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भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन - I प्रभाग

Power System Planning & Appraisal - I Division

सेवा में / To

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.	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.

Subject: 5th meeting of "National Committee on Transmission" (NCT) held on 21st August 2019 – Minutes of the meeting

Sir/Madam,

Minutes of the 5th meeting of National Committee on Transmission (NCT) held on 21.08.2019 in conference room of CEA (Chintan), 2nd Floor, Sewa Bhawan, R.K.Puram, New Delhi is available on CEA website: www.cea.nic.in (path to access – Home Page – Wing - Power System-PSPA-I-National Committee on Transmission).

Yours faithfully,

(Goutam Roy) 28.08.19

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

Copy to:

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

Minutes of the 5th meeting of National Committee on Transmission (NCT)

Date and Time: 21.08.2019, 15:00 hrs

Venue: Conference Room of CEA (Chintan), 2nd Floor, Sewa Bhawan, R.K. Puram, New Delhi

List of Participants is enclosed as Annexure-I

Member (E&C), CEA welcomed the participants to the 5th meeting of the NCT and requested Chief Engineer (PSPA-I), CEA to take up the agenda for discussion.

1.0 Confirmation of the minutes of 4th meeting of National Committee on Transmission (NCT)

1.1 CEA stated that minutes of 4th meeting of National Committee on Transmission held on 31.07.2019 were issued vide CEA letter No. CEA-PS-11-15(11)/1/2018-PSPA1 dated 09.08.2019.

1.2 CTU suggested some corrections in the MoM of the 4th NCT which were discussed and following modifications were agreed:

Item No.	Name of the Scheme	As recorded in minutes of 4th NCT	Modification agreed
6.1.4.1 Page 15	**Transmission System for evacuation of power from RE projects in Rapar (3000 MW) and Lakadia (2000 MW) SEZ – Part C (Ahmedabad 400 kV interconnection)**.	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.	CTU stated that Pirana (T) - Pirana (PG) 400 kV D/c line is an existing line of **Torrent POWERGRID Limited [a JV of Powergrid & TPL]** 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.
6.1.6 Table at i)	**Transmission System for evacuation of power from RE projects in Banaskantha (2500 MW) REZ – Part A (Augmentation of transformation capacity at Radhanesda PS)**	S.no 1, 3rd Column: 400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 **220kV line bays- 9 nos**	400/220 kV, 500 MVA ICT – 5 400 kV ICT bays – 5 220 kV ICT bays – 5 **220kV line bays- 7 nos.**
		S.no 1, 4th Column: **Estimated Cost: 193**	**Estimated Cost: 185**
6.3.1 Heading of the 3rd column of table on Page 29	**Connectivity system for NTPC Lara STPP 2x800MW Stage-II generation project**	Capacity/**ckm**	Capacity/**km**

1.3 Expert Members stated that in the 4th NCT, it was agreed that SECI needs to invite bids for the entire potential for which transmission system has been planned and ensure that entire capacity is awarded to avoid underutilization/non-utilization of the planned ISTS scheme. The same has also been recorded in the minutes of the meeting. In addition to this, the implications of non-utilization of transmission assets created for the purpose also needs to be emphasized, in the event of non-materialization of the RE generation bids.

1.4 CTU stated that CERC in its order dated 9th August, 2019 in the petition for grant of Regulatory Approval for execution of the transmission system for 8.9 GW of Solar Energy Zones in Rajasthan has mentioned the following:

i) CTU shall endeavor to match the construction of transmission system with the COD of the generators. If required, CTU may even defer the construction of such systems, in consultation with MoP and MNRE so that no transmission capacity remains unutilized.
ii) The Regulatory Approval granted is subject to the condition that the distribution companies and consumers shall be liable for tariff corresponding to the RE generation capacity commissioned and the transmission system put to use.
iii) CTU shall ensure that the cost of implementation shall not be passed onto the consumers in any way till the solar generators are commissioned.

In view of the above, LTA by RE generators/SECI is required before taking up the implementation of the transmission schemes associated with RE generators. With LTA, the beneficiary/target beneficiary and the implementation time frame of the transmission scheme would be available.

1.5 The above issue was deliberated in detail by the NCT members. NCT suggested CTU to firm up, in consultation with MNRE and SECI, the location where RE bids would be invited, the quantum of RE bids and the implementation timeframe of the RE projects before taking up the implementation of the associated transmission system.

1.6 NCT members opined that a minimum period of 18 months needs to be given for implementation of the scheme by the successful bidder (Transmission Service Provider) from the date of SPV acquisition (zero date). 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 schemes proposed are transmission schemes associated with RE power to be implemented by December' 2021, therefore, completion time of the schemes associated with RE projects were considered as December' 2021. The implementation time-frame for the transmission schemes agreed in the 4th NCT meeting needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation of the associated transmission system.

1.7 The Minutes of the 4th NCT meeting alongwith modifications at Item 1.2 and 1.6 were confirmed by the members.

2.0 Modifications in the transmission schemes already recommended by NCT and ECT

2.1 Transmission Schemes recommended for implementation through TBCB:

CEA stated that Fatehgarh-II –Bhadla-II 765 kV D/c line was agreed as a part the transmission system associated with 8.9 GW RE projects in Rajasthan in the 2nd NRSCT meeting held on 13.11.2018. Subsequently, in the 2nd NCT meeting held on 04.12.2018, Fatehgarh-II –Bhadla-II 765 kV D/c line was recommended to be implemented through TBCB route as "Transmission system associated with LTA applications from Rajasthan SEZ Part-B". The provision of 240 MVAR switchable line reactor in each circuit at Fatehgarh II end of Fatehgarh II –Bhadla II 765 kV D/c line was agreed in the 4th NRSCT meeting held on 25.07.2019 in view of the increased length of the line (based on survey report of BPC).

