



7.1.1.1 NCT recommended the following:

- i) **Transmission scheme for Solar Energy Zone in Ananthapuram (Ananthapur) (2500 MW) and Kurnool (1000 MW) , Andhra Pradesh** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021.
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW in Ananthapuram (Ananthapur) and 1 GW in Kurnool, Andhra Pradesh and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme

I/6436/2019 Name of the Scheme: Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka – Part A

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Cost in Rs cr.
1.	Establishment of 400/220 kV, 5x500 MVA Gadag Pooling Station with 400kV (1x125 MVAR) bus reactor <u>Future provisions:</u> Space for 400/220kV ICTs along with bays: 1 nos. 400kV line bays: 6 nos. 220kV line bays: 4 nos	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 400 kV line bays – 4 220 kV line bays – 8 125 MVAr, 420 kV reactor - 1 420 kV reactor bay – 1	243
2.	Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/C Line	Length – 60	102
3.	400 kV line bays at Koppal PS for Gadag PS-Koppal PS 400 kV D/c line	400 kV line bays – 2	18
4.	Gadag PS-Narendra (New) PS 400 kV (high capacity equivalent to quad moose) D/C Line	Length - 100	170
5.	400 kV line bays at Narendra (new) for Gadag PS-Narendra (New) PS 400 kV D/c line.	400 kV line bays – 2	18
		Total	551

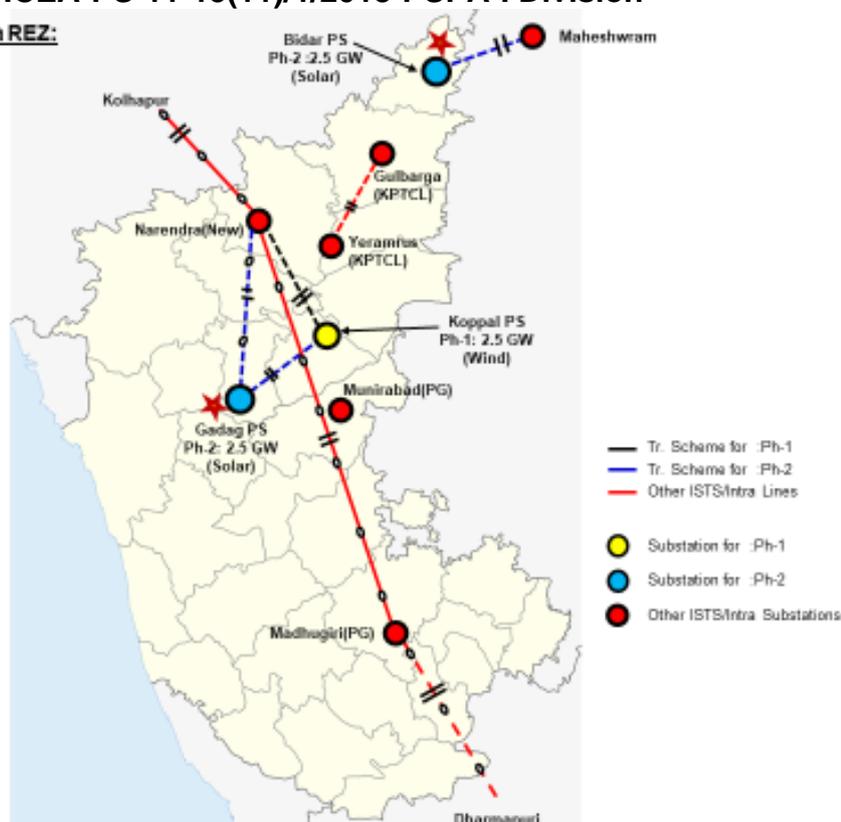
Note: (i) Developer of Koppal PS to provide space for 2 no. of 400 kV line bays at Koppal PS for termination of Gadag PS-Koppal PS 400 kV (high capacity equivalent to quad moose) D/C Line.

(ii) 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.

