

I/3145/2018



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

To,

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.	Sh. Surinder Singh Sur, Joint Adviser (Energy) 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: 4 दिसंबर 2018 को आयोजित "ट्रांसमिशन पर राष्ट्रीय समिति" (एनसीटी) की दूसरी बैठक - मिनट्स ऑफ़ मीटिंग

Subject: 2nd meeting of National Committee on Transmission (NCT) held on 4th December 2018 - Minutes of meeting

Madam/Sir,

2nd meeting of National Committee on Transmission (NCT) was held on 4th December 2018 (Tuesday) in CEA, New Delhi. Minutes of meeting are available on CEA website: www.cea.nic.in (path to access – Home Page – Wing- Power System-PSPA-I- National Committee on Transmission).

Yours' faithfully,

रवीन्द्र गुप्ता, 12/12/18

(रवीन्द्र गुप्ता/Ravinder Gupta)

मुख्य अभियन्ता/Chief Engineer (PSPA-I) & Member Secretary (NCT)

Copy to:

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

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- (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

Minutes of 2nd meeting of National Committee on Transmission (NCT) held on 4th December 2018 in CEA, New Delhi

List of participants is enclosed at Annexure-I.

Chairperson, CEA as Chairman of the National Committee on Transmission(NCT) welcomed the participants to the 2nd meeting of the NCT and requested Director (PSPA-I), CEA to take up the agenda for discussions.

1. Confirmation of the minutes of the 1st meeting of National Committee on Transmission:

1.1. CEA stated that the minutes of 1st meeting of National Committee on Transmission held on 27th July, 2018 were issued vide CEA letter No. CEA-PS-11-15(11)/1/2018-PSPA-I Division dated 2nd August, 2018. No comment / observation had been received so far.

1.2. Shri P. K. Pahawa, Expert Member of the NCT suggested to modify Para 4.2.7 of the minutes and after deliberations, the following modified Para 4.2.7 was agreed:

4.2.7 In view of above, the NCT suggested that augmentation / modifications at existing ISIS sub-stations may be done by the owner of the substation.

1.3. With above modifications, minutes of the 1st meeting of the National Committee on Transmission were confirmed.

2. Notification / approval of transmission schemes approved in 1st meeting of National Committee on Transmission by MoP:

2.1. CEA stated that the schemes recommended in the 1st meeting of NCT for implementation through RTM/TBCB were further deliberated in 2nd meeting of Empowered Committee on Transmission (ECT) held on 06.08.2018. Following transmission schemes were approved by ECT:

A. Transmission schemes for implementation through Tariff Based Competitive Bidding (TBCB) route:

S. No	Name of Scheme	Estimated Cost as per NCT (in Crore)	BPC
1.	400kV Udupi (UPCL)-Kasargode D/C line	620	RECTPCL

B. Transmission schemes for implementation through Regulated Tariff Mechanism (RTM) is enclosed at Annexure-II.

2.2. Members noted the same.

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

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

4. Inter-State Transmission Schemes for RE projects:

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- 4.1. CEA stated that Govt. of India has set a target for establishing 175 GW renewable capacity by 2022, which includes 100 GW Solar, 60 GW Wind generation capacity. To identify ISTS connectivity of renewable energy projects from potential solar energy zones (SEZs) and potential wind energy zones (WEZs) of about 50 GW and 16.5 GW respectively, MNRE vide its order dated 08.06.2018 had constituted a Sub-Committee. SEZs and WEZs envisaged in 7 RE rich states (Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat, Rajasthan, Maharashtra and Madhya Pradesh) were identified by SECI in association with MNRE in consultation with RE power developers. To ease the implementation of transmission infrastructure, it has been proposed to bifurcate these requirements in two phases. A total of 20GW solar & 9 GW wind projects has been planned in Phase-I (up to Dec. 2020) and 30 GW solar & 7.5 GW wind has been planned for Phase-II (December 2021). The state wise and phase wise details of SEZ and WEZ are as given below:

Solar Energy Zone (SEZ)					Wind Energy Zone (WEZ)				
State/ District	Taluk/ Tehsil	Ph-1 2020	Ph-2 2021	Total	State/ District		Ph-1 2020	Ph-2 2021	Total
		GW	GW	GW			GW	GW	GW
Rajasthan					Tamil Nadu				
Jaisalmer	Ramgarh	2.5	1.5	4	Karur		1.5	1	2.5
	Fatehgarh	2.5	1.5	4	Tirunelveli		0	0.5	0.5
Jodhpur	Phalodi	2	1	3					
Bikaner	Koyalat/ Pugal	3	1	4					
Barmer	Barmer	0	5	5					
Subtotal		10	10	20	Subtotal		1.5	1.5	3
Andhra Pradesh					Andhra Pradesh				
Kurnool	Gooty	2.5	0	2.5	kurnool		2	1	3
Ananthpuram	Urvakonda	0	2.5	2.5					
Subtotal		2.5	2.5	5	Subtotal		2	1	3
Karnataka					Karnataka				
Gadag		0	2.5	2.5	Koppal		2.5	0	2.5
Bidar		0	2.5	2.5					
Subtotal		0	5	5	Subtotal		2.5	0	2.5
Gujarat					Gujarat				
Kutch	Rapar	3	2	5	Kutch	Bhuj	0	2	2
Banaskantha	Vav/ Tharad	0	2.5	2.5		Laka- diya	2	0	2
Jamnagar	Lalpur	1	1.5	2.5	Dwarka		1	1	2
Subtotal		4	6	10	Subtotal		3	3	6
Maharashtra					Maharashtra				
Solapur		1	1.5	2.5	Osmanabad		0	2	2
Wardha		0	2.5	2.5					

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Solar Energy Zone (SEZ)					Wind Energy Zone (WEZ)				
Subtotal		1	4	5	Subtotal		0	2	2
Madhya Pradesh									
Raigarh		2.5	0	2.5					
Khandwa		0	2.5	2.5					
Subtotal		2.5	2.5	5					
Total		20	30	50	Total		9	7.5	16.5

4.2. CEA added that broad Transmission schemes were evolved for integration of envisaged RE generation capacity in Solar & Wind Energy Zones. Transmission System evolved from potential renewable energy zones were discussed in the meetings of Regional Standing Committees on Transmission.

4.3. In the 1st meeting of Western Region Standing Committee on Transmission (WRSC) held on 5.9.2018, following transmission system for evacuation of power from 10.5 GW (7.5 GW wind and 3 GW solar) of RE generations was agreed:

A. Transmission system for injection of power from 4000MW RE projects under SECI bids (Tranche I to IV) at Bhuj PS.

- i) In addition to existing 2x500MVA 400/220 kV & 2x1500MVA 765/400 kV ICTs at Bhuj pooling station, augmentation in transformation capacity required for evacuation of 4000MW RE projects under SECI bids (Tranche-I to IV)
 - Installation of additional 3x500MVA, 400/220kV ICTs along with 400kV AIS & 220kV AIS bays
 - Installation of additional 3x500MVA, 400/220kV ICTs along with 400kV GIS & 220kV AIS bays
 - Installation of additional 2x1500MVA, 765/400kV ICTs along with 765kV AIS & 400kV GIS bays
- ii) Additional 1x500MVA, 400/220kV (9th) ICT, for injection from any additional RE project (other than the above 4000MW) in existing Bhuj PS with associated 400 kV GIS bay and 220 AIS bay.
- iii) 220 kV line bays to be implemented as AIS bays or Hybrid/MTS (Mixed Technology Switchgear) bays.

B. Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system:

- i) Establishment of 2x1500MVA, 765/400kV Lakadia PS[#]
- ii) Lakadia – Vadodara 765kV D/c line (~350km) along-with 330MVAR switchable line reactors at both ends
- iii) Bhuj PS – Lakadia PS 765kV D/c line
- iv) LILO of Bhachau – EPGL 400kV D/c (triple) line at Lakadia PS & conversion of existing 2x63MVAR line reactors at Bhachau to switchable line reactors.
- v) 1x330MVAR, 765kV Bus reactor & 1x125MVAR, 420kV Bus reactor at Lakadia PS

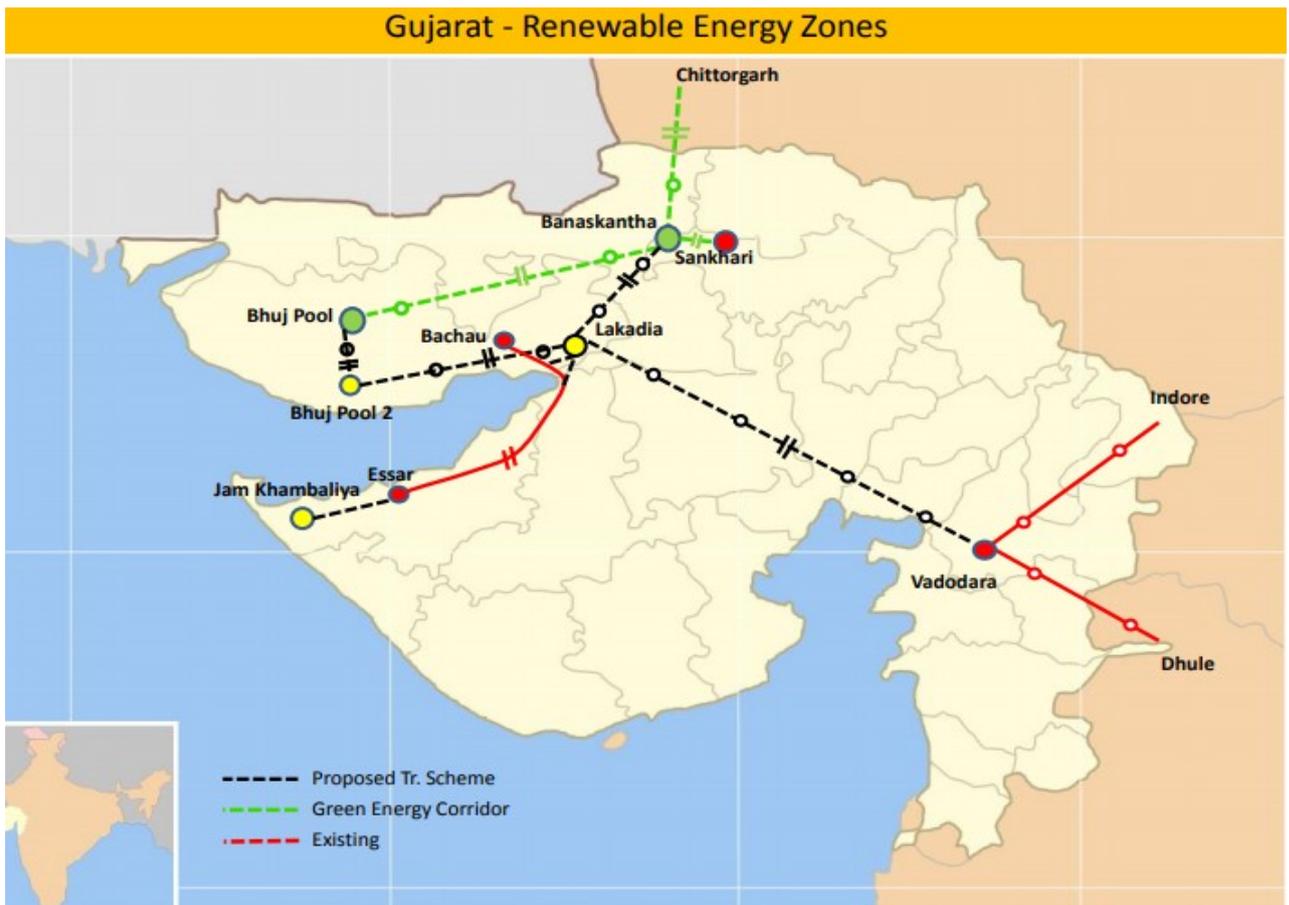
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with future provision for another 2X1500 MVA 765/400 kV ICT, establishment of 4000 MVA, 400/220 kV transformation capacity and 400/220 kV line bays for providing connectivity to RE developers.