Item No.	Scheme name	Table location	As recorded in the minutes of the 2nd meeting of NCT	Corrigendum proposed
6.2	Transmission system associated with LTA applications from Rajasthan SEZ Part-B	S.no 1 , 2nd Column i.e **Scope of the Transmission Scheme**	Fatehgarh-II – Bhadla -II 765kV D/c line	Fatehgarh-II – Bhadla -II 765kV D/c line alongwith 1x240 MVAR switchable line reactor in each ckt at Fatehgarh-II end.
		S.no 1, 3rd column i.e. **Capacity/ckm**	130 km	130 km 240 MVAr, 765 kV reactor-2 765kV reactor bay-2
		Note b. under the table	*Developer of Fatehgarh-2 and Bhadla -2 to provide space for 2 nos of 765kV bays at Faetehgarh-2 and Bhadla -2 for termination of Fatehgarh-2 – Bhadla -2 765kV D/c line*	• *Developer of Fatehgarh-2 to provide space for 2 nos of 765kV bays and 2 no. of 240 MVAr, 765 kV switchable line reactors along with bays at Faetehgarh-2 for termination of Fatehgarh-2 – Bhadla -2 765kV D/c line* • *Developer of Bhadla -2 to provide space for 2 nos of 765kV bays at Bhadla -2 for termination of Fatehgarh-2 – Bhadla -2 765kV D/c line*

2.2 Transmission Schemes recommended for implementation through RTM

CEA stated that LILO of Fatehgarh –Bhadla 765 kV D/c line (operated at 400 kV) at Fatehgarh II substation was agreed as a part the transmission system associated with 8.9 GW RE projects in Rajasthan in the 2nd NRSCT meeting held on 13.11.2018. Subsequently, in the 2nd NCT meeting held on 04.12.2018, the same was recommended to be implemented through RTM route as a part of the scheme "Transmission system associated with LTA applications from Rajasthan SEZ Part-A". The provision of 240 MVAR switchable line reactor in each circuit at Fatehgarh II end of Fatehgarh-II – Bhadla 765 kV D/c line (formed after LILO of Fatehgarh-Bhadla 765 kV line to be operated at 400 kV level at Fatehgarh-II)

was agreed in the 4th NRSCT meeting held on 25.07.2019 in view of the increased length of the line.

Item No.	Scheme name	Table location	As recorded in the minutes of the 2nd meeting of NCT	Corrigendum proposed
6.1	Transmission system associated with LTA applications from Rajasthan SEZ Part-A	Sl. No. 11 2ndColumn: **Scope**	Additional scope to be added	2x240 MVAr, 765 kV Switchable line reactor at Fatehgarh-2 end for Fatehgarh 2 – Bhadla (PG) 765 kV D/c line (after LILO)
		Sl no. 11 3rd column **Capacity**	Additional scope to be added	240 MVAr, 765 kV reactor-2 765kV reactor bay-2

2.3 Members noted the modifications in the already approved transmission schemes.

3.0 Status of transmission schemes under bidding process - briefing by BPCs

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

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

Sl. No.	Independent Transmission Projects	Estimated Cost of the Project as per Empowered Committee (in Rs. Crore)	Estimated Cost of the Project as per Cost Committee (including RoW compensation) (in Rs. Crore)
1.	Construction of Ajmer(PG)-Phagi 765 kV D/c line along with associated bays for Rajasthan SEZ	583	872.06
2.	Transmission system associated with LTA applications from Rajasthan SEZ-Part B	676	1186.25

4.1 Members noted the same.

5.0 New Inter-State Transmission Schemes in Northern Region:

5.1 Transmission schemes for Solar Energy Zones (SEZs) in Rajasthan (8.1 GW) under Phase-II

CEA stated that in the 4th meeting of NRSCT held on 25.07.2019, the following transmission system for evacuation of power from **8.1 GW** potential RE generation, under Phase-II, in

Northern Region (**Ramgarh/Kuchheri-1.9 GW, Bikaner-2.95 GW, Bhadla- 1.05GW & Fatehgarh-2.2GW)** was technically agreed:

Transmission schemes for Solar Energy Zones (SEZs) in Rajasthan (8.1 GW) under Phase-II

A. EHVAC Portion

i) Establishment of 400/220kV, 4x500 MVA pooling station at suitable location near Ramgarh/Kuchheri in Distt Jaisalmer (Ramgarh-II PS)
ii) Establishment of 400/220kV, 6x500MVA pooling station at suitable location near Bikaner (Bikaner-II PS) with suitable bus sectionalisation at 400 and 220 kV level.
iii) Establishment of 765/400kV, 3x1500MVA substation at suitable location in Narela (near delhi)
iv) Augmentation with 765/400kV, 2x1500MVA transformer (5^{th} & 6^{th}) at Fatehgarh-II PS.
v) Augmentation with 400/220kV, 4x500MVA transformer at Fatehgarh-II PS with suitable bus sectionalisation at 400 and 220 kV level
vi) Augmentation with 400/220kV, 3x500MVA transformer at Bhadla-II PS with suitable bus sectionalisation at 400 and 220 kV level.
vii) Augmentation with 765/400kV, 1x1500MVA (3^{rd})transformer at Bikaner(PG)
viii) Ramgarh-II PS –Fatehgarh-II PS 400 kV D/c Line (Twin HTLS[$])
ix) Ramgarh-II PS – Jaisalmer-II (RVPN) 400 kV D/c Line (Twin HTLS[$])
x) Fatehgarh-II PS – Bhadla-II PS 765kV D/c line (2^{nd})
xi) Bikaner-II PS – Khetri 400kV 2xD/c line (*Twin HTLS[$] line on M/c tower*)
xii) Khetri - Bhiwadi 400kV D/c line (Twin HTLS[$])**
xiii) Removal of LILO of one circuit of Bhadla-Bikaner(RVPN) 400kV D/c(Quad) line at Bikaner(PG). Extension of above LILO section from Bikaner(PG) upto Bikaner-II PS to form Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad) line
xiv) Khetri - Narela 765kV D/c line
xv) LILO of 765kV Meerut – Bhiwani S/c line at Narela S/s
xvi) Removal of LILO of Bawana – Mandola 400kV D/c(Quad) line at Maharani Bagh/Gopalpur S/s. Extension of above LILO section from Maharani Bagh/Gopalpur upto Narela S/s so as to form Maharanibagh – Narela 400kV D/c(Quad) and Maharanibagh -Gopalpur-Narela 400kV D/c(Quad) lines.
xvii) LILO of both circuits of Bawana – Mandola 400kV D/c(Quad) line at Narela S/s
xviii) Power reversal on ±500kV, 2500MW Balia – Bhiwadi HVDC line upto 2000MW from Bhiwadi to Balia
xix) 220kV line bays for interconnection of solar projects at Bikaner-II PS (10 nos.), Ramgarh-II PS (7 nos), Fatehgarh-II PS (8 nos) & Bhadla-II PS (4 nos)
xx) 1x125 MVAr (420kV), 2x240 MVAr (765kV) Bus Reactor at Narela Substation
xxi) 2x125 MVAr (420kV) Bus Reactor each at Bikaner-II & Ramgarh-II PS
xxii) 1x240 MVAr Switchable line reactor for each circuit at each end of Fatehgarh-II – Bhadla-II 765kV D/c line (2^{nd})
xxiii) 1x80 MVAr Switchable line reactor for each circuit at each end of Bikaner-II – Khetri 400kV 2xD/c line
xxiv) 1x240 MVAr Switchable line reactor for each circuit at each end of Khetri – Narela 765kV D/c line