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Tr. Sys. For Karnataka REZ:

- Ph-1: 2.5 GW Wind
- Ph-2: 5 GW Solar



7.1.2.1 After deliberations, NCT recommended the following:

- i) **Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021.
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW in Gadag, Karnataka and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

7.1.3 Name of the Scheme: Transmission Scheme for Solar Energy Zone in Gadag (2500 MW), Karnataka – Part B

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Cost in Rs cr.
1.	Upgradation of Narendra (New) to its rated voltage of 765 kV level along with 2x1500 MVA, 765/400 kV transformer and 765 kV, 1x330 MVA Bus Reactor	765/400 kV, 1500 MVA ICT – 2 765 kV ICT bays – 2 400 kV ICT bays – 2 765 kV line bays – 2 330 MVA, 765 kV reactor - 1 765 kV reactor bay – 1 500 MVA/ 765/400 kV 1-phase ICT (spare unit) – 1 110 MVAR, 765 kV, 1 ph Reactor (spare unit) -1 (for both the bus reactor	245.74

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		and 1X330 MVAr line reactor on Madhugiri (Tumkur) - Narendra New 765 kV D/c line)	
2.	Upgradation of Kolhapur (PG) to its rated voltage of 765 kV level alongwith 2x1500 MVA, 765/400 kV transformer and 765 kV, 1x330 MVAr Bus Reactor	765/400 kV, 1500 MVA ICT – 2 765 kV ICT bays – 2 400 kV ICT bays – 2 765 kV line bays – 2 330 MVAr, 765 kV reactor - 1 765 kV reactor bay – 1 500 MVA/ 765/400 kV 1-phase ICT (spare unit) – 1 110 MVAR, 765 kV, 1 ph Reactor (spare unit) -1 (for both the bus reactor and 1X330 MVAr line reactor on Narendra new - Kolhapur (PG) 765 kV D/c line)	245.74
3.	Upgradation/charging of Narendra new - Kolhapur (PG) 765 kV D/c line (initially charged at 400 kV) to its rated voltage of 765 kV		
4.	1x330 MVAr, 765 KV switchable Line Reactor on Kolhapur (PG) end of each circuit of Narendra new - Kolhapur (PG) 765 kV D/c line	765 kV, 330 MVAr line reactor – 2 nos. Switching equipments for line reactor-2	62.37
		Total	554

7.1.3.1 NCT recommended the implementation of the above scheme through RTM as it involves upgradation of an existing S/stn from 400 kV level to 765 kV level and charging of the lines at 765 kV level (at present 765 kV lines are charged at 400 kV level). The scheme to be completed in matching time frame of Evacuation system for RE projects in Gadag and Koppal RE potential zones.

7.1.4 **Name of the scheme:** Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Cost in Rs cr.
1	Establishment of 3x1500MVA (765/400kV), 5x500MVA (400/220kV) station at suitable border location near Bidar.with 765kV (1x240 MVAR) and 400kV (1x125 MVAR) bus reactor <u>Future provisions:</u> Space for 765/400kV ICTs along with	1500MVA, 765/400kV- 3 500MVA , 400/220kV- 5 765kV ICT bay-3 400kV ICT bay-8 220kV ICT bay- 5 765kV line bay-2 220kV line bays -8 1x240MVAr, 765kV - 1 1x125MVAr, 420kV - 1	520.65

I/6436/2019

	bays: 1 no. 400/220kV ICTs along with bays: 2 nos. 765kV line bays: 6 nos. 400kV line bays: 8 nos. 220kV line bays: 4 nos. 765kV bus reactor along with bays: 1no	765kV reactor Bay -1 400kV reactor Bay -1 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) - 1 1x80 MVAR, 765 kV, 1 ph Reactor (spare unit) – 1 (for both bus reactor and 240 MVA line reactor of Bidar PS – Maheshwaram (PG) 765 kV D/C line)	
2	Bidar PS – Maheshwaram (PG) 765 kV D/C line	Length - 160	749.47
3	765 kV line bays at Maheshwaram (PG) for termination of Bidar PS – Maheshwaram (PG) 765 kV D/C line	765 kV line bays - 2	40.03
4	765kV, 1X240MVA switchable Line reactor for each circuit at Bidar PS end of Bidar PS – Maheshwaram (PG) 765 kV D/C line	240 MVAR, 765 kV line reactor – 2 Switching equipments for line reactor- 2	57.38
		Total	1367.52

Note:(ii) Powergrid to provide space for 2 no. of 765 kV line bays at Maheshwaram 765 kV substation for termination of Bidar PS – Maheshwaram (PG) 765 kV D/C line.

