

I/20890/2022



भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केन्द्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन - I प्रभाग

Power System Planning & Appraisal - I Division

सेवा में / To

-As per enclosed list-

विषय: "ट्रांसमिशन पर राष्ट्रीय समिति" (एनसीटी) की 8th बैठक की कार्यसूची।Subject: Meeting notice & Agenda for the 8th Meeting of "National Committee on Transmission" (NCT)

महोदया / महोदय / Sir / Madam,

The 8th meeting of the "National Committee on Transmission" (NCT) is scheduled to be held on 25.03.2022 (Friday) at 1100 hrs under the chairmanship of Chairperson, CEA & Chairman, NCT, through Video Conferencing (Microsoft Teams). The agenda for the meeting is enclosed herewith. The link to join the meeting would be intimated in due course.

Kindly make it convenient to attend the meeting.

भवदीय,

रविन्द्र गुप्ता 17/3/2022
(रविन्द्र गुप्ता / Ravinder Gupta)

मुख्य अभियन्ता /Chief Engineer & Convener (NCT)

Copy to:

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

I/20890/2022

List of addressees:

1.	Chairperson, Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	2.	Member (Power System), Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.
3.	Member (Economic & Commercial), Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	4.	Director (Trans), Ministry of Power Shram Shakti Bhawan, New Delhi-110001.
5.	Sh. Dilip Nigam, Scientist 'G', MNRE, Block no. 14, CGO Complex, Lodhi Road, New Delhi – 110003	6.	Chief Operating Officer, CTUIL, Saudamini, Plot No. 2, Sector-29, Gurgaon – 122 001.
7.	Sh. Rajnath Ram, Adviser (Energy), NITI Aayog, Parliament Street, New Delhi – 110 001.	8.	CMD, POSOCO, B-9, Qutub, Institutional Area, Katwaria Sarai, New Delhi – 110010
9.	Dr. Radheshyam Saha, Ex. Chief Engineer, Central Electricity Authority	10	Shri Sushanta Kumar Ray Mohapatra, Ex. Chief Engineer, Central Electricity Authority

I/20890/2022

Agenda for the 8th meeting of National Committee on Transmission**1. Confirmation of the minutes of the 7th meeting of National Committee on Transmission.**

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

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

- (i) S.no 2, column no 2 of table under Para 1.1.0 at Page no. 7: The implementation timeframe of the transmission scheme “Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B” is mentioned as July 2022. The same may be read as June 2023.
- (ii) S.no 1, column no 2 of table under Para 1.6 at Page no. 11: The name of the scheme got inadvertently mentioned as “Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Phase-II: Part B”. The same may be read as Transmission Scheme for Solar Energy Zone in Gadag (1500 MW), Karnataka: Part A-Phase-II

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

- (i) Modifications in the detailed scope of the scheme “Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B” included in Annexure-IV (table under item no.2 S.no 1, column no 2). CTU has suggested for provision of space for 765 kV/400 kV line bays along with space for switchable line reactor instead provision of space for 765 kV/400 kV line bays recorded in the minutes of the 7th NCT meeting.
- (ii) Modifications of the capacity of 400 kV D/c Khandukhal (Srinagar) - Rampura (Kashipur) line (Twin HTLS) from minimum capacity of 2500 MVA on each circuit at nominal voltage to minimum capacity of 2100 MVA on each circuit at nominal voltage. Line capacity of 2500 MVA would necessitate 4000 A switchgear rating for bay equipment. The committee (comprising members from CEA, CTUIL and PTCUL to assess the feasibility of installation of 3150 A switchgears in the proposed line bays of Srinagar- Kashipur 400kV D/C line) has proposed installation of 3150A switchgears in the yard of Kashipur. It is to mention that as per the layout of Srinagar S/s available with CTU, the s/s is at high altitude with 400kV DMT scheme with optimized layout in different levels in the hills. Considering larger equipment size of 4000A than 3150A (commensurate to 2500 MVA line capacity), live metal clearances and ground clearances may not be available at both Srinagar & Kashipur substations with such space constraints. Further, 400kV, 4000A equipment are in general not readily available in the Indian market which may lead to delay in procurements as well. Considering all these aspects, line capacity of 2100 MVA is recommended commensurate to 3150A switchgear rating.