*** Due to space constraints 400kV bays at Bhiwadi S/s to be implemented as GIS*

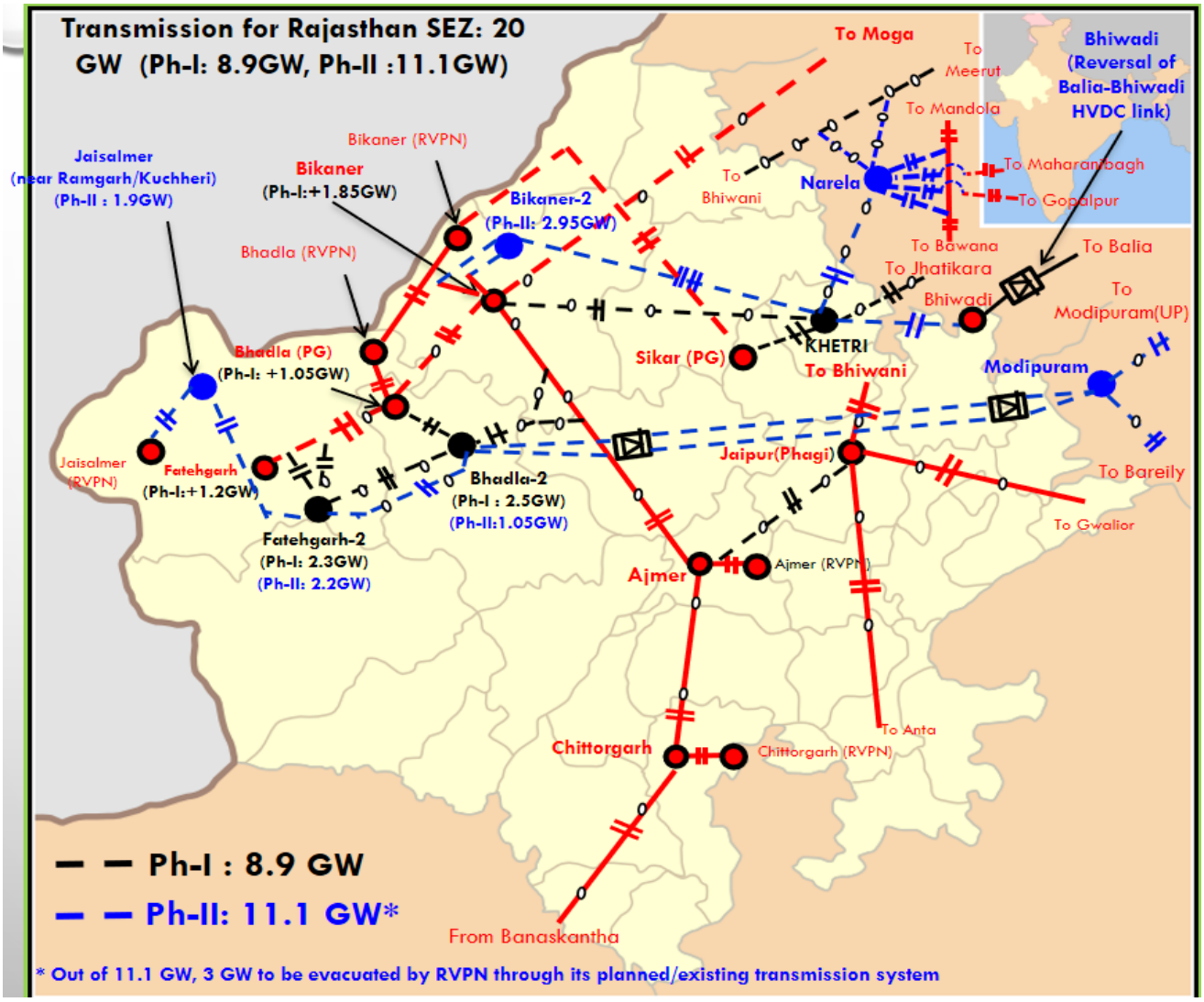
[$] with minimum capacity of 2200 MVA on each circuit at nominal voltage

B. HVDC Portion

1) VSC based HVDC system between Bhadla-II PS and suitable location near Modipuram
   i) ±400kV, 5000 MW HVDC terminal at Pooling point near Bhadla-II PS
   ii) ±400kV, 5000 MW HVDC terminal at Pooling point in suitable location near Modipuram
   iii) ±400kV HVDC line (Quad) between Bhadla-II PS and suitable location near Modipuram (on M/c tower)

AC interconnection at Pooling point in suitable location near Modipuram

2) 5x1500MVA transformer at suitable location (near modipuram)
3) Modipuram - Bareily (PG) 765kV D/c line
4) Modipuram - Modipuram (UPPCL) 765kV D/c line
5) 2x240 MVAr (765kV) Bus Reactor at Modipuram Substation
6) 1x240 MVAr Switchable line reactor for each circuit at each end of Modipuram - Bareily (PG) 765kV D/c line



For implementation purpose, the scheme has been split into following transmission packages:

5.1.1 Name of the Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part A

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 400/220 kV, 4x500 MVA SEZ Pooling Point at Ramgarh –II PS with 420kV (2x125 MVAR) bus reactor Future provisions: Space for 400/220 kV ICTs along with bays: 2 400 kV line bays alongwith Switchable line reactor: 4 220 kV line bays:4 420 kV bus reactor along with bay: 1	400/220 kV, 500 MVA ICT – 4 400 kV ICT bays – 4 220 kV ICT bays – 4 400kV line bays - 4 220 kV line bays – 7 125 MVAr, 420 kV bus reactor-2 420 kV reactor bay – 2	225
2.	Ramgarh-II SEZ PP – Fatehgarh- II 400kV D/c line (Twin HTLS)	Length – 150	255
3.	2 no. of 400 kV line bays at Fatehgarh- II for Ramgarh –II SEZ PP - Fatehgarh 400kV D/c line	400 kV line bays – 2	18
4.	Ramgarh –II – Jaisalmer-II(RVPNL) 400 kV D/c line (Twin HTLS)	Length- 60	102
5.	2 no. of 400 kV line bays at Jaisalmer- II for Ramgarh –II SEZ PP - Jaisalmer-II 400kV D/c line	400 kV line bays – 2	18
		Total	**618**

Note:

POWERGRID to provide space for 2 no of 400 kV bays at Fatehgarh II for Ramgarh-II SEZ PP – Fatehgarh- II 400kV D/c line (Twin HTLS)
M/s RVPNL to provide space for 2 no of 400 kV bays at Jaisalmer II for Ramgarh –II – Jaisalmer-II(RVPNL) 400 kV D/c line (Twin HTLS)
The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey.