7.1.4.1 After deliberations, NCT recommended the following:

- i) **Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka** to be implemented through TBCB route.
- ii) The completion schedule for the scheme is December' 2021.
- iii) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.5 GW in Bidar, Karnataka and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

7.1.5 **Name of the Scheme:** Common transmission system strengthening in Southern Region for enabling evacuation and export of power from Solar & Wind Energy Zones in Southern Region”

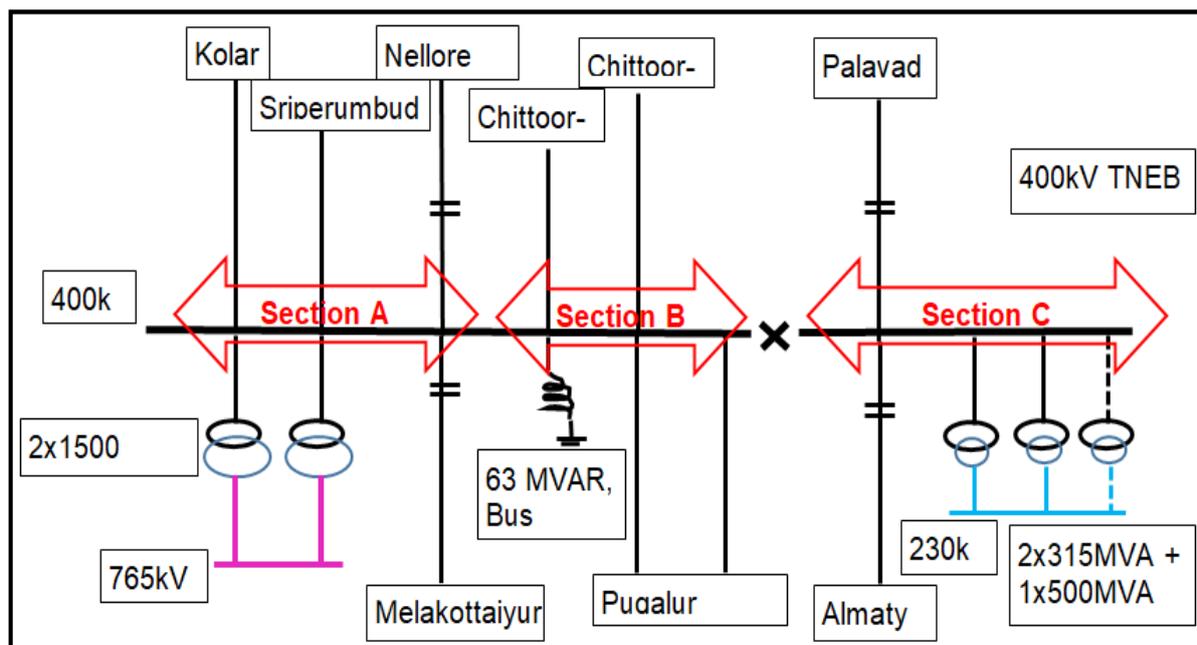
Sl no	Scope of the Transmission Scheme	Capacity / ckm / nos.	Estimated Cost (Rs. Cr.)
1.	(i) Upgradation of Tuticorin PS to its rated voltage of 765kV level alongwith 2x1500 MVA, 765/400kV ICTs and 1x330 MVA, 765kV Bus Reactor (ii) Upgradation of Dharmapuri (Salem New) to its rated voltage of 765kV level	1500MVA, 765/400kV - 6 765kV ICT bay-6 400kV ICT bay-6 765kV line bay-12 330 MVA reactor-1	1202