I/20890/2022

1.4. Incorporating the modifications suggested by CTU the following modifications is proposed in the minutes of the 7th NCT meeting (modified portion highlighted) :

(i) Modified para 3.4

3.4 NCT recommended the following:

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

Name of the scheme/est. cost/schedule	Mode of implementation	Purpose /Justification
<p>400 kV Khandukhal(Srinagar)- Rampura (Kashipur) D/c line</p> <p>Estimated Cost: Rs 800 Crores</p> <p>Implementation Timeframe: The timeline to be considered as matching time frame of commissioning of Vishnugad Pipalkoti HEP (Dec'23) of THDC or Tapovan Vishnugad HEP of NTPC, whichever is earlier.</p>	TBCB	To evacuate power from upcoming hydro-electric projects in the Alaknanda river basin

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

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1	400 kV D/c Khandukhal(Srinagar) - Rampura (Kashipur) line (Twin HTLS*)	Length – 195 km
2	1x80MVAR switchable line reactor at Rampura (Kashipur) end on each circuit of Khandukhal(Srinagar) - Rampura (Kashipur) line	Switching equipment for 420 kV 80 MVAR switchable line reactor –2 420 kV, 80 MVAR Switchable line reactor- 2
3	1 no. of 400 kV line bay at Rampura (Kashipur) S/ s	400 kV line bay -1
4	Upgradation of existing 400kV bays at Khandukhal (Srinagar)	Upgradation works for 400 kV line bays -2
5	Upgradation of existing 1 no. of 400 kV diameter comprising line bay (Srinagar) and ICT bay alongwith associated Tie bay at Rampura (Kashipur)	Upgradation works for 400 kV line bay – 1 Upgradation works for 400 kV ICT bay – 1

I/20890/2022

Sl. No.	Scope of the Transmission Scheme	Capacity /km
		Upgradation of Tie bay -1

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

Note:

- (i) **Implementation Timeframe:** The timeline to be considered as matching timeframe of commissioning of Vishnugad Pipalkoti HEP (December, 2023) of THDC or Tapovan Vishnugad HEP of NTPC, whichever is earlier.
- (ii) The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
- (iii) PTCUL to provide space for 1 nos. of 400kV bay at Rampura (Kashipur) along with the space for switchable line reactors.
- (ii) Modified Scope of works for the the scheme“Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B” included in Annexure-IV in issued MoM is as follows:

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

Sl.No	Scope of the Transmission Scheme	Capacity /km
	<p>1.Establishment of 765/400/220 kV Navsari (new) (South Gujarat) S/s (GIS)</p> <p>Space provisions for Future Scope</p> <p>765/400 kV ICT: 4 nos.</p> <p>400/220 kV ICT: 4 nos.</p> <p>765 kV line bays along with space for switchable line reactor: 8 nos.</p> <p>400 kV line bays along with space for switchable line reactor: 6 nos.</p> <p>220 kV line bays: 16 nos.</p>	<p>765/400 kV, 1500 MVA- 2 nos. (7 X 500 MVA inc 1 spare unit)</p> <p>400/220 kV, 500 MVA- 3 nos.</p> <p>765 kV ICT bays- 2 nos.</p> <p>765 kV GIS line bays -2 (for Phadge line)</p> <p>400 kV ICT bays- 5 nos.</p> <p>400 kV line bays – 4 nos. (for Kala and Magarwada lines)</p> <p>220 kV ICT bays- 3 nos.</p> <p>765 kV, 330 MVAr BR – 2 nos. (7 X 110 MVAr inc. 1 switchable spare unit)</p> <p>1X 80 MVAr single phase switchable spare unit (for Ahmedabad – Navsari (New) (South Gujarat) 765 kV D/c line)</p> <p>765 kV Bus Reactor bays – 2 nos.</p>