5.1.1.1 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part A" may be considered for implementation through TBCB route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 1.9 GW in Ramgarh in similar time frame and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme , which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.2 Name of scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part A1 (765/400kV ICT augmentation at Fatehgarh II)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Augmentation with 765/400kV, 1x1500MVA transformer (5th) at Fatehgarh-II PS.	765/400 kV, 1500 MVA ICT – 1 765 kV ICT bays – 1 400 kV ICT bays – 1	72
		Total	**72**

5.1.2.1 CEA stated that establishment of 765/400/220kV, 4x1500MVA (765/400kV), 5x500MVA (400/220kV) Fatehgarh-II pooling station was agreed in the 2nd meeting of Northern Region Standing Committee on Transmission held on 13.11.2018 as part of transmission system for Solar Energy Zones in Rajasthan (8.9 GW-Phase I). In the 2nd meeting of NCT held on 04.12.2018, the transmission scheme "Transmission system associated with LTA applications from Rajasthan SEZ Part-A", which involved establishment of 765/400/220kV, 4x1500MVA (765/400kV), 5x500MVA (400/220kV) Fatehgarh-II pooling station was agreed to be implemented through RTM route.

5.1.2.2 The proposed scheme involves augmentation of transmission capacity at Fatehgarh II PS by 1x1500 MVA, 765/400 kV for enabling the injection of power from Ramgarh SEZ.

5.1.2.3 NCT recommended the following:

(d) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part A (765/400kV ICT augmentation at Fatehgarh II)" may be considered for implementation through RTM route as it involves upgradation of substation /addition of transformation capacity in under implementation substation.

(a) The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part A".

5.1.3 Name of the Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part B

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Fatehgarh-II PS – Bhadla-II PS 765kV D/c line (2nd)	Length-200	937
2.	2 no. of 765 kV line bays each at Fatehgarh-II and Bhadla-II for Fatehgarh-II PS – Bhadla-II PS 765kV D/c line (2nd)	765 kV line bays – 4	80
3.	1x240 MVAr Switchable line reactor for each circuit at each end of Fatehgarh-II – Bhadla-II 765kV D/c line (2nd)	240 MVAr, 765 kV reactor- 4 (2 reactors each at Fatehgarh-II and Bhadla-II) Switching equipments for 765 kV reactor - 4 (2 Switching equipments each at Fatehgarh-II and Bhadla-II) (*1x80 MVAr spare reactor, envisaged under phase-I, each at Fatehgarh-II and Bhadla-II to be used as spare for Fatehgarh-II – Bhadla-II 765kV D/c line (2nd))*	99
		Total	**1116**

Note:

(i) POWERGRID to provide space for 2 no of 765 kV bays each at Fatehgarh II and Bhadla II substation and space for 2 no of line reactors each at Fatehgarh II and Bhadla II substation

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

5.1.3.1 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part B" may be considered for implementation through TBCB route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.2 GW in Fatehgarh and 1.05 GW in Bhadla in similar time frame and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme, which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.4 Name of scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part B (765/400/220 ICT augmentation at Fatehgarh II and Bhadla-II)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Augmentation with 765/400kV, 1x1500MVA transformer (6^{th}) at Fatehgarh-II PS.	765/400 kV, 1500 MVA ICT – 1 765 kV ICT bays – 1 400 kV ICT bays – 1	72
2.	Augmentation with 400/220kV, 4x500MVA transformer at Fatehgarh-II PS with suitable bus sectionalisation at 400 and 220 kV level	400/220 kV, 500 MVA ICT – 4 400 kV ICT bays – 4 220 kV ICT bays – 4 220kV line bays - 7	167
3.	Augmentation with 400/220kV, 3x500MVA transformer at Bhadla-II PS with suitable bus sectionalisation at 400 and 220 kV level.	400/220 kV, 500 MVA ICT – 3 400 kV ICT bays – 3 220 kV ICT bays – 3 220kV line bays - 5	121
		Total	**360**

5.1.4.1 CEA stated that establishment of 765/400/220kV, 4x1500MVA (765/400kV), 5x500MVA (400/220kV) Fatehgarh-II pooling station and 765/400kV, 2x1500MVA Bhadla-II pooling station was agreed in the 2nd meeting of Northern Region Standing Committee on Transmission held on 13.11.2018 as part of transmission system for Solar Energy Zones in Rajasthan (8.9 GW-Phase I).In the 2nd meeting of NCT held on 04.12.2018, the transmission scheme "Transmission system associated with LTA applications from Rajasthan SEZ Part-A", which involved establishment of 765/400/220kV, 4x1500MVA (765/400kV), 5x500MVA (400/220kV) Fatehgarh-II pooling station and 765/400kV, 2x1500MVA Bhadla-II pooling station was agreed to be implemented through RTM route.

5.1.4.2 The proposed scheme involves augmentation of transmission capacity at Fatehgarh II PS by 1x1500 MVA, 765/400 kV and 4x500MVA, 400/220kV for enabling the injection of power from Fatehgarh SEZ under Phase II. The scheme also involves augmentation of transmission capacity at Bhadla II PS by 3x500MVA, 400/220kV for enabling injection of power from Bhadla SEZ under Phase II.