C. Transmission System associated with RE generations from potential wind energy zones in Gujarat [Bhuj-II (2000MW), Lakadia (2000MW) & Dwarka (1500MW)]

- i) Establishment of 2x1500MVA (765/400kV), 4x500MVA (400/220kV) Bhuj-II PS (GIS) along-with space for 8 nos. 220kV bays for integration of wind farms
- ii) Establishment of 4x500MVA, 400/220kV ICTs at Lakadia PS (GIS) along-with space for 8 nos. 220kV bays for wind farms' integration
- iii) Establishment of 4x500MVA, 400/220kV Jam Khambhaliya PS (GIS) along-with space for 8 nos. 220kV line bays
- iv) Extension of Essar–Lakadia/Bhachau 400kV D/c (triple) line upto Jam Khambhaliya PS along-with 63MVAR Line Reactor at both ends (i.e. Lakadia & Jam Khambhaliya ends).
- v) Reconfiguration of Bhuj PS – Lakadia PS 765kV D/c line so as to establish Bhuj-II –Lakadia 765 kV D/C line as well as Bhuj-Bhuj-II 765kV D/C line.
- vi) Lakadia PS – Banaskantha PS 765kV D/c line along-with 240MVAR switchable LR at Lakadia PS (~150km)
- vii) 1x330MVAR, 765kV Bus reactor at Bhuj-II PS & 1x125MVAR, 420kV Bus reactor each at Bhuj-II PS & Jam Khabhaliya PS

The above system for Jam Khambhaliya PS shall be able to cater RE injection to the tune of 1500MW in Dwarka area. This could be utilized for injection of power from wind or solar projects in the area. For any additional RE injection, additional system would need to be planned subsequently.



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D. Transmission system associated with RE generations from potential wind energy zones in Osmanabad area of Maharashtra

- i) Establishment of 4x500MVA, 400/220kV near Kallam PS along-with 8 nos. 220kV line bays
- ii) 1x125MVAr bus reactor at Kallam PS
- iii) LILO of both circuits of Parli(PG) – Pune(GIS) 400kV D/c line at Kallam PS along-with:
 - a. Conversion of 50MVAr fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable.
 - b. Provision of new 50MVAr switchable line reactor at Kallam PS end of Kallam – Pune(GIS) 400kV D/c line

E. Transmission system associated with RE generations from potential Solar Energy Zone in Maharashtra (1000 MW under Ph-I)

- i) Establishment of 400/220 kV, 2X500 MVA at Solapur PP (near Mohol)
- ii) Solapur pooling point - Solapur PS 400 kV D/c line (twin HTLS)
- iii) 220 kV line bays for interconnection of wind & solar projects
- iv) 1x125 MVAR, 420 kV Bus Reactor at Solapur PP

While transmission projects under parts A, B and C were agreed for immediate implementation, it was decided that projects under D and E shall be taken up only upon receipt of Stage-II connectivity applications.

4.4. Following transmission system for 8.5 GW (6 GW wind and 2.5 GW solar) RE projects in Southern Region was agreed in 2nd meeting of SRST held on 7.9.2018:

A. Tirunelveli and Tuticorin Wind Energy Zone (Tamil Nadu)(500MW):

- i. Addition of 1x500 MVA, 400/230kV ICT (4th) at Tuticorin-II GIS sub-station.
***Operation of Tuticorin Pooling Station – Dharmapuri (Salem) 765kV D/C line (presently operating at 400kV) at its rated voltage. (i. e. 765kV) & 5th ICT (500 MVA) at Tuticorin-II PS would be reviewed for dispersal of more than 2000MW RE generation*

B. Karur / Tiruppur Wind Energy Zone (Tamil Nadu)(2500MW):

- i. Establishment of 5x500 MVA, 400/230 kV Karur Pooling Station (at a location in between Karur Wind zone and Tiruppur wind zone)
- ii. LILO of both circuits of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS
- iii. 9 Nos. of 230kV line bays for interconnection of wind projects
- iv. 2x125 MVAr, 400kV Bus reactors at Karur PS

C. Koppal Wind Energy Zone (Karnataka) (2500MW)

- i. Establishment of 5x500 MVA, 400/220kV pooling station near Munirabad /suitable location in Koppal distt.
- ii. Pooling station (near Munirabad /suitable location in Koppal distt.) - Munirabad 400 kV D/c Line (with Quad Moose ACSR conductor)
- iii. Pooling station (near Munirabad /suitable location in Koppal distt.) - Narendra (New) 400 kV D/c Line (with Quad Moose ACSR conductor)

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- iv. 9 Nos of 220kV line bays for interconnection of wind projects
- v. 2x125 MVA, 400kV bus reactor at Pooling station (near Munirabad /suitable location in Koppal distt.)
- vi. Adequate space provision for future expansion.

D. Kurnool Wind Energy Zone (3000MW) /Solar Energy Zone (AP)(1500MW):

- i. Establishment of 765/400/220kV 3x1500 MVA, 9x500 MVA Pooling station at suitable location in Kurnool Distt (Kurnool-III)
- ii. Kurnool –III PS - Kurnool(new) 765 kV D/c Line-
- iii. Kurnool –III PS-Maheshwaram(PG) 765 kV D/c Line
- iv. 220kV line bays for interconnection of wind projects (15 nos)
- v. 1x330 MVA (765kV) & 1x125MVA (400kV) bus reactor at Kurnool-III PS
- vi. 240 MVar Switchable line reactors at both ends of Kurnool-III PS – Maheshwaram(PG) 765 kV D/c Line

In SRSCT, it was agreed that the above schemes would be implemented as ISTS, consequent to grant of LTA by the CTU. The transformation capacity at various stations and certain elements would be reviewed based on LTA applications. The above transmission system was agreed as a broad master plan to serve integration of RE generation potential assessed in Tamil Nadu, Karnataka and Andhra Pradesh for period up to 2021-22. This broad master plan would be implemented in stages for RE integration.

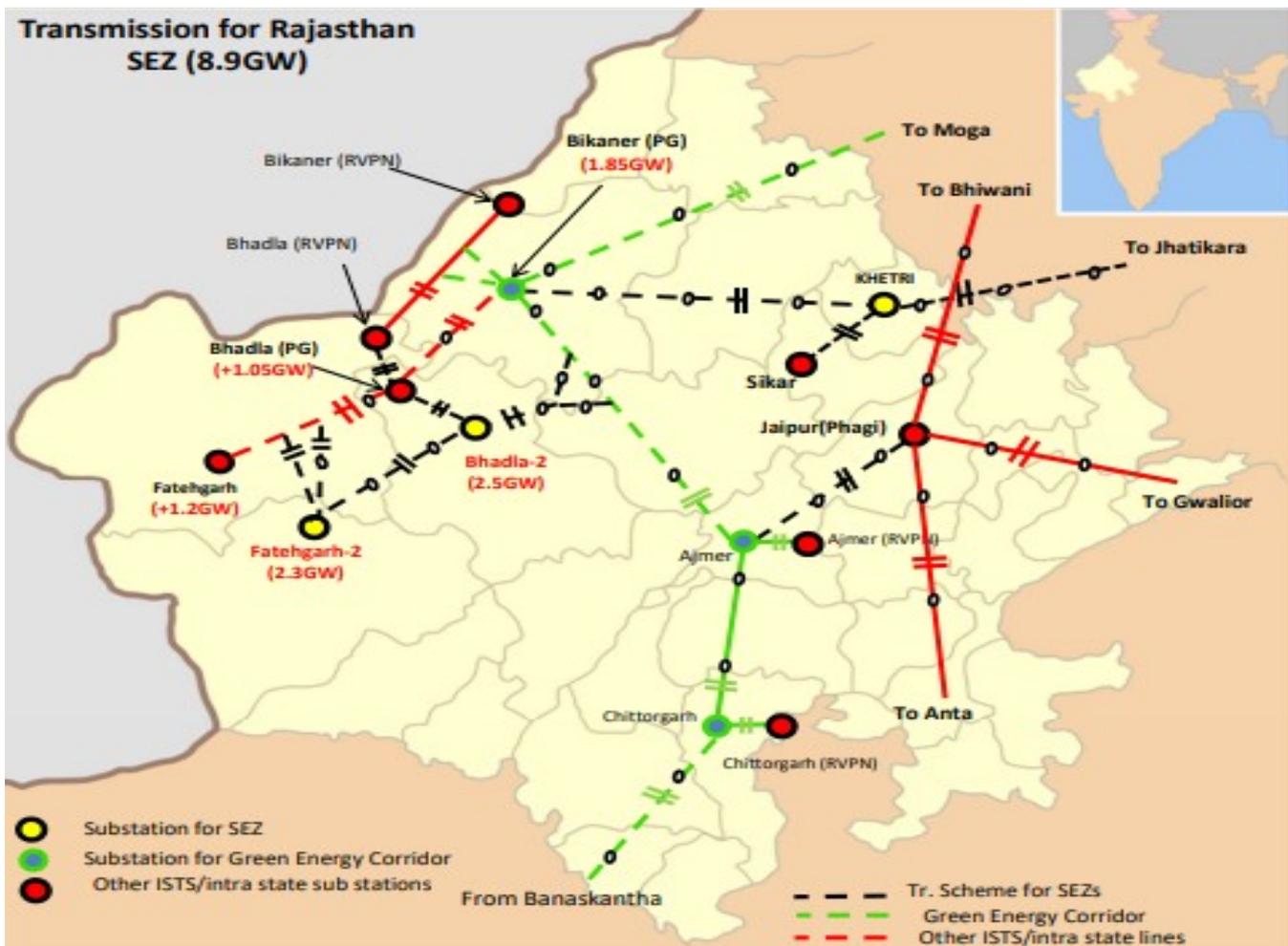
4.5. Transmission system for 8.9 GW of solar RE projects from Bhadla(3.55 GW), Fatehgarh (3.5 GW), Bikaner (1.85 GW) complexes in Rajasthan was technically agreed in the 2nd meeting of NRSCT held on 13.11.2018:

- i) Establishment of 765/400/220kV, 3x1500MVA (765/400kV), 5x500MVA (400/220kV) pooling station at suitable location near Phalodi/ Bhadla in Jodhpur (Bhadla-II PS)**
- ii) Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri **
- iii) Augmentation of transformation capacity at Bhadla (PG) by 400/220kV, 2x500MVA (6th & 7th) transformers
- iv) Creation of 220 kV level at Bikaner (PG) with Installation of 400/220kV, 2x500MVA transformers at Bikaner (PG)
- v) LILO of both circuits of Ajmer – Bikaner 765kV D/c line at Bhadla-II PS
- vi) Bhadla-II PS – Bhadla (PG) 400kV D/c Line (Twin HTLS)
- vii) Bikaner(PG) –Khatri S/s 765kV D/c line
- viii) Khatri – Jhatikara 765kV D/c line
- ix) Khatri – Sikar (PG) 400kV D/c line (Twin AL59)
- x) Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Moga S/s
- xi) Augmentation with 765/400kV, 1x1000MVA, transformer (3rd) at Bhiwani (PG) S/s
- xii) Establishment of 765/400/220kV, 4x1500MVA (765/400kV), 5x500MVA (400/220kV) pooling station at suitable location near Fatehgarh in Jaisalmer Distt (Fatehgarh-II PS)**
- xiii) Fatehgarh-II PS– Bhadla -II 765kV D/c line

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- xiv) LILO of both circuits of Fatehgarh (TBCB) – Bhadla (PG) 765 kV D/c line (op. at 400kV) at Fatehgarh-II PS so as to establish Fatehgarh (TBCB) – Fatehgarh -II 765 kV D/c line (to be op. at 400kV) and Fatehgarh-II-Bhadla (PG) 765kV D/c line
- xv) Charging of Fatehgarh-II PS –Bhadla section at 765kV level
- xvi) Ajmer (PG)– Phagi 765kV D/c line
- xvii) 1x125 MVAR (420kV), 2x240 MVAR (765kV) Bus Reactor each at Fatehgarh-II PS, Bhadla-II PS & Khatri Substation
- xviii) 1x240 MVAR Switchable Line reactors for each circuit at Jhatikara end of Khatri – Jhatikara 765kV D/c line
- xix) 1x240 MVAR Switchable line reactor for each circuit at each end of Bikaner – Khatri 765kV D/c line
- xx) 1x330 MVAR Switchable line reactor for each circuit at Bhadla-II PS end for Ajmer-Bhadla-II PS 765kV line (after LILO)
- xxi) 1x240 MVAR Switchable line reactor for each circuit at Bhadla-II PS end for Bikaner-Bhadla-II PS 765kV line (after LILO)
- xxii) 220kV line bays for interconnection of solar projects at Fatehgarh-II PS (9 nos), Bhadla-II PS (9 nos) and Bikaner (4 nos) S/s

****Space provision to be kept at Bhadla-II PS, Fatehgarh-II PS, Khetri S/s for future transformers, bays, switchable line/bus reactors etc.**



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5. New ISTS Transmission Schemes in Western Region:

The transmission system agreed in WRSCT (given at item 4.3 above) would be implemented through following transmission schemes.

5.1 Name of Scheme: 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:

5.1.1 Empowered Committee on Transmission (ECT) in its 2nd meeting held on 06.08.2018 recommended the implementation of scheme “Transmission system for injection of power from 4000MW RE projects under SECI bids (Tranche I to IV) at Bhuj PS” with following scope of works for implementation through RTM by POWERGRID under compressed time schedule:

Sl. No.	Scope of the Transmission Scheme	Capacity (MVA)	Estimated Cost (Rs.) Cr.
1	Installation of additional 3x500MVA, 400/220kV ICTs along with 400kV AIS & 220kV AIS bays	3x500MVA 400/220kV	102
2	Installation of additional 3x500MVA, 400/220kV ICTs along with 400kV GIS & 220kV AIS bays	3x500MVA 400/220kV	107
3	Installation of additional 2x1500MVA, 765/400kV ICTs along with 765kV AIS & 400kV GIS bays	2x1500MVA, 765/400kV	147
Total Rs (in Crore)			356

Note: The existing transformation capacity at Bhuj pooling station is 2x500MVA, 400/220 kV & 2x1500MVA, 765/400 kV ICTs.

5.1.2 The scheme was discussed in 1st meeting of WRSCT held on 5.9.2018, wherein, in addition to above following was also agreed:

- i) Additional 1x500MVA 400/220kV (9th) ICT, for injection from any additional RE project (other than the above 4000MW) in existing Bhuj PS with associated 400 kV GIS bay and 220kV AIS bay.
- ii) 220 kV line bays to be implemented as AIS bays or Hybrid/MTS (Mixed Technology Switchgear) bays.

5.1.3 Regarding 220kV line bays, CTU stated that out of the 17 nos. 220kV line bays allocated to RE project developers at Bhuj PS, 3nos. 220kV line bays is to be developed under ISTS and balanced 14 nos. are being implemented by RE generation project developers.

5.1.4 The scope of the scheme is as under:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Additional 1x500MVA 400/220kV (9 th) ICT, for injection from any additional RE	1x500MVA, 400/220kV	37

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	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.	400kV ICT bay-1 230kV ICT bay-1	
2.	3 nos. of 220kV line bays(hybrid/MTS) for termination of dedicated lines of RE developers with Stage-II connectivity	220kV bays -3	19.3
Total Rs (in Crore)			56.3

5.1.5 CTU stated that 3100 MW LTA has already been granted at Bhuj PS and additional applications for 925 MW has been received seeking LTA progressively in the period Nov 2019 to March 2020. Therefore, implementation of 9th 400/220 kV 500 MVA ICT along with 3 no. 220 kV line bays needs to be taken up.

5.1.6 As POWERGRID is already implementing 8 no. 400/220 kV 500 MVA ICT under RTM and scheme also involves construction of hybrid/MTS 220 kV bays, NCT recommended the above scheme for implementation through RTM.

5.2 Name of Scheme: 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.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	Establishment of 2x1500MVA, 765/400kV Lakadia PS with 765kV (1x330MVAR) & 400kV (125 MVAR) bus reactor <u>Future provisions:</u> 765/400kV ICTs along with bays: 2 nos. 400/220kV ICTs along with bays : 8 nos. 765kV line bays:4 nos. 400kV line bays: 6 nos. 220kV line bays: 16 nos 765kV bus reactor along with bays : 1no 400kV bus reactor along with bays: 1no	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 400kV Reactor bay -1	319
2	LILO of Bhachau – EPGL 400kV D/c (triple) line at Lakadia PS	10km	37
3	Conversion of existing 2x63MVAR line reactors at Bhachau end of Bhachau – EPGL 400kV D/c line to switchable line reactors	400kV Reactor bay -2	19

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5	Bhuj PS – Lakadia PS 765kV D/c line	100km	463
6	2 nos of 765kV bays at Bhuj PS for Bhuj PS – Lakadia PS 765kV D/c line	765kV line bay-2	37
Total Rs (in Crore)			838

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 765kV bays at Bhuj PS for Bhuj PS – Lakadia PS 765kV D/c line*
- POWERGRID to provide space for Conversion of existing 2x63MVAR line reactors at Bhachau end of Bhachau – EPGL 400kV D/c line to switchable line reactors*

5.2.1 CEA stated that the wind power generation projects at Bhuj Pooling station, which have been successful in SECI bids of Tranche –I (300 MW), Tranche-II (550 MW), Tranche-III (1850 MW) and Tranche-IV (400 MW) are scheduled to be commissioned by Oct. 2018, May 2019, Nov. 2019 and Feb. 2020 respectively. As per current progress, the Tranche –I projects are expected to be commissioned from Feb. 2019 onwards. Further, additional applications for 925 MW has been received at Bhuj seeking LTA progressively for the period from Nov 2019 to March 2020.

5.2.2 Members noted that with the above timelines, the scheme was required to be implemented by February – March 2020. For implementation of the scheme in this time, only 14 to 15 months' time is available (including the time required for bidding process). The current bidding time line for TBCB route is 185 days and 5 to 6 months was also required for bidding by POWERGRID through RTM route. Considering the bidding time of 6 months, the actual implementation time of 8 to 9 months would only be available for the scheme.

5.2.3 Members enquired about the time required for the bidding process in TBCB route. BPC replied that at present, the timelines for two stage bidding process (RfQ & RfP) is of 185 days. This includes 45 days for creation of SPV. At the most, bidding timeline could be reduced by 45 days and bidding could be completed in 140 days.

PFCCCL (BPC) informed that “Transmission system for Ultra Mega Solar Park in Fatehgarh, distt. Jaisalmer Rajasthan” has been successfully awarded (in March 2018) through TBCB route (to M/s FBTL, subsidiary M/s Adani Power) with an implementation time schedule of September 2019 (18 months). The scope included setting up of 400 kV pooling station and a 765 kV D/C line (about 100 km in length)

Regarding time line for bidding process under RTM, CTU stated that by expediting the bidding process, the scheme could be awarded in 3-4 months by POWERGRID.

5.2.4 Keeping above in view, Members opined that implementation of the scheme in time period of 8 to 9 months would not be achievable either through RTM or TBCB route. Considering a bidding timeline of 140 days (about 5 months) and minimum implementation time of 18 months, members agreed for an implementation schedule of December 2020.

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5.2.5 After further deliberations, NCT recommended the above scheme for implementation through TBCB by December 2020. BPCs were requested to complete the bidding process in 140 days.