I/6436/2019SI	SI no	Scope of the Transmission Scheme	Capacity / ckm / nos.	Estimated Cost (Rs. Cr.)
		<p>alongwith 2x1500 MVA, 765/400kV ICTs and 1x240 MVAr, 765kV Bus Reactor</p> <p>(iii) Upgradation of Madhugiri (Tumkur) to its rated voltage of 765kV level alongwith 2x1500 MVA, 765/400kV ICTs and 1x240 MVAr, 765kV Bus Reactor</p> <p>(iv) Upgradation/ charging of Tuticorin PS - Dharmapuri (Salem New) 765 kV D/c line (initially charged at 400 kV) to its rated voltage of 765 kV along with 1x330 MVAr switchable Line Reactor on both end of each circuit.</p> <p>(v) Upgradation/charging of Dharmapuri (Salem New) - Madhugiri (Tumkur) 765 kV 2xS/c line (initially charged at 400 kV) to its rated voltage of 765 kV along with 1x330 MVAr switchable Line Reactor on Dharampuri (Salem New) end of both circuits</p> <p>(vi) Upgradation/ charging of Madhugiri (Tumkur) - Narendra New 765 kV D/c line (initially charged at 400 kV) to its rated voltage of 765 kV along with 1x330 MVAr switchable Line Reactor on both end of each circuit.</p> <p>(vii) Conversion of 400 kV Line Reactors installed on 765 kV circuits/ lines (initially charged at 400 kV) mentioned at SI No. iv, v and vi into 400 kV bus Reactor with suitable arrangements at respective substations.</p>	<p>240 MVAr reactor-2 330 MVAr LR-10 Switching equipments for 330 MVAr LR – 10 765kV bus reactor bay-3 400kV bus reactor bay-10</p> <p>Spare for Tuticorin PS :</p> <p>1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) 1x110 MVAR, 765 kV, 1 ph. Switchable reactor (spare unit) (for 330 MVAr line/bus reactor)</p> <p>Spare for Dharmapuri (Salem New):</p> <p>1x500 MVA, 765/400 kV, 1-ph ICT (spare unit), 1 ph. Switchable reactor (spare unit) (for 330 MVAr line reactor) &1x80 MVAR, 765 kV, 1 ph. Switchable reactor (spare unit) (for 240 MVAr bus reactor)</p> <p>Spare for Madhugiri (Tumkur):</p> <p>1x500 MVA, 765/400 kV, 1-ph ICT (spare unit), 1 ph. Switchable reactor (spare unit) (for 330 MVAr line reactor) &1x80 MVAR, 765 kV, 1 ph. Switchable reactor (spare unit) (for 240 MVAr bus reactor)</p>	
			Total	1202

7.1.5.1 NCT recommended the implementation of the above scheme through RTM as it involves upgradation of an existing S/stn from 400 kV level to 765 kV level and charging of the lines at 765 kV level(at present 765 kV lines are charged at 400 kV level).

I/6436/2019 Name of the scheme: Transmission system for controlling high Short Circuit Current level at 765/400 kV Thiruvallam S/s

7.2.1 The scheme has been agreed in the 2nd SRST for controlling fault level at 400 kV bus of Thiruvallam substation



Sl no	Scope of the Transmission Scheme	Capacity / ckm	Estimated Cost (Rs. Cr.)
2.	a) 12Ω, 420 kV fault limiting bus series reactors between: <ul style="list-style-type: none"> • Bus section-A and bus section-B • Bus Section-B and bus section-C b) Opening of the one of the bus (other than on which fault limiting bus series reactors are being installed) between the above mentioned bus sections through suitable arrangement. c) Bypass of Kolar-Thiruvallam and Thiruvallam-Sriperumbud 400 kV S/c line to form Kolar – Sriperumbud 400 kV S/c direct line.		80

7.2.2 NCT recommended the implementation of the above scheme through RTM as it involves re-configuration of an existing line and addition of equipments in existing substation.

7.3 Name of the scheme: Transmission system for controlling High loading of Nellore – Nellore PS 400 kV (Quad) D/c line

7.3.1 CEA stated that the scheme to address the high loading on 400kV Nellore PS – Nellore PG line and high short circuit level at Nellore PG has already been agreed in the 42nd Standing Committee on Power System Planning in Southern Region held on 27/04/2018. The following scope of works has already been recommended to be implemented through RTM by POWERGRID in the 2nd NCT meeting held on 04.12.2018.