5.1.4.3 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part B (765/400/220 ICT augmentation at Fatehgarh II and Bhadla-II)" may be considered for implementation through RTM route as it involves upgradation of substation /addition of transformation capacity in under implementation substation.
(b) The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part B"
(c) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.2 GW in Fatehgarh and 1.05 GW in Bhadla in similar time frame and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

5.1.5 Name of the Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (VSC based HVDC terminal Package)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of +400kV, 5000 MW HVDC terminal at Pooling point near Bhadla-II PS	5000 MW	6500
2.	Establishment of ±400kV, 5000 MW HVDC terminal at Pooling point in Modipuram (ISTS)	5000 MW	
3.	5x1500MVA 765/400 kV ICT at Modipuram (ISTS) with 2x240 MVAr (765kV) Bus Reactor Future provisions: Space for 765 kV line bays alongwith switchable line reactors: 6 765 kV bus reactor bays: 2 400 kV line bays alongwith switchable line reactors: 8 400/220kV ICTs alongwith bays – 4	765/400 kV, 1500 MVA ICT – 5 765/400 kV, 500 MVA spare ICT (1-phase) – 1 765 kV ICT bays – 5 400 kV ICT bays – 5 240 MVAr, 765 kV reactor- 2 765 kV reactor bay – 2 1x80 MVAR, 765 kV, 1 ph Reactor (spare unit) -1 (*for both 1x 80 MVAr bus reactor and 1x80 MVAr line reactor on Modipuram(ISTS) - Bareily (PG) 765kV D/c line*)	455

	220kV line bays - 8		
		Total	**6955**

Note:

(i) Land for VSC based HVDC to be identified by the developer adjacent to proposed to Bhadla-II S/s so that interconnection between ± 400kV , 5000 MW VSC based HVDC terminal and 765/400 /220 kV Bhadla II PS could be established through suitable 400 kV interconnections.

(ii) Developer of Modipuram (ISTS) to provide space for 4 no of 765 kV line bays at Modipuram (ISTS) substation along with the space for 2 no of line reactors for termination of Modipurum(ISTS)- Modipuram(UPPTCL) 765 kV D/c line and Modipuram(ISTS)-Bareily(PG) 765kV D/c line.

5.1.5.1 CEA stated that the scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C " has been planned to enable the evacuation of RE power from Ramgarh, Fatehgarh and Bhadla SEZs under phase II through HVDC line from Bhadla II to Modipuram. For implementation purpose the scheme has been split into two parts namely VSC based HVDC package and HVAC package. The VSC based HVDC package includes Establishment of VSC based HVDC terminals at Bhadla II & Modipuram, 765/400 kV ICTs at Modipuram as well as ±400kV HVDC line from Bhadla II to Modipuram.

5.1.5.2 Expert members opined that VSC based HVDC package could be split into two parts namely (i) Establishment of VSC based HVDC terminals at Bhadla II & Modipuram, 765/400 kV ICTs at Modipuram and (ii) Construction of ±400kV HVDC line from Bhadla II to Modipuram. With this division, instead of one project of about Rs.10,000 Cr, there will be two projects of about Rs. 7000 Cr and Rs 3000 Cr. Even if the project is awarded as a single package, the actual implementation of VSC based HVDC terminal stations would be done by OEM and the implementation of the HVDC line would be done by any Transmission line Contractor.

5.1.5.3 NCT agreed with the suggestion of the Expert Members. The scheme to enable the evacuation of RE power from Ramgarh, Fatehgarh and Bhadla SEZs under phase II through HVDC line from Bhadla II to Modipuram was agreed to be split into three packages for implementation purpose

(i) Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (VSC based HVDC terminal Package)

(ii) Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (HVDC line package)

(iii) Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (HVAC package)

5.1.5.4 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (VSC based HVDC terminal Package)" may be considered for implementation through TBCB route

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 1.9 GW in Ramgarh, 2.2 GW in Fatehgarh and 1.05 GW in Bhadla in similar time frame and ensure that entire capacity is awarded so that the associated transmission scheme of 5 GW HVDC link is fully utilized.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme, which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.6 Name of the Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (HVDC line Package)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	±400kV HVDC line (Quad) between Bhadla-II PS and Modipuram (ISTS) (on M/c tower)	Length- 700 (@4.5 crore/km)	3150
		Total	**3150**

Note:

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

(ii) Developer of Modipuram (ISTS) to provide space for 4 no of 765 kV line bays at Modipuram (ISTS) substation along with the space for 2 no of line reactors for termination of Modipurum(ISTS)- Modipuram(UPPTCL) 765 kV D/c line and Modipuram(ISTS)-Bareily(PG) 765kV D/c line.

5.1.6.1 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (HVDC line Package)" may be considered for implementation through TBCB route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 1.9 GW in Ramgarh, 2.2 GW in Fatehgarh and 1.05 GW in Bhadla in similar time frame and ensure that entire capacity is awarded so that the associated transmission scheme of 5 GW HVDC link is fully utilized.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme , which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.7 Name of the Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (HVAC package)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Modipuram ISTS - Bareily (PG) 765kV D/c line	Length- 200	937
2.	2 nos. of 765 kV line bays at Modipuram ISTS and 2 nos. of 765 kV line bays at Bareily (PG) for Modipuram - Bareily (PG) 765kV D/c line	765 kV line bays – 4	80
3.	765 kV, 240 MVAr switchable line reactor on each circuit at both ends of Modipuram (ISTS) - Bareily (PG) 765kV D/c line	240 MVAr, 765 kV reactor- 4 (2 reactors each at Modipuram (ISTS) and Bareilly) Switching equipments for 765 kV reactor - 4 (2 Switching equipments each at Modipuram and Bareilly) (*1x80 MVAr spare reactor at Bareilly to be used as spare for Modipuram (ISTS)- Bareily (PG) 765kV D/c line)*	99
4.	Modipuram (ISTS) - Modipuram (UPPCL) 765kV D/c line	Length- 50	234
5.	2 nos. of 765 kV line bays at Modipuram (ISTS) and 2 nos. of 765 kV line bays at Modipuram (UPPCL) for Modipuram (ISTS) - Modipuram (UPPCL) 765kV D/c line	765 kV line bays – 4	80
	Total (in Rs Cr)		**1430**

Note:

(i) POWERGRID to provide space for 2 no of 765 kV bays at Bareilly substation along with the space for 2 no of line reactors

(ii) Developer of Modipuram (ISTS) to provide space for 4 no of 765 kV line bays at Modipuram (ISTS) substation along with the space for 2 no of line reactors for termination of Modipurum(ISTS)- Modipuram(UPPTCL) 765 kV D/c line and Modipuram(ISTS)-Bareily(PG) 765kV D/c line.

(iii) UPPTCL to provide space for 2 no of 765 kV bays at Modipuram(UPPTCL) substation for Modipuram(ISTS) – Modipurm(UPPTCL) 765kV D/c line.