I/20890/2022

		400 kV, 125 MVAr Bus Reactor- 1 400 kV Bus Reactor bay- 1 no.
2.	Navsari (new) (South Gujarat) (GIS)- Kala (GIS) 400 kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage) with 63MVAr switchable line reactor on each ckt at Navsari (new) (GIS) end.	110 km 400 kV GIS line bays- 2 nos. (at Kala) 63 MVAr, 400 kV SLR along with switching eqpts.- 2 nos.
3.	Navsari(New) (South Gujarat) (GIS) – Magarwada (GIS) 400 kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage)	80 km 400 kV GIS line bays- 2 nos. (at Magarwada)
4.	Navsari (New) (South Gujarat) (GIS) – Padghe (GIS) 765 kV D/c line with 330 MVAr, 765 kV Switchable line reactor on each ckt at Navsari(New) (South Gujarat) end.	200 km 765 kV GIS line bays -2 (at Padghe) 765 kV, 330 MVAr SLR – 2 nos (6 X 110 MVAr)
5.	Augmentation of transformation capacity at Padghe (GIS) 765/400 kV substation by 1x1500 MVA ICT. The available spare equipped bays (765kV bay: existing & 400kV bay: under construction under WRSS XIX scheme) at Padghe(GIS) S/s shall be utilised for the subject ICT	765/400 kV, 1500 MVA- 1 no

Note:

- (i) Navsari (New) (South Gujarat) S/s shall be establishment as GIS substation to reduce the land requirement as there may be issues in getting contiguous land in this area which is industrial in nature as well as densely populated.
- (ii) Augmentation of transformation capacity at Navsari(new) (GIS) 765/400 kV substation by 1x1500 MVA ICT (3rd) along with its associated bays to be implemented in matching time frame of Khavda Phase-A (Ph-II) (5GW) scheme as a part of the scheme “Transmission Network Expansion in Gujarat associated with integration of RE projects from Khavda potential RE zone”.

I/20890/2022

- (iii) As Kala and Magarwada are located close to each other, majority of common stretch of Kosamba – Kala and Kosamba – Magarwada 400 kV D/c line may be constructed using Multi-circuit towers in order to save RoW.
- (iv) **Implementation Time-frame:** June 2023
- (v) GETCO shall implement the following downstream system in matching time-frame of Navsari(New) (South Gujarat) S/s:

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

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

1.5. With the corrigendum at 1.4 and 1.2, the minutes of the 7th NCT meeting may kindly be confirmed.

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

2.1. The status of the transmission schemes noted/approved/recommended in the 5th, 6th & 7th meetings of NCT is tabulated below

S r. N o	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
	5th NCT					
1.	Transmission system for evacuation of power from Neemuch SEZ (1000 MW)	Recommended for implementation through TBCB route	CTUIL	Approved & notified vide Gazette Notification dated 06.12.2021	RECPDCL	
2.	Establishment of Khavda Pooling Station-2 (KPS2) in Khavda RE Park		RECPDCL		RECPDCL	
3.	Establishment of Khavda Pooling Station-3 (KPS3) in Khavda RE Park		RECPDCL		RECPDCL	
4.	Transmission scheme for injection beyond 3 GW RE power at Khavda PS1 (KPS1)		RECPDCL		RECPDCL	
5.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1		PFFCL		PFFCL	

I/20890/2022

S r. N o	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
6.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A3		PFFCL		PFFCL	
7.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part B1		PFFCL		PFFCL	
8.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part C1		RECPD CL		RECPDCL	
9.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part D		CTUIL		RECPDCL	
10.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part F		RECPD CL		RECPDCL	
11.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part G		PFFCL		PFFCL	
12.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part H		CTUIL		PFFCL	
13.	Creation of 400/220 kV, 2x315 MVA S/S at Siot, Jammu & Kashmir		PFCCCL		PFFCL	
14.	Implementation of 400 kV D/c Khandukhal(Srinagar)-Rampura (Kashipur) line to be taken up under central sector as an ISTS scheme		CTUIL	Not approved		Reviewed and updated scheme recommended by 7 th NCT through TBCB route
15.	Transmission system strengthening beyond Kolhapur for export of power from Solar & Wind Energy Zones in Southern Region- Re- conducting of Kolhapur (PG) – Kolhapur	Recommended for implementation through RTM	Not applicable	Approved and allotted to CTUIL vide OM dated	Not applicable	