5.3 Name of Scheme: 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.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	Lakadia – Vadodara 765kV D/c line	350km	1619
2.	330MVAR switchable line reactors at both ends of Lakadia – Vadodara 765kV D/c line	330 MVAR line reactor -4 no. 765kV Reactor bay -4 no.	172
3.	2 nos of 765kV bays at both Vadodara and Lakadia S/Ss for Lakadia – Vadodara 765kV D/c line	765kV line bays- 4	74
Total Rs (in Crore)			1865

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 765kV bays and space for 2 nos. of 330MVAR switchable line reactors at Vadodara for Lakadia – Vadodara 765kV D/c line
- Developer of Lakadia S/s to provide space for 2 nos of 765kV bays and space for 2 nos. of 330MVAR switchable line reactors at Lakadia for Lakadia – Vadodara 765kV D/c line

5.3.1 The scheme ‘Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS -WRSS-21 Part A & Part B’ are to be implemented in the similar time frame i.e. December 2020.

5.3.2 NCT recommended the above scheme for implementation through TBCB by December 2020. BPCs were requested to complete the bidding process in 140 days.

5.4 Name of Scheme: Transmission system associated with RE generations at Bhuj –II, Dwarka & Lakadia:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	Lakadia PS – Banaskantha PS 765kV D/c line	200km	925

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2.	765kV Bays at Lakadia and Banaskantha for Lakadia PS – Banaskantha PS 765kV D/c line	4 nos. 765kV Bays	74
3.	240MVAr switchable Line reactor at Lakadia PS end of Lakadia PS – Banaskantha PS 765kV D/c line	2x240 MVAR 765kV reactor Bays -2	76
Total Rs (in Crore)			1075

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 765kV bays at Banaskantha S/s for Lakadia – Banaskantha 765kV D/c line
- Developer of Lakadia S/s to provide space for 2 nos of 765kV bays and space for 2 nos. of 240MVAr switchable line reactors at Lakadia for Lakadia – Banaskantha 765kV D/c line

5.4.1 CEA stated that the scheme is required with addition of RE generation projects in the wind potential zones in Gujarat (Bhuj –II, Dwarka & Lakadia). As CTU has received connectivity / LTA applications in Jam Khambaliya and Bhuj area, implementation of the scheme may also be taken up.

5.4.2 NCT recommended the above scheme for implementation through TBCB by June 2021 or as per the progress of connectivity/LTA applications of RE projects from WEZ in Gujarat.

5.5 Name of Scheme: Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1	Establishment of 2x1500MVA (765/400kV), 4x500MVA(400/220kV) Bhuj-II PS (GIS) with 765kV (1x330MVAR) and 400kV (125 MVAR) bus reactor <u>Future provisions:</u> 765/400kV ICTs along with bays: 2 nos. 400/220kV ICTs along with bays: 5 nos. 765kV line bays: 4 nos. 400kV line bays: 6 nos. 220kV line bays: 9 nos 765kV bus reactor along with bays: 1no 400kV bus reactor along with bays: 1no	2x1500MVA, 765/400kV, 4x500MVA (400/220kV) 400kV ICT bay-6 765kV ICT bay-2 220kV ICT bay-4 765kV line bay-4 220kV line bays -7 1x330MVA, 765kV, 1x125MVA, 420kV 765kV reactor Bays -1 400kV reactor Bays -1	552

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2	Reconfiguration of Bhuj PS – Lakadia PS 765kV D/c line so as to establish Bhuj-II –Lakadia 765 kV D/C line as well as Bhuj-Bhuj-II 765kV D/C line	20 km	93
Total Rs (in Crore)			645

Note:

a. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.

- 5.5.1** In the recently concluded SECI bid Tranche-V for wind RE projects, the injection point for about 1200MW RE projects is Bhuj. As Bhuj-I has become saturated, therefore, another pooling station in Bhuj area i.e. Bhuj-II is required for evacuation of power from these RE projects.
- 5.5.2** CTU stated that at Bhuj pooling station, which is currently under implementation, St-II connectivity to the tune of 5000 MW has already been granted and additional St-II connectivity applications for 900 MW has already been received in Bhuj area. Therefore, implementation of Bhuj-II Pooling station needs to be taken up immediately.
- 5.5.3** NCT recommended the scheme for implementation through TBCB with commissioning schedule of December 2020 or as per progress of connectivity/LTA applications at Bhuj-II.

5.6 Connectivity System for RE projects (1500 MW) in Dwarka (Gujarat):

Name of Scheme: Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat):

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 4x500MVA, 400/220kV Jam Khambhaliya PS (GIS) <u>Future provisions:</u> 400/220kV ICTs along with bays: 4 nos. 400kV line bays: 8 nos. 220kV line bays: 9 nos 400kV bus reactor along with bays: 1no	4x500MVA, 400/220kV 400kV ICT bay-4 220kV ICT bay- 4 400kV line bay-1 220kV line bay-7	209
2.	1 no 400kV bay for M/s Vaayu 1 no of 220kV bay for M/s Air power 6 nos of 220kV bay for future developers		
3.	1x125MVAr, 420kV Bus reactor at Jam Khabhaliya PS along with reactor bay	1x125MVAr, 420kV 400kV reactor Bays -1	20
Total Rs (in Crore)			229

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Name of Scheme: Interconnection of Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat):

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Extension of Essar–Lakadia/Bhachau 400kV D/c (triple) line up to Jam Khambhaliya PS	40km	75
2.	2 nos. of 400kV line bays at Jam Khambhaliya PS for termination of of Jam Khambhaliya PS-Lakadia 400kV D/c (triple) line	400kV line bay-2	23
3.	63MVA _r switchable Line Reactor at both ends of Lakadia/Bhachau - Jam Khambhaliya 400kV D/c line	4x 63 MVA _r 400kV reactor Bays -4	71
Total Rs (in Crore)			169

Note:

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

- 5.6.1** The above system shall be able to cater RE injection to the tune of 1500MW in Dwarka area. This could be utilized for injection of power from wind or solar projects in the area. For any additional RE injection, additional system would need to be planned subsequently.
- 5.6.2** CTU stated that St-II connectivity for 250 MW at 220kV level (M/s Air power) and St-II connectivity for 300 MW at 400kV level (M/s Vaayu) has already been granted from December 2019. Therefore, implementation of Jam Khambhaliya PS needs to be taken up immediately.
- 5.6.3** CEA stated that these developers have already represented to CEA for providing alternative interim arrangements for evacuation of power from their RE projects. In view of non-availability of Jam Khambhaliya PS in the time frame of Dec 2019.
- 5.6.4** CEA further stated that connectivity to Jam Khambhaliya PS is to be provided by extending the existing Essar–Bhachau 400kV D/c (triple snowbird) line up to Jam Khambhaliya PS. Essar–Bhachau 400kV D/c (triple snowbird) line (about 230km) has been implemented by POWERGRID as connectivity line for Essar generation project. Essar generation project has not come up till date and neither there is any possibility in near future, therefore, extension of this line (by about 40km) up to Jam Khambhaliya has been agreed for providing connectivity to RE projects in Dwarka..
- 5.6.5** NCT recommended the scheme ‘Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat)’ for implementation through TBCB with commissioning schedule of June 2020.
- 5.6.6** As the transmission scheme ‘Interconnection of Jam Khambhaliya Pooling Station for providing connectivity to RE projects (1500 MW) in Dwarka (Gujarat)’ involves extension of existing 400 kV line owned by POWERGRID, NCT recommended the scheme for implementation through RTM with commissioning schedule of June 2020.

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5.7 Name of Scheme: 400kV line bay at Solapur PS for St-II connectivity to M/s Toramba

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	1 nos. of 400kV bay at Solapur (PG) for St-II connectivity to M/s Toramba	400kV line bay -1	10
Total Rs (in Crore)			10

5.7.1 CTU stated that St-II connectivity to M/s Toramba has been granted from December 2019 at existing Solapur 400kV S/s of POWERGRID and 1 no 400kV line bay is required for termination of connectivity line of the developer under ISTS.

5.7.2 NCT recommended the implementation of the scheme through RTM by December 2019.

5.8 Transmission schemes for providing connectivity to RE projects in potential wind energy and solar energy zones in WR [Lakadia (2000MW), Osmanabad (2000MW) & Solapur(1000 MW)]:

Name of Scheme: Transmission System for providing connectivity to RE projects in Gujarat [Lakadia (2000MW)]:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	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	196
Total Rs (in Crore)			196

Name of Scheme: Transmission system associated with RE generations from potential wind energy zones in Osmanabad area of Maharashtra

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 4x500MVA, 400/220kV near Kallam PS	4x500MVA, 400/220kV 400kV ICT bay-4 220kV ICT bay-4 400kV line bay-4 220kV line bay- 8	179
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.	Conversion of 50MVA 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

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5.	Provision of new 50MVAR switchable line reactor at Kallam PS end of Kallam – Pune(GIS) 400kV D/c line	2x50 MVAR 400kV Reactor bays -2	30
Total Rs (in Crore)			301

Note:

- a. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- b. Powergrid to provide space at Parli (PG) for Conversion of 50MVAR fixed Line Reactors on each ckt of Parli (PG) – Pune (GIS) 400kV D/c line at Parli (PG) end into switchable.

Name of Scheme: Transmission system associated with RE generations from potential Solar Energy Zone in Maharashtra (1000 MW under Ph-I)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	Establishment of 400/220 kV, 2x500 MVA at Solapur PP (near Mohol) Space for 8 nos. of 220 kV line bays for interconnection of wind & solar projects	500MVA, 400/220kV ICT -2 400kV ICT bay -2 220kV ICT bay -2 400kV line bay -2	89
2.	Solapur pooling point - Solapur (PG) 400 kV D/c line (twin HTLS)	50km	94
3.	2 nos. of 400kV bays at Solapur PS for Solapur pooling point - Solapur (PG) 400 kV D/c line	400kV line bay -2	19
4.	1x125 MVAR, 420 kV Bus Reactor at Solapur PP	1x125 MVAR, 420kV bus reactor 420kV reactor bay	18
Total Rs (in Crore)			220

5.8.1 Since the above schemes have been firmed up based on future solar/wind potential zones in WR, however no connectivity/LTA applications have been received from any of the RE generator.

5.8.2 NCT opined that implementation of the above scheme may be taken up only after receipt of connectivity/LTA application/s either from RE generator/s or by SECI on behalf of generators.

5.9 Name of the Scheme: Installation of 400/220 kV ICT along with associated bays at M/s CGPL Switchyard

Sl. No.	Scope of the Transmission Scheme	Capacity/Ckm	Estimated Cost (Rs.) Cr.
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1	1x500 MVA, 400/220 ICT at CGPL Mundra switchyard.	1x500 MVA, 400/220 kV 400 kV ICT bay-1 220 kV ICT bay-1	37
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Note:

- a. M/s CGPL to provide space for ICT and creation of 220kV level at CGPL Mundra UMPP switchyard.
- b. 1x500 MVA, 400/220 kV ICT would be charged from 400 kV side and kept isolated from 220 kV side.