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

5.1.7.1 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C (HVAC Package)" may be considered for implementation through TBCB route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 1.9 GW in Ramgarh, 2.2 GW in Fatehgarh and 1.05 GW in Bhadla in similar time frame and ensure that entire capacity is awarded so that the associated transmission scheme of 5 GW HVDC link is fully utilized.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme, which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.8 Name of Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part D

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 765/400 kV, 3X1500 MVA substation at Narela with 765 kV (2x240) bus reactor and 400kV (1x125 MVAR) bus reactor <u>Future provisions:</u> Space for 765/400kV ICTs along with bays: 1 765 kV line bays alongwith Switchable line reactor : 4 400 kV line bays alongwith switchable line reactor : 14 765kV reactor along with bays: 2 400/220 kV ICTs along with bays: 4 220 kV line bays: 8 400 kV reactor along with bays:2	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 – 4 240 MVAr, 765 kV reactor- 2 765 kV reactor bay – 2 125 MVAr, 420 kV reactor - 1 420 kV reactor bay – 1 80 MVAR, 765 kV, 1 ph Reactor (spare unit) -1 (*for both 1x 80 MVAr bus reactor and 1x80 MVAr line reactor on Khetri – Narela 765 kV D/c line*)	410
2.	Khetri – Narela 765 kV D/c line	Length -180	843
3.	2 nos. of 765 kV line bays at Khetri for Khetri – Narela 765 kV D/c line	765 kV line bays - 2	40
4.	1x240 MVAr Switchable line reactor for each circuit at each end of Khetri – Narela 765kV D/c line	240 MVAr, 765 kV reactor- 4 (2 reactors each at Khetri and Narela) Switching equipments for 765 kV reactor - 4 (2 Switching equipments each at Khetri and Narela)	99

		(*1x80 MVAr spare reactor at Khetri to be used as spare for Khetri – Narela 765 kV D/c line*)	
5.	LILO of 765 kV Meerut-Bhiwani S/c line at Narela	Length – 25	117
	Total(in Rs Cr)		**1509**

Note:

(i) Developer of Khetri substation to provide space for 2 no of 765 kV bays at Khetri substation along with the space for 2 no of switchable line reactors

(ii) Developer of Narela substation to provide space for 4 no of 400 kV bays for Narela – Maharanibagh/Gopalpur 400kV 2xD/c(Quad).

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

5.1.8.1 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part D" may be considered for implementation through TBCB route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.95 GW in Bikaner and ensure that entire capacity is awarded so that the associated transmission scheme of 5 GW HVDC link is fully utilized.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme, which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.9 Name of Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part D (Narela 765/400 kV substation 400 kV interconnections)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Removal of LILO of Bawana – Mandola 400kV D/c(Quad) line at Maharani Bagh/Gopalpur S/s. Extension of above LILO section from Maharani Bagh/Gopalpur upto Narela S/s so as to form Maharanibagh – Narela 400kV D/c(Quad) and Maharanibagh -Gopalpur-Narela 400kV D/c(Quad)	Length – 14 (2x7)	36

	lines.		
2.	LILO of both circuits of Bawana – Mandola 400kV D/c(Quad) line at Narela S/s	Length- 12	31
3.	2 no of line bays at Narela each for Maharanibagh – Narela 400kV D/c(Quad) and Maharanibagh -Gopalpur-Narela 400kV D/c(Quad) lines formed after removal of LILO of Bawana – Mandola 400kV D/c(Quad) line at Maharani Bagh/Gopalpur S/s and Extension of above LILO section from Maharani Bagh/Gopalpur upto Narela S/s.	400 kV line bays – 4	36
4.	2 no of line bays at Narela for LILO of both circuits of Bawana – Mandola 400kV D/c(Quad) line at Narela S/s	400 kV line bays – 4	36
		Total	**139**

Note:

(i) Developer of Narela substation to provide space for 4 no of 400 kV bays for Narela – Maharanibagh/Gopalpur 400kV 2xD/c(Quad)

(ii) Developer of Narela substation to provide space for 4 no of 400 kV bays for LILO of both circuits of Bawana – Mandola 400kV D/c(Quad) line at Narela S/s

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

5.1.9.1 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part D (Narela 765/400 kV substation 400 kV interconnections)" may be considered for implementation through RTM route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.95 GW in Bikaner and ensure that entire capacity is awarded so that the associated transmission scheme of 5 GW HVDC link is fully utilized.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme, which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.10 Name of Scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part E

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Establishment of 400/220 kV, 6x500 MVA SEZ Pooling Point at Bikaner –II PS with suitable bus sectionalisation at 400 kV and 220 kV level and with 420kV (2x125 MVAR) bus reactor Future provisions: Space for 400/220 kV ICTs along with bays: 2 400 kV line bays: 2 220 kV line bays: 4 420 kV reactors along with bays: 1	400/220 kV, 500 MVA ICT – 6 400 kV ICT bays – 6 220 kV ICT bays – 6 400kV line bays - 4 220 kV line bays – 10 125 MVAr, 420 kV bus reactor-2 420 kV reactor bay – 2	300
2.	Bikaner-II SEZ PP – Khetri 400 kV 2xD/c line (Twin HTLS)	Length – 540 (2x270)	917
3.	1x80MVAr switchable Line reactor on each circuit at both ends of Bikaner-II – Khetri 400 kV 2x D/c Line	400 kV 80MVAr reactor – 8 nos. (4 each at Bikaner-II and Khetri) Switching equipments for 400 kV switchable line reactor – 8 (4 each at Bikaner-II and Khetri)	78
4.	4 no. of 400 kV line bays at Khetri for Bikaner –II SEZ PP – Khetri 400kV 2xD/c line	400 kV line bays – 4	36
5.	Khetri- Bhiwadi 400 kV D/c line (Twin HTLS)	Length- 120	204
6.	2 no. of 400 kV line bays at Khetri for Khetri - Bhiwadi 400kV D/c line	400 kV line bays – 2	18
7.	2 no of 400 kV(GIS) line bays at Bhiwadi for Khetri-Bhiwadi 400 kV D/c line	400 kV line bays – 2	26
		Total	**1579**

Note:

(i) POWERGRID to provide space for 2 no of 400 kV GIS bays at Bhiwadi substation for Khetri- Bhiwadi 400 kV D/c line (Twin HTLS).