Sl. No.	Scope of the Transmission Scheme	Estimated Cost (Rs.) Cr.
1	Bypassing of Nellore PS – Nellore PG 400kV D/c (Quad)	1.00

I/6436/2019	line & Nellore PG – Thiruvalam 400kV D/c (quad) line at Nellore PG to form Nellore PS – Thiruvalam 400kV D/c (Quad) direct line	
2	Conversion of 2x50 MVAR fixed line reactors at Nellore PG on Nellore PG – Thiruvalam 400kV D/c (Quad) line as bus reactor at Nellore PG 400kV sub-station	

7.3.2 Subsequently, in the 2nd SRSCT meeting held on 10.06.2019, it has been agreed to shift the 125 MVAR and 80 MVAR line reactors at Nellore (PG) on Nellore PS-Nellore(PG) 400 kV D/c line with suitable arrangement on Nellore(PG) – Sriperumbudur 400 kV D/c line (189 km) and bypass Nellore PS – Nellore 400 kV D/c (quad) line and Nellore – Thiruvalam 400 kV D/c (quad) line at Nellore (PG) for making Nellore PS – Thiruvalam 400kV D/c (quad) line.

Sl no	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs. Cr.)
1	a) Shifting of 125 MVAR and 80 MVAR line reactors at Nellore (PG) on Nellore PS-Nellore(PG) 400kV D/c line with suitable arrangement on Nellore(PG) – Sriperumbudur 400kV D/c line. b) Bypassing Nellore PS – Nellore 400 kV D/c (quad) line and Nellore – Thiruvalam 400kV D/c (quad) line at Nellore (PG) for making Nellore PS – Thiruvalam 400kV D/c (quad) line		10-12

7.3.3 NCT recommended the implementation of “Shifting of 125 MVAR and 80 MVAR line reactors at Nellore (PG) on Nellore PS-Nellore(PG) 400kV D/c line with suitable arrangement on Nellore(PG) – Sriperumbudur 400kV D/c line” through RTM as it involves reconfiguration of equipments in existing substation.

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

8.1 Name of the scheme: North Eastern Region Strengthening Scheme-X (NERSS-X)

8.1.1 The scheme was agreed in the 1st meeting of NERSCT held on 29th Nov 2018 at Guwahati as an ISTS scheme.

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Cost
1	Roing (POWERGRID) – Chapakhowa (Assam) 132kV D/c line	40 kms	24
2	132kV line bays at Roing (POWERGRID) S/s	132 kV line bays - 2	6
3	132kV line bays at Chapakhowa (Assam)	132 kV line bays - 2	6
		Total	36

8.1.2 NCT recommended the implementation of the above scheme through RTM under compressed time schedule.

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Annexure-I**List of Participants of the 4th meeting of National Committee on Transmission (NCT) held on 31.07.2019 at CEA, New Delhi**