5.9.1 The matter was discussed in the 1st meeting of National Committee on Transmission (NCT) held on 27th July, 2018, wherein, NCT opined to review the scheme in the next meeting of WRSCT. Accordingly, the scheme was discussed in the 1st meeting of WRSCT held on 5.9.2018, wherein members again recommended the proposal already agreed in the 43rd meeting of SCPSPWR to be implemented as an ISTS scheme. The scheme would provide the startup power to CGPL through Nanikhakhar-CGPL 220 kV S/C line (existing). The line would normally be kept open from CGPL end.

5.9.2 NCT recommended the above scheme for implementation through TBCB mode.

6 New ISTS Transmission Schemes in Northern Region:

The transmission system was technically agreed in NRSCT (given at item 5.5 above) is proposed to be implemented through following transmission schemes:

6.1 Name of Scheme: Transmission system associated with LTA applications from Rajasthan SEZ Part-A:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 3x1500MVA (765/400kV), Fatehgarh-2 Pooling station at suitable location near Fatehgarh 400kV S/s in Jaisalmer Distt with 765kV (2x240MVAR) and 400kV (1x125 MVAR) bus reactor <u>Future provisions:</u> 765/400kV ICT along with bays: 3 nos 400/220kV ICTs along with bays: 10 nos. 765kV line bays: 4 nos 400kV line bays: 6 nos. 220kV line bays: 18 nos 400kV bus reactor along with bays: 1no 765kV bus reactor along with bays: 1no	3x1500MVA, 765/400kV, 765kV ICT bay-3 400kV ICT bay-3 400kV line bay-2 765kV line bay-2 125 MVAR reactor-1 240 MVAR reactor-2 765kV reactor bay-1 400kV reactor bay-2	369
2.	LILo of Fatehgarh (TBCB) – Bhadla (PG) D/c (765kV line op. at 400kV) line at Fatehgarh-2 so as to establish Fatehgarh (TBCB) – Fatehgarh -2 400kV D/c line (765kV line op. at 400kV) and Fatehgarh -2- Bhadla 400kV D/c line	10km	106

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	(765kV line op. at 400kV)* Charging of Fatehgarh-2 –Bhadla section at 765kV level		
3.	2 no of 765kV bays at Bhadla for charging of Fatehgarh-2 –Bhadla section at 765kV level	765kV line bay-2	37
4.	Establishment of 765/400kV, 2x1500MVA (765/400kV) Bhadla-2 Pooling station at suitable location near Phalodi/ Bhadla in Jodhpur with 765kV (2x240MVAR) and 400kV (1x125 MVAR) bus reactor Future provisions: 765/400kV ICT along with bays: 1Nos 400/220kV ICTs along with bays: 9 nos. 765kV line bays: 6nos 400kV line bays: 6nos. 220kV line bays: 16 nos 400kV bus reactor along with bays: 1no 765kV bus reactor along with bays: 1no	2x1500MVA, 765/400kV, 765kV ICT bay-2 400kV ICT bay-2 400kV line bay-2 765kV line bay-4 125 MVAR reactor-1 240 MVAR reactor-2 765kV reactor bay-1 400kV reactor bay-2	333
5.	Bhadla-2 – Bhadla (PG) 400kV D/c Line (Twin HTLS)*	30km	56
6.	LILO of both ckts. 765kV Ajmer – Bikaner D/c line at Bhadla-2	270 route km	1249
7.	1x240 MVAR Switchable line reactor at Bhadla-2 end for Bikaner-Bhadla-2 765kV line (after LILO)	240 MVAR reactor-2 765kV reactor bay-2	76
8.	1x330 MVAR Switchable line reactor at Bhadla-2 end for Ajmer-Bhadla-2 765kV line (after LILO)	330 MVAR reactor-2 765kV reactor bay-2	86
9.	Ajmer (PG)– Phagi 765kV D/c line	110km	509
10.	765kV bays at Ajmer(PG) and Phagi for Ajmer (PG)– Phagi 765kV D/c line	765kV line bay-4	74
Total Rs (in Crore)			2895

* with charging of Fatehgarh-II –Bhadla section at 765kV level, 2nos. of 400kV bays would be spared at Bhadla S/s, which could be utilized for Bhadla-II – Bhadla (PG) 400kV D/c line.

Note:

- a) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- b) 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

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- 6.1.1** CEA informed that Bhadla Pooling station, Bhadla –Bikaner 765kV D/c line, Bikaner – Moga 765kVD/c line, Bikaner –Ajmer 765kV D/c line and Bhadla (PG) – Bhadla (RVPN) 400kV D/c line is under implementation by Powergrid as a part of Green Energy Corridor. It is expected to be commissioned by March 2019. Establishment of Fatehgarh 400kV pooling station along with Fatehgarh –Bhadla 765kV D/c line (charged at 400kV) is being implemented through TBCB route with commissioning schedule of September 2019.
- 6.1.2** CTU informed that LTA of 1000 MW at Fatehgarh and LTA of 2330 MW (1500 MW+ 830 MW) at Bhadla has already been granted with the above mentioned transmission system under implementation as a part of GEC. In addition to LTA of 3330 MW (1000 MW+ 2330 MW) has already been granted with the system under implementation, LTA of 2850 MW (1200MW LTA at Fatehgarh, 800 MW at Bhadla Pool and 850 MW at Bikaner) has also been granted with the new system agreed technically (at item no 4.5 above) in 2nd meeting of NRSCT held on 13.11.2018. LTA of 2850 MW has been granted with new system as per the following time lines:

S. NO.	LTA Quantum & location	Schedule
1	250 MW at Bhadla	September 2019
2	250 MW at Bikaner	October 2019
3	500 MW at Bhadla	September 2020
4	50 MW at Bhadla	October 2020
5	600 MW at Bikaner	October 2020
6	1200 MW at Fatehgarh	October 2020

- 6.1.3** CEA stated that there is evacuation requirement of 5330 MW beyond Bhadla and with current system under implementation (Bhadla –Bikaner 765kV D/c line), evacuation of 3330 MW is only possible. Therefore, the scheme proposed above, out of the total system agreed in 2nd NRSCT for evacuation of power from solar potential zones in Rajasthan, is the minimum system required to be implemented urgently in compressed time schedule. The above transmission system is required from Sep. / Oct. 2019 onwards, however keeping in view the transmission system implementation time and time line for evacuation of major chunk of the generation (1850 MW by Oct. 2020), the transmission system is required to be implemented by September 2020 (21 months: 18 months implementation + 3months bidding).
- 6.1.4** Members noted the least system required to evacuate the additional 2850 MW RE generations who have been granted LTA with new transmission system.
- 6.1.5** **NCT recommended the above scheme for implementation through RTM by September 2020 in a compress time schedule of 21 months: (18 months implementation + 3 months bidding).**
- 6.1.6** As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st meeting of NRSCT held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.

6.2 Name of Scheme Transmission system associated with LTA applications from Rajasthan SEZ Part-B:

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Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Fatehgarh-2 – Bhadla -2 765kV D/c line	130km	602
2.	2 no of 765kV bays at both Fatehgarh-2 & Bhadla -2 for Fatehgarh-2 – Bhadla-2 765kV D/c line	765kV line bay-4	74
Total Rs (in Crore)			676

Note:

- a. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
 - b. Developer of Fatehgarh-2 and Bhadla -2 to provide space for 2 nos of 765kV bays at Fatehgarh-2 and Bhadla -2 for termination of Fatehgarh-2 – Bhadla -2 765kV D/c line
- 6.2.1** CEA stated that transmission system for 8.9 GW of solar RE projects from Bhadla (3.55 GW), Fatehgarh (3.5 GW), Bikaner (1.85 GW) complexes in Rajasthan was technically agreed in the 2nd meeting of NRSCT held on 13.11.2018. 3.5 GW potential has been assessed in addition to 1 GW RE projects that has already been granted LTA in Fatehgarh area. Out of 3.5 GW potential, LTA has been granted for capacity of 1.2 GW. The scheme is required for evacuation of power from balance 2.3 GW RE potential in Fatehgarh area.
- 6.2.2** NCT recommended the above scheme for implementation through TBCB route. Time frame to be decided based on connectivity/LTA applications at Fatehgarh-II.
- 6.2.3** As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st NRSCT meeting held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.
- 6.3** Name of Scheme: Transmission system associated with LTA applications from Rajasthan SEZ Part-C

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri with 765kV (2x240MVAR) and 400kV (1x125 MVAR) bus reactor <u>Future provisions:</u> 400/220Kv ICTs along with bays: 4 nos. 765kV line bays: 4nos 400kV line bays: 4nos. 220kV line bays: 7 nos	2x1500MVA, 765/400kV, 765kV ICT bay-2 400kV ICT bay-2 400kV line bay-2 765kV line bay-2 240 MVAr (765kV) Bus Reactor -2 125 MVAr (765kV) Bus Reactor -1 765 KV Reactor bay - 2 400 kV Reactor bay -1	296
2.	Khetri – Sikar (PG) 400kV D/c line (AL59)	70 km 400 kV line bay-2	151
3.	400kV line bays at Sikar (PG) for	400kV line bay-2	19

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	Khetri – Sikar (PG) 400kV D/c line (Twin AL59)		
4.	Khetri –Jhatikara 765kV D/c line	170 km	786
5.	765kV bays at Jhatikara for Khetri – Jhatikara 765kV D/c line	765kV line bay-2	37
6.	1x240 MVAR Switchable Line reactors for each circuit at Jhatikara end of Khetri – Jhatikara 765kV D/c line along with reactor bays	240 MVAR Line reactor -2 765 kV Reactor bay -2	76
Total Rs (in Crore)			1365

Note:

- a. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
 - b. POWERGRID to provide space for 2 nos of 400kV bays at Sikar (PG) for termination of Khetri – Sikar (PG) 400kV D/c line
 - c. POWERGRID to provide space for 2 nos of 765kV line bays & space for 2nos. of 240 MVAR Switchable Line reactors along with reactor bays at Jhatikara for termination Khetri –Jhatikara 765kV D/c line.
- 6.3.1** CEA stated that transmission system for 8.9 GW of solar RE projects from Bhadla (3.55 GW), Fatehgarh (3.5 GW), Bikaner (1.85 GW) complexes in Rajasthan was technically agreed in the 2nd meeting of NRSCT held on 13.11.2018. The scheme is required for evacuation of power from balance 6050 MW of RE potential out of total quantum of 8.9 GW (2.850 GW LTA already granted).
- 6.3.2** NCT recommended the above schemes for implementation in through TBCB by December 2020 in 24 months (19 months implementation + 5 months bidding time).
- 6.3.3** As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st NRSCT meeting held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.