(ii) Developer of Khetri substation to provide space for 6 no of 400 kV bays at Khetri for Bikaner –II SEZ PP – Khetri 400kV 2xD/c line & Khetri- Bhiwadi 400 kV D/c line (Twin HTLS).

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

(iv) Developer of Bikaner II to provide space for 2 no of 400 kV bays for termination of Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad)

5.1.10.1 CEA stated that the Bikaner II Pooling Station has been proposed with 400/220 kV, 6x500 MVA transformation capacity along with 10 no. of 220 kV line bays for evacuation of power from the entire 2.95 GW of RE potential in Bikaner SEZ under Phase II.

5.1.10.2 NCT recommended the following:

(a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part E" may be considered for implementation through TBCB route.

(b) SECI to invite bids for setting up of Solar RE projects for the entire potential of 2.95 GW in Bikaner in similar time frame and ensure that entire capacity is bid out to avoid underutilization/ non-utilization of ISTS scheme.

(c) The implementation time-frame of the transmission schemes associated with Ph-II of 66.5 GW RE integration is December' 2021.The implementation time-frame of the transmission scheme , which is associated with Phase-II of 66.5 GW RE integration, needs to be firmed up by CTU in consultation with MNRE and SECI before taking up the implementation.

5.1.11 Name of scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II-Part E (765/400 kV ICT augmentation at Bikaner (PG))

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1	Augmentation with 765/400kV, 1x1500MVA (3rd) transformer at Bikaner(PG)	765/400 kV, 1500 MVA ICT – 1 765 kV ICT bays – 1 400 kV ICT bays – 1	72
		Total	**72**

5.1.11.1 CEA stated that establishment of establishment of 2x1500 MVA, 765/400 kV substation at Bikaner (PG) was agreed in the 36th Standing Committee Meeting (SCM) on Power System Planning in Northern Region held at NRPC, Katwaria Sarai, New Delhi on 13th July, 2015 as part of Green Energy Corridor which is being implemented by POWERGRID. In the 35th meeting of ECT held on 14.09.2015, the transmission scheme which involved establishment of 2x1500 MVA, 765/400 kV substation at Bikaner was

agreed to be implemented through RTM route. The proposed scheme involves augmentation of transmission capacity at Bikaner PS by 1x1500 MVA, 765/400 kV for enabling the injection of power from Bikaner II.

5.1.11.2 NCT recommended the following:

a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II-Part E (765/400 kV ICT augmentation at Bikaner (PG))" may be considered for implementation through RTM route as it involves upgradation of substation /addition of transformation capacity in under implementation substation.
b) The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part E"

5.1.12 Name of scheme: Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II-Part E (Bikaner (PG) and Bikaner II 400 kV interconnection)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Removal of LILO of one circuit of Bhadla-Bikaner (RVPN) 400kV D/c (Quad) line at Bikaner(PG). Extension of above LILO section from Bikaner(PG) up to Bikaner-II PS to form Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad) line	Length - 25	65
2.	2 nos. of 400 kV line bays at Bikaner-II PS for Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad) line formed after removal of LILO of one circuit of Bhadla-Bikaner(RVPN) 400kV D/c(Quad) line at Bikaner(PG) and extension of above LILO section from Bikaner(PG) up to Bikaner-II PS	400 kV line bays – 2	18
		Total	**83**

Note:

(i) Developer of Bikaner II to provide space for 2 no of 400 kV bays for termination of Bikaner-II PS – Bikaner (PG) 400kV D/c(Quad).
(ii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey

5.1.12.1 CEA stated that the proposed scheme is to establish interconnection between Bikaner(PG) and Bikaner II for enabling the evacuation of power from Bikaner SEZ under Phase II.

5.1.12.2 After deliberations, NCT recommended the following:

a) Transmission scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II-Part E (Bikaner (PG) and Bikaner II 400 kV interconnection)" may be considered for implementation through RTM route.

b) The completion schedule for scheme would be same as the completion schedule of the scheme "Transmission Scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part E"

5.2 Name of the Scheme: Transmission scheme for controlling high loading and high short circuit level at Moga substation

5.2.1 CEA stated that the scheme was agreed in the 4th meeting of NRSCT held on 25.07.2019 in order to resolve the issues of high short circuit levels of Moga(PG) 400kV bus. The bus splitting would be taken up as Supplementary System strengthening scheme associated Bikaner-Moga line under ISTS. The details scope of the scheme is as under:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	400kV Bus splitting at Moga **<u>400kV Bus Section-1</u>** • 400kV Kishenpur D/c feeders • 400kV Hisar D/c feeders • 2 nos. 765/400kV transformers • 1 No. 50 MVAR **<u>400kV Bus Section-2</u>** • 400kV Jalandhar D/c feeders • 400kV Bhiwani feeder • 400kV Fatehabad feeder • 400kV Nakodar feeder • 400kV Talwandi Sabo/Malkana Feeder • 4 nos. 400/220kV transformers • 1 No. 125 MVAR		45
		Total	**45**

Note: Bus splitting would involve running parallel GIS bus (Main-I/Main-II) to the existing bus. The proposed bus section – I arrangement would be transferred to GIS bus. Further, bus sectionalisers between AIS and GIS would be required. To accomplish the same, for Nakodar and ICT-II (765/400kV) feeders, one additional GIS bay module would be required and it shall be double breaker switching scheme. This arrangement would also avoid dismantling of existing buildings.

5.2.2 NCT recommended the following:

a) Transmission scheme "Transmission scheme for controlling high loading and high short circuit level at Moga substation" may be considered for implementation through RTM route as it involves upgradation/modifications in existing substation.

5.3 Name of the Scheme: Construction of 2 nos. of 400 kV bays under ISTS at 765/400 kV PGCIL substation, Varanasi:

5.3.1 CEA stated that the scheme was agreed in the 4th meeting of NRSCT held on 25.07.2019 for termination Jaunpur- Varanasi 400 kV D/C line of UPPTCL. UPPTCL has requested for implementation of the bays by January 2021. The details scope of the scheme is as under:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	2 nos. of 400 kV bays (GIS) at 765/400 kV Varanasi (PGCIL) substation for Jaunpur-Varanasi (PGCIL) 400 kV D/c line	400 kV line bays – 2 (GIS)	26
		Total	**26**

5.3.2 After deliberations, NCT recommended the following:

a) Transmission scheme "Construction of 2 nos. of 400 kV bays under ISTS at 765/400 kV PGCIL substation, Varanasi" to be implemented through RTM route.
b) Implementation schedule to be matching with the implementation of Jaunpur-Varanasi (PGCIL) 400 kV D/c line by UPPTCL.