S.No.	Name (S/Shri)	Designation	Mb. No.	Email
	CEA			
1	PS. Mhaske	Chairperson – in chair		
2	Somit Das Gupta	Member (E&C)		
3	Goutam Roy	Chief Engineer	8376817933	Goutamroy.715@gmail.com
4	Awdhesh Kr. Yadav	Director (PSPA-I)	9868664087	awd.cea@gmail.com
5	Manjari Chaturvedi	Director (PSPA-I)	9810502209	Manjari.cea@gmail.com
6	B.S. Bairwa	Director (PSPA-II)	9868929569	Bs.birwa@nic.in
7	U.M. Rao	Dy. Director (PSPA-II)	8800641444	umrao@nic.in
8	Priyam Srivastava	Asst. Director(PSPA-I)	9717650473	priyam.cea@gmail.com
9	Vikas Sachan	Asst. Director(PSPA-I)	7838263649	vikas.cea@gmail.com
10	Nitin Deswal	Asst. Director(PSPA-I)	9717818349	nitindeswal14@gmail.com
11	Kanhaiya Singh Kushwaha	Asst. Director (PSPA-I)	8334951500	kanhaiyasinghk@gmail.com
12	Kanchan Chauhan	Asst. Director (PSPA-II)	8375070150	Kanchan.cea@gov.in
	TECH. EXPERT			
13	Prabhakar Singh	Tech. Expert	9873174448	Prabhakar.s@rediffmail.com
14	P.K. Pahwa	Tech. Expert	9818243524	Pkpahwa2000@yahoo.com
	CTU			
15	Subir Sen	COO (CTU)	9650293185	subir@powergridindia.com
16	Ashok Pal	CGM (CTU-Plg.)	9910378105	ashok@powergridindia.com
17	Anil Kumar. Meena	DGM (CTU-Plg.)	9971399120	anilsehra@powergridindia.com
	NITI AAYOG			
18	Manoj Kumar Upadhyay	Dy. Advisor	9971131218	mk.upadhyay@nic.in
	PFCCL			
19	Ina Gupta	Manager	9212225125	inasethi@pfcindia.com
20	Nirmala Meena	Dy. Manager	9971869091	Nirmala_meena@pfcindia.com
	RECTPCL			
21	Pankaj Verma	Deputy General	991033566	vrpankaj@yahoo.com

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		Manager	8	
22	Ankit Kumar	Dy. Manager	989112856 9	ankitkumar.1@gmail.com

Status of Transmission Projects through TBCB as on 31.07.2019 (RECTPCL)

Sl. no.	Transmission Scheme	Status
1	Western Region Strengthening Scheme – 21 (WRSS-21) Part-A - Transmission System Strengthening for relieving over loadings observed in Gujarat Intra-State System due to RE Injections in Bhuj PS	<ul style="list-style-type: none"> • RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • RfP issued on 13.03.2019, 5 bidders participated in RFP stage • Adani Transmission Limited emerged as L1 bidder with levelised tariff of Rs. 951.29 Million • LOI issued on 31.07.2019. • Regulatory Approval pending from CERC. SPV can be transferred to selected bidder only after regulatory approval. • TSA yet to be signed by 2 LTTCs i.e M/s Torrent Power & M/s Netra Wind.
2	Transmission System associated with RE generations at Bhuj-II, Dwarka & Lakadia	<ul style="list-style-type: none"> • RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • RfP issued on 13.03.2019. • No LTTCs finalized till date due to which last date of RfP bid submission extended to 05.08.2019 • Regulatory Approval pending from CERC.
3	Jam khambaliya Pooling Station and Interconnection of Jam khambaliya Pooling Station for providing connectivity to RE Projects (1500 MW) in Dwarka (Gujarat) and Installation of 400/220 Kv ICT along with associated bays at M/s CGPL Switchyard	<ul style="list-style-type: none"> • RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • RfP issued on 13.03.2019. • No LTTCs finalized till date due to which last date of RfP bid submission extended to 05.08.2019 • Regulatory Approval pending from CERC. • Approval of Section 68 of Electricity Act 2003 is pending. • Revised COD awaited
4	Construction of Ajmer (PG)-Phagi 765 kV D/C line along with associated bays for Rajasthan SEZ	<ul style="list-style-type: none"> • RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • RfP issued on 13.03.2019. • Last date of RfP bid submission extended to 08.08.2019. • Regulatory Approval pending from CERC. • Technical clarification pending from RVPN • Decision on spare reactor pending • Revised COD awaited
5	Transmission system associated with LTA application from Rajasthan SEZ	<ul style="list-style-type: none"> • RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP

I/6436/2019 Sl. no.	Transmission Scheme	Status
	(Part -C)	<ul style="list-style-type: none"> • RfP issued on 13.03.2019, 3 bidders participated in RFP stage. • PGCIL emerged as L1 bidder with levelised tariff of Rs. 1220.42 Million. • LOI issued on 31.07.2019. • Regulatory Approval pending from CERC. SPV can be transferred to selected bidder only after regulatory approval.
6	400 kV Udupi (UPCL) – Kasargode TBCB project	<ul style="list-style-type: none"> • RFQ issued on 15.09.2018, 9 bidders shortlisted to participate in RFP • RfP issued on 31.12.2018, 4 bidders participated in RFP. • Sterlite Grid 14 Ltd emerged as L1 bidder with levelised tariff of Rs. 847.44 million. • LOI issued on 31.07.2019.