6.4 Name of Scheme: Transmission system associated with LTA applications from Rajasthan SEZ Part-D

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Bikaner(PG) – Khetri S/s 765kV D/c line	220km	1018
2.	765kV Bays at Bikaner(PG) & Khetri for Bikaner(PG) – Khetri S/s 765kV D/c line	765kV line bay-4	37
3.	1x240 MVAr Switchable line reactor for each circuit at each end of Bikaner – Khetri 765kV D/c line along with reactor bays	1x240 MVAr Line reactor -4 765 kV Reactor bay -4	153
Total Rs (in Crore)			1208

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Note:

- a. The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.
- b. Powergrid to provide space for 2 nos of 765kV bays & space for 2x240 MVAR switchable line reactors at Bikaner(PG) for termination of Bikaner(PG) – Khetri S/s 765kV D/c line
- c. Developer of Khetri S/s to provide space for 2 nos of 765kV bays at Khetri S/s & space for 2x240 MVAR switchable line reactors for termination of Bikaner(PG) – Khetri S/s 765kV D/c line

6.4.1 CEA stated that transmission system for 8.9 GW of solar RE projects from Bhadla (3.55 GW), Fatehgarh (3.5 GW), Bikaner (1.85 GW) complexes in Rajasthan was technically agreed in the 2nd meeting of NRSCT held on 13.11.2018. The scheme is required for evacuation of power from balance 6050 MW of RE potential out of total quantum of 8.9 GW (2.850 GW LTA already granted).

6.4.2 NCT recommended the above schemes for implementation in through TBCB by December 2020 in 24 months (19 months implementation + 5 months bidding time).

6.4.3 Scheme under 6.3 and 6.4 are to be implemented in same time frame.

6.4.4 As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st NRSCT meeting held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.

6.5 Name of Scheme: ICT Augmentation works at existing Moga (PG) ISTS S/S associated with LTA applications from SEZs in Rajasthan:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Augmentation with 765/400kV, 1x1500MVA transformer (3 rd) at Moga S/s	1x1500MVA, 765/400kV 765kV ICT bay-1 400kV ICT bay-1	73
Total Rs (in Crore)			73

6.5.1 Injection of power from 3330 MW LTA already granted to RE projects with the green energy Corridor in NR (under implementation) is likely to flow towards Moga (through Bikaner –Moga 765kV D/c line). The scheme has been proposed to take care of ICT overloading at Moga under N- 1 contingency.

6.5.2 NCT recommended the above scheme for implementation through RTM in compressed time schedule of 9 months by September 2019.

6.5.3 As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st meeting of NRSCT held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.

6.6 Name of Scheme: ICT Augmentation works at Bhadla(PG) associated with 1630 MW LTA granted at Bhadla:

Sl.	Scope of the Transmission Scheme	Capacity/Ckm	Estimated
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No.			Cost (Rs.) Cr.
1.	Additional 3x500 MVA, 400/220kV 5 th , 6 th & 7 th ICT at Bhadla Pooling station.	3x500 MVA, 400/220kV 400 kV ICT bay-3 220 kV ICT bay-3	105

6.6.1 CTU informed that LTA of 830 MW (280 MW by Aug 2019, 550 MW by Oct 2020) and 800 MW (250 MW by September 2019, 500 MW by September 2020 & 50 MW by October 2020) have been granted at Bhadla with augmentation of 5th ICT and 6th & 7th ICT respectively at Bhadla.

6.6.2 The above ICTs are required in the time frame of August 19/ September 19. Therefore, **NCT recommended the above scheme for implementation through RTM with compressed time schedule of 8/ 9months.**

6.6.3 As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st NRSCT meeting held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.

6.7 Name of Scheme: ICT Augmentation works at existing Bhiwani (PG) ISTS S/S associated with LTA applications from SEZs in Rajasthan:

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Augmentation with 765/400kV , 1x1000MVA, transformer (3 rd) at Bhiwani (PG) S/s	1x1500MVA, 765/400kV, 765kV ICT bay-1 400kV ICT bay-1	65
Total Rs (in Crore)			243

6.7.1 The scheme has been proposed to take care of ICT overloading at Bhiwani(PG) under N-1 contingency with increased flow on Phagi –Bhiwani 765kV D/c line after implementation of Ajmer –Phagi 765kV D/c line (September 2020).

6.7.2 NCT recommended the scheme for implementation through TBCB with implementation **schedule of September 2020.**

6.7.3 As the transmission scheme for evacuation of power from SEZs in Rajasthan was agreed technically in the 1st NRSCT meeting held on 13.11.2019, therefore, CTU needs to take regulatory approval from CERC for the scheme.

6.8 Transmission system for providing connectivity to RE projects at Bikaner(PG), Fatehgarh-II & Bhadla –II:

Name of Scheme: Transmission system for providing connectivity to RE projects at Bikaner (PG):

Sl. No.	Scope of the Transmission Scheme	Capacity/Ckm	Estimated Cost (Rs.) Cr.
	Creation of 220 kV level at Bikaner (PG) with transformation capacity of 2x500MVA, 400/220kV transformers 4 nos. of 220kV line bays	2x500 MVA, 400/220 kV 400 kV ICT bay-2	93

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		220 kV ICT bay-2 220kV line bays-4	
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Name of Scheme: Transmission system for providing connectivity to RE projects in Fatehgarh-II:

Sl. No.	Scope of the Transmission Scheme	Capacity/Ckm	Estimated Cost (Rs.) Cr.
1	Additional (4 th) 765/400kV transformer at Fatehgarh-II	1x1500MVA, 765/400kV 5x500 MVA, 400/220 kV	298
2	Creation of 220kV level Fatehgarh -2 in Jaisalmer Distt (Fatehgarh-2) 9 nos. of 220kV line bays	765 kV ICT bay-1 400 kV ICT bay-6 220 kV ICT bay-5 220kV line bays- 9	

Name of Scheme: Transmission system for providing connectivity to RE projects in Bhadla-II:

Sl. No.	Scope of the Transmission Scheme	Capacity/Ckm	Estimated Cost (Rs.) Cr.
1	Additional (3 rd) 765/400kV transformer at Bhadla-II	1x1500MVA, 765/400kV 5x500 MVA, 400/220 kV	298
2	Creation of 220kV level at Bhadla-II 10 nos. of 220kV line bays	765 kV ICT bay-1 400 kV ICT bay-6 220 kV ICT bay-5 220kV line bays- 9	

6.8.1 The transmission system for 8.9 GW of solar RE projects from Bhadla (3.55 GW), Fatehgarh (3.5 GW), Bikaner (1.85 GW) complexes in Rajasthan was technically agreed in the 2nd meeting of NRSCT held on 13.11.2018. The above schemes are required for providing connectivity to potential RE projects of 6050 MW (out of total quantum of 8.9 GW) at Bhadla- II(2.75 GW), Bikaner (1GW) & Fatehgarh-II (2.3 GW) in Rajasthan.

6.8.2 Since the above schemes have been firmied up based on future solar potential zones in NR, however no connectivity/LTA applications have been received from any of the RE generator.

6.8.3 NCT opined that implementation of the above scheme may be taken up only after receipt of connectivity/LTA application/s from RE generator/s or by SECI on behalf of RE generators.

6.9 Name of Scheme: 125 MVAR bus reactor at Kala Amb substation

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6.9.1 CEA stated that to control high voltage in the Northern grid, the provision of reactive compensation, was discussed and approved in the 39th meeting of Standing Committee on Power System Planning of Northern Region held on 29-30th May, 2017 which involved installation of bus reactors at various 220kV & 400kV buses. Further, in the 2nd ECT installation of bus reactors at various substations of POWERGRID in Northern Region was recommended for implementation through RTM by POWERGRID as a part of the scheme NRSS-XL. The scheme which was agreed in the 39th meeting of SCPSNR also involved installation of 125 MVAR bus reactor at Kala Amb substation. The Kala Amb substation is under implementation through TBCB.

The scope of works is as follows:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (Rs.) Cr.
1.	1x125 MVAR, 420 kV Bus Reactor at Kala Amb	1x125 MVAR, 420kV bus reactor 1 420kV reactor bay	16

6.9.2 After deliberations, it was opined that the scheme is basically technical upgradation at existing ISTS (implemented through TBCB route by M/s POWERGRID).

6.9.3 NCT recommended the above scheme for implementation through RTM.

6.10 Name of Scheme: 12ohm series reactor at 400kV Mohindergarh S/s of M/s Adani:

6.10.1 The scheme to control Fault Level in Northern Region (Phase-II) was discussed and approved in the 39th meeting of Standing Committee on Power System Planning of Northern Region held on 29-30th May, 2017 and in the 2nd ECT the scheme was recommended for implementation through RTM by Powergrid. The scheme which was agreed in the 39th meeting of SCPSNR also involved installation of 12ohm Series Line reactors in Mohindergarh–Dhanonda 400kV D/c line Ckt I & II at Mohindergarh end. Mohindergarh substation is owned by M/s Adani Power limited.

The scope of works is as follows:

Sl. No.	Scope of the Transmission Scheme	Estimated Cost (Rs.) Cr.
1	12ohm Series Line reactors in Mohindergarh–Dhanonda 400kV D/c line (Ckt I & II) at Mohinder garh end	50

6.10.2 After deliberations, it was opined that the scheme involves works at existing ISTS HVDC tation (of M/s Adani Power limited). The above works falls under the category of technical upgradation.

6.10.3 NCT recommended the above scheme for implementation through RTM.

6.11 Name of Scheme: 2 Nos. of 220kV bays at 3x315 MVA, 400/220kV Samba (Jatwal) (PG) S/s

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6.11.1 The scheme for providing 2 nos. of 220kV bays at 3x315 MVA, 400/220kV Samba (Jatwal) (PG) S/s for termination of Samba (Jatwal) (PG) –Samba (JKPDD) 220kV D/c line under ISTS was agreed in 1st meeting of NR SCT held on 11/09/2018.

The scope of works is as follows:

Sl. No.	Scope of the Transmission Scheme	Capacity/Ckm	Estimated Cost (Rs.) Cr.
1	2 nos. of 220kV line bays at Samba (Jatwal) (PG)	220 kV line bays- 2	10.00

6.11.2 CTU appraised that the Samba (Jatwal) (PG) –Samba (JKPDD) 220kV D/c line is under implementation (expected commissioning by November 19) as a part of PMDP -2015 and above bays are required for terminating this line at 400/220kV Samba (Jatwal) (PG) S/s.

6.11.3 After deliberations, NCT recommended the scheme for implementation through RTM in the matching time frame of the transmission line (November 19).