5.4 Name of the Scheme: Additional 1x500 MVA, 400/220kV (4th) transformer at Balachak under ISTS.

5.4.1 CEA stated that the scheme was agreed in the 4th meeting of NRSCT held on 25.07.2019 for n-1 compliance at Balachak 400/220 kV substation. PSTCL has requested for implementation of the scheme in compressed time schedule by June 2020.

5.4.2 CTU informed that only 10 months were left for implementation of scheme by June 2020, which is very short period. Implementation time of atleast one year was required from the date recommendation of the scheme implementation under RTM by Empowered Committee.

The detailed scope of the scheme is as under:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	Additional 1x500 MVA, 400/220kV (4th) transformer at Balachak	400/220 kV, 500 MVA ICT – 1 400 kV ICT bays – 1 220 kV ICT bays – 1	36
		Total	**36**

5.4.3 NCT recommended the following:

a) Transmission scheme "Additional 1x500 MVA, 400/220kV (4th) transformer at Balachak under ISTS" may be considered for implementation through RTM route as it involves upgradation of substation /addition of transformation capacity in existing substation.

5.5 Name of the Scheme: 220 kV Two Feeder bays at Saharanpur (400) PGCIL:

5.5.1 CEA stated that the scheme was agreed in the 3rd meeting of NRSCT held on 24.5.2019. The details scope of the scheme is as under:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Estimated Cost (in Rs Cr)
1.	220 kV Two Feeder bays at Saharanpur (400) PGCIL for Saharanpur (400) PGCIL-Deoband (Saharanpur) 220 kV D/C line	220 kV line bays – 2	8
		Total	**8**

5.5.2 NCT recommended the following:

a) Transmission scheme "220 kV Two Feeder bays at Saharanpur (400) PGCIL" may be considered for implementation through RTM route.
b) Implementation in matching schedule of Saharanpur (400) PGCIL-Deoband (Saharanpur) 220 kV D/C line by UPPTCL.

Meeting ended with thanks to the chair.

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Annexure-I

List of Participants of the 5th meeting of National Committee on Transmission (NCT) held on 21.08.2019 at CEA, New Delhi

S.No.	Name (S/Shri)	Designation	Mb. No.	Email
	CEA			
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Annexure II

Status of Transmission Projects through TBCB as on 21.08.2019 (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	• 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	• 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. • **No LTTCs finalized till date** • Regulatory Approval pending from CERC • SPV can be transferred to selected bidder only after regulatory approval and identification & signing of TSA by LTTCs
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	• RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • RfP issued on 13.03.2019. • Bid submission date extended upto 30.08.2019 • **No LTTCs finalized till date** • Regulatory Approval pending from CERC. • SPV can be transferred to selected bidder only after regulatory approval and identification & signing of TSA by LTTCs
4	Construction of Ajmer (PG)-Phagi 765 kV D/C line along with associated bays for Rajasthan SEZ	• RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • RfP issued on 13.03.2019, 6 bidders participated. • RfP process on-going • SPV expected to be transferred in first week of Sept, 2019
5	Transmission system associated with LTA application from Rajasthan SEZ (Part -C)	• RFQ issued on 12.01.2019, 8 bidders shortlisted to participate in RFP • 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.** • SPV expected to be transferred by Aug, 2019
6	400 kV Udupi (UPCL) – Kasargode TBCB project	• 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.** • SPV expected to be transferred by Aug, 2019

Status of Transmission Projects through TBCB (PFC Consulting Limited)

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

Sl. No.	Name of Transmission Project	Present Status
1.	Western Region Strengthening Scheme- XIX (WRSS-XIX) and North Eastern Region Strengthening Scheme- IX (NERSS-IX)	1. (07) Seven bidders were shortlisted at RfQ Stage on October 26, 2018 to participate in the next stage of bidding i.e RfP. 2. RfP documents issued on 13.11.2018. 3. Two (2) bidders submitted RfP bids on 27.05.2019. 4. RfP (Price Bid) opened on 20.06.2019; 5. E-reverse bidding held on 21.06.2019; 6. 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; 7. 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. 8. Out of 24 nos. LTTCs in WR & NER region, 3 LTTCs i.e TSECL in NER region and DNH & D&D are yet to sign the TSA. CEA is in touch with these LTTCs.
2.	WRSS-21 (Part-B) Transmission System strengthening for relieving over loadings observed in Gujarat Intra-state system due to RE injections in Bhuj PS	**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 (financial) bid opened on 15.07.2019 followed by **e-reverse auction held on 16.07.2019;**

Sl. No.	Name of Transmission Project	Present Status
		7. Based upon e-RA, **M/s Sterlite Grid 18 Limited** emerged as the Successful Bidder; **8.** LoI issued to the Successful Bidder on 31.07.2019; **9.** TSA has signed by all the LTTCs except by Torrent Power; **10.** Necessary approval for transfer of SPV is in progress; **11. Transfer of SPV expected by 31.08.2019.**
3.	Transmission System for providing connectivity to RE projects at Bhuj-II (2000MW) in Gujarat	**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; **5.** Three (3) bidders submitted RfP bids on 02.07.2019; **6.** RfP (financial) bid opened on 16.07.2019 followed by **e-reverse auction held on 17.07.2019**; **7.** Based upon e-RA, **M/s Power Grid Corporation of India Limited** emerged as the Successful Bidder; **8.** LoI issued to the Successful Bidder i.e. M/s Power Grid Corporation of India Limited on 31.07.2019; **9.** TSA has been signed by all the LTTCs; **10.** Necessary approval for transfer of SPV is in progress; **11. Transfer of SPV is expected by 31.08.2019.**
4.	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 26.08.2019; 6. **Transfer of SPV is expected by 31.09.2019.**
5.	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 (financial) bid opened on 17.07.2019 followed by **e-reverse auction held on 18.07.2019**; **7.** Based upon e-RA, **M/s Adani Transmission Limited** emerged as the Successful Bidder; **8.** LoI issued to the Successful Bidder on 31.07.2019;

Sl. No.	Name of Transmission Project	Present Status
		9. TSA has been signed by all the LTTCs; **10.** Necessary approval for transfer of SPV is in progress; **11. Transfer of SPV is expected by 31.08.2019.**