I/6436/2019 Transmission Projects awarded through Tariff Based Competitive Bidding Route to PFC Consulting Limited

1. Projects for which bidding process is on-going are as under:-

S. No.	Name of Transmission Project	Present Status as on 31.07.2019
1.	Connectivity System for Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) and Inter State Transmission system strengthening in Chhatarpur area in Madhya Pradesh	<ol style="list-style-type: none"> 1. Bid Process was kept on Hold. 2. Empowered Committee in its 37th Meeting held on 20.09.2017 decided that the bidding process for the scheme may be taken up after resolution of financial issue and after ascertaining the progress of the project.
2.	Western Region Strengthening Scheme- XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme- IX (NERSS-IX)	<ol style="list-style-type: none"> 1. RfQ notification published on 14.08.2018 2. Seven bidders were shortlisted at RfQ Stage on October 26, 2018 3. RfP documents issued on 13.11.2018. 4. Out of 6 bidders purchased RfP document, Two (2) bidders submitted RfP bids on 27.05.2019. 5. RfP (Price Bid) opened on 20.06.2019; 6. E-reverse bidding held on 21.06.2019; 7. BEC in its meeting held on 10.07.2019 for evaluation of financial Bids opined that the Levelised Transmission Charges discovered through the bid process are 45.2% higher than the Levelised Tariff worked out as per CERC norms; 8. Further, BEC advised BPC to consult the matter with Cost Committee (to review the cost estimates if required) and CEA in order to assess the reasonability of the discovered price for further necessary action.
3.	WRSS-21 (Part-B) Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS	<ol style="list-style-type: none"> 1. RfQ notification published on 17.01.2019. 2. RfQ opened on 18.02.2019. 3. Eight (8) bidders shortlisted at RfQ stage. 4. RfP documents issued on 18.03.2019. 5. Three (3) bidders submitted RfP bids on 25.06.2019. 6. RfP (Price Bid) opened on 15.07.2019; 7. E-reverse bidding held on 16.07.2019; 8. LoI issued to the successful bidder M/s. Sterlite Grid 18 Ltd on 31.07.2019. 9. SPV will be transferred after Regulatory Approval.
4.	Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat	<ol style="list-style-type: none"> 1. RfQ notification published on 17.01.2019. 2. RfQ opened on 18.02.2019. 3. Nine (9) bidders shortlisted at RfQ stage. 4. RfP documents issued on 18.03.2019.

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S. No.	Name of Transmission Project	Present Status as on 31.07.2019
		5. Three (3) bidders submitted RfP bids on 02.07.2019. 6. RfP (Price Bid) opened on 16.07.2019; 7. E-reverse bidding held on 17.07.2019; 8. LoI issued to the successful bidder M/s. PGCIL on 31.07.2019. 9. SPV will be transferred after Regulatory Approval.
5.	Transmission system associated with LTA applications from Rajasthan SEZ Part-B	1. RfQ notification published on 17.01.2019 2. RfQ opened on 19.02.2019. 3. Nine (9) bidders shortlisted at RfQ stage. 4. RfP documents issued on 03.06.2019. 5. RfP bid submission scheduled on 02.08.2019 further extended to 19.08.2019.
6.	Transmission system associated with LTA applications from Rajasthan SEZ Part-D	1. RfQ notification published on 17.01.2019; 2. RfQ opened on 19.02.2019; 3. Nine (9) bidders shortlisted at RfQ stage; 4. RfP documents issued on 18.03.2019; 5. Six (6) bidders submitted RfP bids on 25.06.2019; 6. RfP (Price Bid) opened on 17.07.2019; 7. E-reverse bidding held on 18.07.2019; 8. LoI issued to the successful bidder M/s. Adani transmission Limited on 31.07.2019. 9. SPV will be transferred after Regulatory Approval.