7 New ISTS Transmission Schemes in Southern Region:

CEA stated that for the transmission schemes agreed in SRSCT (given at item 5.4 above) following packages are proposed:

7.1 Evacuation of power from RE sources in Wind Energy Zones in Tamil Nadu, Karnataka and Andhra Pradesh:

Name of Scheme: Evacuation of power from RE sources in Tirunelveli and Tuticorin Wind Energy Zone (Tamil Nadu) (500MW)

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1	Addition of 1x500 MVA, 400/230kV ICT (4 th) at Tuticorin-II GIS sub-station.	1x500MVA, 400/230kV 400kV ICT bay-1 230kV ICT bay-1	37
Total Rs (in Crore)			37

Note: Powergrid to provide space for 400/230kV ICT (4th) at Tuticorin-II sub-station.

Name of Scheme: Evacuation of power from RE sources in Karur / Tiruppur Wind Energy Zone (Tamil Nadu) (2500MW)

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 5x500 MVA, 400/230 kV Karur Pooling Station (at a location in between Karur Wind zone and Tiruppur wind zone) 9 Nos. of 230kV line bays for interconnection of wind projects	5x500MVA, 400/230kV 400kV ICT bay-5 230kV ICT bay-5 400kV line bay- 4 400kV reactor bay -2 230kV line bays-9	284

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2.	LILO of both circuits of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS	50km	277
3.	2x125 MVA,400kV bus reactor at Karur PS	125 MVA reactor-2	17
Total Rs (in Crore)			578

Name of Scheme: Evacuation of power from RE sources in Koppal Wind Energy Zone (Karnataka) (2500MW)

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 5x500 MVA, 400/220kV pooling station near Munirabad /suitable location in Koppal distt. 9 Nos of 220kV line bays for interconnection of wind projects Space provision for future expansion.	5x500MVA, 400/220kV 400kV ICT bay-5 220kV ICT bay-5 400kV line bay- 4 400kV reactor bay -2 220kV line bays-9	284
2.	Pooling station (near Munirabad /suitable location in Koppal distt.) - Munirabad 400 kV D/c Line (with Quad Moose ACSR conductor)	50km	138
3.	Pooling station (near Munirabad /suitable location in Koppal distt.) - Narendra (New) 400 kV D/c Line (with Quad Moose ACSR conductor)	125km	346
4.	400kV lines bays at Munirabad (2 nos) and Narendra(new) (2 nos)	400kV line bay- 4	39
5.	2x125 MVA,400kV bus reactor at Pooling station (near Munirabad /suitable location in Koppal distt.)	125 MVA reactor-2	17
Total Rs (in Crore)			824

Name of Scheme: Evacuation of power from RE sources in Kurnool Wind Energy Zone (3000MW) /Solar Energy Zone (AP)(1500MW):

Sl. No.	Scope of the Transmission Scheme	Capacity /ckm	Estimated Cost (Rs.) Cr.
1.	Establishment of 765/400/220kV 3x1500 MVA, 9x500 MVA Pooling station at suitable location in Kurnool Distt (Kurnool-III) with 1x330 MVA (765kV) & 1x125MVA (400kV) bus reactor	3x1500 MVA, 765/400kV 9x500MVA, 400/220kV 765kV ICT bay-3 400kV ICT bay-12 220kV ICT bay-9	760

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	220kV line bays for interconnection of wind projects (15 nos)	400kV reactor bay -1 220kV line bays-15 765kV reactor bay -1	
2.	Kurnool –III PS - Kurnool(new) 765 kV D/c Line	100km 765kV line bays-2	500
3.	Kurnool –III PS-Maheshwaram(PG) 765 kV D/c Line	250km 765kV line bays-2	1193
4.	765kV lines bays at Kurnool(new) (2 nos) and Maheshwaram(PG) (2 nos)		74
5.	240 MVar Switchable line reactors at both ends of Kurnool-III PS – Maheshwaram(PG) 765 kV D/c Line along with bays	240 MVar line reactor -4 Reactor bays -4	153
Total Rs (in Crore)			2680

Note: (i) PGCIL to provide space for 2nos. of 765kV bays both at Kurnool(new) and Maheshwaram (PG) S/s

(ii) PGCIL to provide space at Maheshwaram (PG) for 765kV Switchable line reactors at Maheshwaram end of Kurnool-III PS –Maheshwaram (PG) 765 kV D/c Line

7.1.1 The above schemes have been firmed up based on future solar potential zones in SR, however no connectivity/LTA applications have been received from any of the RE generator.

7.1.2 NCT opined that implementation of the above scheme may be taken up only after receipt of connectivity/LTA application/s from RE generator/s or by SECI on behalf of RE generators.

7.2 High loading of Nellore – Nellore (PS) 400kV (Quad) D/c line:

The scope of works is as follows:

Sl. No.	Scope of the Transmission Scheme	Estimated Cost (Rs.) Cr.
1	Bypassing of Nellore PS – Nellore PG 400kV D/c (Quad) line & Nellore PG – Thiruvalam 400kV D/c (quad) line at Nellore PG to form Nellore PS – Thiruvalam 400kV D/c (Quad) direct line	1.00
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	

7.2.1 CEA appraised that the scheme has been agreed to address the high loading on 400kV Nellore PS – Nellore PG line and high short circuit level at Nellore PG in the 42nd Standing Committee on Power System Planning in Southern Region held on 27/04/2018.

7.2.2 As the scope of work includes only Bypassing arrangement in existing transmission line and Conversion of line reactor as bus reactor and the scheme is basically technical

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upgradation at existing ISTS substation, therefore, may be implemented through RTM as per provision 7.1(7) of Tariff Policy.

7.2.3 NCT recommended the above scheme for implementation through RTM.

8 New ISTS Transmission Schemes in Northern Eastern Region:

8.1 Name of Scheme: Strengthening of transmission system in Assam including formation of second 400kV node in ER-NER corridor:

The detailed scope of works is as follows:

Sl. No.	Scope of the Transmission Scheme	Capacity /Ckm	Estimated Cost (Rs.) Cr.
1	<p>Construction of 400kV Bornagar substation as switching station (to be upgraded to 765kV at a later stage)</p> <p>400kV</p> <ul style="list-style-type: none"> Line bays (including space for sw. line reactor): 6 no. [4 no for LILO of Bongaigaon-Balipara 400kV D/C (Quad) line at Bornagar and 2 no for Disconnection of Alipurduar – Bongaigaon 400kV D/C (Quad) line from Bongaigaon end and termination of the same line at Bornagar S/s so as to form Alipurduar – Bornagar 400kV D/C (Quad) line] Bus reactor: 2×125 MVAR Bus reactor bay: 2 no. <p>Space for future 765kV switchyard</p> <ul style="list-style-type: none"> 765/400kV 3x1500MVA ICTs (10x500MVA Single Phase Units) along with associated bays 765kV Line bays (including space for sw. line reactor): 8 nos. 765kV, 2x330MVAR (7x110 MVAR) Bus Reactors <p>Space for 400kV switchyard</p> <ul style="list-style-type: none"> 400kV Line bays (including space for sw. line reactor): 6 nos. 765/400kV 3x1500MVA ICTs (10x500MVA Single Phase Units) along with associated bays 400/220kV, 3x500MVA ICTs along with associated bays <p>Space for future 220kV switchyard</p> <ul style="list-style-type: none"> 400/220kV, 3x500MVA ICTs along with associated bays 10 nos. 220kV line bays 		

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2	LILO of Bongaigaon-Balipara 400kV D/C (Quad) line at Bornagar		
3	Disconnection of Alipurduar – Bongaigaon 400kV D/C (Quad) line from Bongaigaon end and termination of the same line at Bornagar S/s so as to form Alipurduar – Bornagar 400kV D/C (Quad) line		
4	Shifting of 2 nos. 420kV, 80MVAR Line Reactors from Bongaigaon end of Siliguri/Alipurduar – Bongaigaon 400 kV D/c (Quad) line to Bornagar end of Alipurduar – Bornagar 400kV D/c (Quad) line		
5	Shifting of 2 nos. 420kV, 63MVAR Line Reactors from Bongaigaon end of Balipara – Bongaigaon 400kV D/c (Quad) line to Bornagar end of Bornagar – Balipara 400kV D/c (Quad) line		

8.1.1 CEA informed that the above transmission scheme was agreed in the 6th and 7th meetings of SCSPNER held on 03-10-2016 and 17-5-2018. The scheme, interalia, envisages construction of 400 kV Bornagar sw. station (to be upgraded to 765kV at a later stage) and its interconnection with Katihar (Eastern Region) via Parbotipur (Bangladesh) through 765kV line. This line would also provide additional connectivity to NER. It was appraised that the 765 kV link with Bangladesh is under discussion. As such for implementation of this project, we may wait till further discussion with Bangladesh.

8.1.2 NCT decided to defer the scheme till finalization of 765kV link with Bangladesh and explore other measures to enhance reliability of Bongaigaon sub-station.

8.2 **Name of Scheme: Construction of 2 nos. 132 kV feeder bays at Malda 400 kV substation of POWERGRID**

The scope of works are as follows:

Sl. No.	Scope of the Transmission Scheme	Capacity /Ckm	Estimated Cost (Rs.) Cr.
1	Replacement of existing Single Main & Transfer (SMT) scheme with Double Main (DM) scheme at 132kV level at Malda (POWERGRID) substation in GIS along with additional 2 no. of 132kV GIS line bays for Manikchak/Paranpur – Malda (POWERGRID) 132kV D/c line		

8.2.1 This work comprises of replacement of existing bus scheme to Double Main scheme at Malda (POWERGRID) substation and additional 2 no. of 132kV GIS line bays, the scheme is basically technical upgradation at existing ISTS substation, therefore, may be implemented through RTM as per provision 7.1(7) of Tariff Policy.

8.2.2 NCT recommended the above scheme for implementation through RTM.

8.3 **Reviewing of Scheme “Transmission system for Phase-1 generation projects in Arunachal Pradesh”:**

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- 8.3.1** The following transmission system for Phase-1 hydro generation project in Arunachal Pradesh was discussed and finalised in the 3rd Standing Committee Meeting on Power System Planning of NER held on 21-12-2018.
- Dinchang- Rangia / Rowta Pooling Point 400 kV D/C line (with Quad Moose ACSR conductor),
 - LILO of both ckts of Balipara- Bongaigaon 400 kV D/C line (with Twin Moose ACSR conductor) at Rangia/ Rowta,
 - Establishment of 7x166 MVA, 400/220 kV Pooling station (GIS) at Dinchang
 - Establishment of 2x500 MVA, 400/220 kV Pooling station at Rangia/ Rowta in Upper Assam
- 8.3.2** In the 35th meeting of Empowered Committee on Transmission held on 14-09-2015, the above scheme was recommended to be implemented through TBCB (BPC: RECPTCL). In the 37th meeting of Empowered Committee on Transmission held on 20-09-2017, it was decided that *“The scheme would be taken up for implementation after ascertaining the progress of hydro projects by CEA”*.
- 8.3.3** In the 7th meeting of Standing Committee Meeting on Power System Planning of NER held on 21-12-2018, it was decided that element b) and d) at 8.3.1 above would be implemented by AEGCL as intra-state transmission scheme.
- 8.3.4** In view of above the modified **“Transmission system for Phase-1 generation projects in Arunachal Pradesh”** scheme would consist of the elements a) and c) at 8.3.1 above.
- 8.3.5** CTU informed that there is no progress of the HEPs, which are planned to be pooled at Dinchang pooling station.
- 8.3.6** **After deliberations, in view of non-implementation of the HEPs planned to be pooled at Dinchang Pooling station, it was agreed the scheme may be recommended for de-notification.**

9 Director (Transmission) MoP, informed the following issues for discussion in NCT:

- Implementation of two number of 400kV line bays at Surajmaninagar substation for termination of Surajmaninagar – North Comila 400kV D/C line was earlier agreed in ECT for implementation under RTM by owner of Surajmaninagar ISTS station “NER-II Transmission Limited”. However, M/s Sterlite power has proposed to construct these bays under TBCB and requested NCT to discuss. The matter was discussed in a meeting held on 25.10.2018 under the chairmanship of Secretary (Power), MoP, wherein, it was decided that these bays would be implemented by M/s Sterlite under RTM, as already decided in 2nd meeting of ECT. The bays may be implemented under RTM. NCT noted the same.
- The Indian portion of Arun-III HEP (Nepal) – Mujjaffarpur 400kV D/C line was discussed earlier in 2nd meeting of ECT, in which, the scheme was deferred for further discussion with stakeholders. Further, it was informed that this link is being further discussed in JTT of India-Nepal and therefore, would be put up to NCT in its next meeting.
- Director (Transmission) MoP stated that in a meeting held in MoP on 28.11.2018, it was decided that one dedicated transmission line for evacuation of power from NKSTPP is to be implemented. NCT opined that as the dedicated transmission line is to be implemented by generating company and it is not in the purview of NCT.

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Meeting ended with thanks to the Chair.

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Annexure - I

List of Participants of the second meeting of National Committee on Transmission held on 04.12.2018 in CEA

S.No.	Name (Smt/Shri)	Designation
I	CEA	
	P.S. Mhaske	Chairperson
	Somit Dasgupta	Member (E&C)
	Pardeep Jindal	Chief Engineer (PSPA-II)
	Awdhesh Kumar Yadav	Director (PSPA-I)
	B.S. Bairwa	Director (PSPA-II)
	Manjari Chaturvedi	DD (PSPA-I)
	Satyendra Kr. Dotan	DD (PSPA-II)
	Priyam Srivastava	AD (PSPA-I)
	Jitesh Shrivastava	AD (PSPA-I)
	Nitin Deswal	AD (PSPA-I)
	Kanhaiya Singh Kushwaha	AD (PSPA-I)
	Ajay Kumar	AD (PSPA-II)
	Pranay Garg	AD (PSPA-II)
II	MoP	
	D.K. Srivastava	Director (Trans.)
III	NITI AAYOG	
	Manoj Kumar Upadhyay	Dy. Advisor
IV	Expert Members	
	P.K. Pahwa	Ex. Member (GO&D), CEA
	Prabhakar Singh	Ex. Director, PGCIL
V	CTU	
	Subir Sen	COO (CTU-Plg)
	Ashok Pal	CGM (CTU-Plg)
	Mukesh Khanna	CGM (CTU-Plg)
	Kashish Bhambhani	DGM (SG)
VI	PFCCL	
	Sanjay Nayak	AVP
VII	RECTPCL	
	Bhupender Gupta	Addl. CEO

Annexure-II**Transmission schemes approved for implementation through Regulated tariff mechanism in 2nd meeting of ECT**

1. Northern Region System strengthening Scheme –XL (NRSS-XL)
Part-A: System Strengthening Scheme in Northern Region
Part-B: Reactive Power Compensation in Northern Region
Part-C: System Strengthening Scheme in Northern Region for grant of LTA to M/s Essel Saurya Urja Company of Rajasthan Ltd
2. Replacement of 1x315 MVA ICT by 1x500 MVA along with two nos. of 220 kV line bays at Lucknow
3. 1x315 MVA, 400/220 kV ICT (to be shifted from Lucknow after refurbishment if required) with 2 nos. of 220 kV line bays at Gorakhpur
4. Western Region Strengthening Scheme –XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme – IX (NERSS-IX)

Note: TBCB - scheme already notified, Modification in scope of works of Package-2 to be notified.

5. Scheme to control Fault Level in Northern Region (Phase-II)
6. Measures to control fault level at Wardha Substation
7. System strengthening Scheme in Southern Region
8. Construction of 2 no. 400 kV GIS bays at 400/220 kV Chamera Pooling Station of PGCIL under Northern Region System Strengthening scheme
9. Additional 1x500 MVA, 400/220kV ICT at Saharanpur (PG) 400/220kV substation
10. Provision of Bus Reactors at High Voltage Nodes in Western Region
11. Augmentation of transformation capacity in Western Region
12. Provision of 400 kV 1x125 MVAr Bus Reactor at Champa Pool Split Bus Section –A
13. Conversion of 50 MVAr Fixed line reactor to Switchable reactors in Kankroli–Zerda 400 kV line at Kankroli S/S of POWERGRID
14. Transmission system for evacuation of 4000 MW of RE power in the Bhuj area under SECI bids (Tranche I to IV) at Bhuj PS
15. Transmission system for evacuation of 950 MW of RE power under SECI bids Tranche I to IV) at Tuticorin PS of POWERGRID
16. Construction of 2 no. 400 kV line bays at 400/220 kV Kozhikode (Areekode) substation of PGCIL for terminating North Trissur (Madakkathara)-Kozhikode (Areekode) 400kV D/C line of KSEBL
17. Implementation of 1x125 MVAr bus reactors at 400kV sub-stations of POWERGRID for reactive power compensation in SR
18. Termination of 400kV lines at Jeerat (WBSETCL) S/s under the ERSS-XV and ERSS-XVIII schemes

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19. 500MW HVDC back to back station at North Comilla (Bangladesh) for transfer of power through Surjamaninagar (India)–North Comilla (Bangladesh) : Indian Portion
20. 2 no. 400kV line bays at Muzaffarpur (POWERGRID) S/s for operation of Muzaffarpur-Dhalkebar 400kV D/c line (presently operated at 132kV) at rated voltage level of 400kV
21. Indian portion of Dhalkebar (Nepal)–Muzaffarpur (India) 400kV D/c (Quad Moose) line associated with 900MW Arun-3 HEP in Nepal
22. Conversion of 50MVAR (3x16.67 MVAR) bus reactor at Farakka to switchable line reactor due to space constraints in termination of Farakka – Baharampur 400kV D/c (Twin HTLS) line

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Annexure-III**Review Status of transmission schemes under bidding process - briefing by BPCs**

S. No.	Name of Transmission Project	Present Status	Deliberation in the meeting
1.	Connectivity System for Lanco Vidarbha Thermal Power Pvt. Ltd. (LVTPPL) and Inter State Transmission system strengthening in Chhatarpur area in Madhya Pradesh – BPC (PFCCL)	Empowered Committee in its 37 th 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.	CEA 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 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. Members agreed for the same.
2.	Western Region Strengthening Scheme- XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme- IX (NERSS-IX) – BPC (PFCCL)	<ul style="list-style-type: none"> • MoP vide Gazette Notification dated May 04, 2018 appointed PFCCL as the Bid Process Coordinator for the ITP” Western Region Strengthening Scheme- XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme- IX (NERSS-IX).” • PFCCL vide letter dated May 10, 2018 requested CTU to provide RfQ inputs. • CTU vide letter dated August 08, 2018 furnished the RfQ inputs. On receipt of inputs from CTU, RfQ notification was published on August 14, 2018 with the last date of submission of RfQ on September 13, 2018. • (07) Seven bidders were shortlisted at RfQ Stage on October 26, 2018 to participate in the next stage of bidding i.e RfP. • RfP documents were 	<p>PFCCL informed that, in the preliminary surveys, severe ROW problem in Navi Mumbai area has been observed. He added that it is very difficult to lay overhead lines over some stretch of 1.5 - 2 kms.</p> <p>Members deliberated on the issue and it was agreed to have a joint visit by representatives from CEA, CTU, MSETCL and BPC to access the ROW and suggest technical alternatives such as Gas Insulated Line (GIL) etc., if required and accordingly, the scope of the scheme may be modified.</p>

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		issued to the shortlisted bidders w.e.f November 13, 2018 with the last date of submission of RfP on January 14, 2019.	
3.	400 kV Udupi (UPCL) – Kasargode D/C line -- BPC (RECTPCL)	<ul style="list-style-type: none"> • Request for Qualification (RFQ) was issued on 15.09.2018. • Following 10 (ten) bidders have submitted their response to RFQ and responses against RFQ were opened on 22.10.2018:- <ol style="list-style-type: none"> 1. L&T Infrastructure Development Projects Limited 2. Torrent Power Limited 3. Adani Transmission Limited 4. Kalpataru Power Transmission Limited 5. Sterlite Grid 14 Limited 6. Power Grid Corporation of India Limited 7. Megha Engineering & Infrastructure Ltd. 8. The Tata Power Company Limited 9. Kerala State Electricity Board Limited 10. Alfanar Company <ul style="list-style-type: none"> • Evaluation of the responses against RFQ is on-going. 	<p>BPC stated that the bus extension works required at Udupi generation switchyard for implementation of 2 nos. 400kV line bays has not been included in the scope of works.</p> <p>A meeting was held on 19.11.2018 in CEA regarding provision of technical inputs for 2 nos. of 400 kV bays at Udupi generation switchyard for “400 kV Udupi (UPCL) – Kasargode D/C Line” to be implemented through TBCB, in which, the following was agreed:</p> <ol style="list-style-type: none"> 1. Bus Extension Works at Udupi generation switchyard needs to be included in the scope of works covered under TBCB for Transmission System for “400 kV Udupi (UPCL) – Kasargode D/C Line” at RfP stage. 2. For preparing a detailed technical specification for bus extension works at Udupi generation switchyard for RfP documents, BPC to organize a site visit of a team comprising of representatives from CTU, KPTCL, RECTPCL(BPC), UPCL and CEA. <p>Members agreed on the same.</p>