I/20890/2022

S r. N o	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
	400 kV D/c line			1.12.2021		
16.	Augmentation of 1x500 MVA, 400/220 kV ICT (3rd) at Bhatapara (PG)					
17.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part E1					
18.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part E2					
19.	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part J					
20.	System Strengthening scheme for Reconductoring of portion of Dulhasti-Kishtwar- Kishenpur 400 kV (Quad) S/c					
21.	Grant of 400kV & 220kV bays to RE generators at Fatehgarh-III (erstwhile Ramgarh-II) PS under ISTS					
22.	1x500 MVA, 400/220 kV ICT augmentation 3rd at Sohawal (PG) under system strengthening					
23.	One no of 220kV bay at Chamera Pooling point for 2nd Circuit stringing of 220 kV Karian – Chamera Pool line under implementation by HPPTCL					
23	220 kV bays at 400 kV substation PGCIL Khatkar (Jind)& Naggal (Panchkula) substation					
24	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part A2	Recommended for implementation through RTM	Not applicable	MoP OM not yet issued as the schemes involve augmentation at substations planned	Not applicable	
25	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase-III Part B2					
26	Transmission system for evacuation of power from					

I/20890/2022

S r. N o	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
	REZ in Rajasthan (20GW) under Phase-III Part C2			under A1, B1 & C1 schemes.		
	6th NCT *					
1.	Augmentation of Transformation Capacity in Southern Region	Approved for implementation through RTM. Allotted to CTUIL	Not applicable	Not required	Not applicable	
2.	Transmission System Strengthening for 'Srinagar – Leh Transmission System'					
3.	Transmission system for evacuation of 10 GW RE power from renewable energy parks in Leh: Pang (Leh) to Kaithal (Haryana) transmission system- Part-1	Recommended to MoP		Not approved		Reviewed and updated scheme recommended by 7 th NCT
4.	Transmission system for evacuation of power from Kaza Solar Power Project	Recommended to MoP				Reviewed and updated scheme is part of Agenda of this meeting.
5.	400 kV Khandukhal (Srinagar)-Rampura (Kashipur) D/c line	Recommended to MoP				
	7th NCT*					
6. 1	Transmission Network Expansion in Gujarat associated with integration of RE projects from Khavda potential RE zone	Recommended for implementation through TBCB route	RECPD CL	Approved and notified vide Gazette	RECPDCL	

I/20890/2022

S r. N o	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Survey Agency	MoP approval	BPC	Remarks
7.	400 kV Khandukhal (Srinagar) - Rampura (Kashipur) D/c line		PFFCL	Notification dated 17.02.2022	PFFCL	
8.	Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part B	Recommended for implementation through RTM route	Not applicable	MoP OM dated 13.01.2022	Not applicable	MoP in meeting dated 02.11.2020 had opined for implementation through RTM. NCT agreed to the same.
9.	Transmission system for evacuation of RE power from renewable energy parks in Leh (5 GW Leh - Kaithal transmission corridor)					
10.	Transmission Network Expansion in Gujarat to increase ATC from ISTS: Part C	Approved for implementation through RTM. Allotted to CTUIL	Not applicable	Not required	Not applicable	
11.	Transmission Schemes for Solar Energy Zone in Gadag (1500 MW), Karnataka: Part A-Phase-II:	Approved for implementation through TBCB	RECPDCL	Not required	RECPDCL	

* As per the MoP order dated 28.10.2021, ISTS schemes costing between Rs. 100 Crore to Rs. 500 Crore are to be approved by NCT while ISTS schemes costing more than Rs. 500 Crore to be recommended by NCT to MoP for approval.

2.2. From the transmission schemes tabulated above, it can be seen that Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1 has been recommended by the NCT in its 5th meeting. The same was approved and notified by MoP vide Gazette Notification dated 06.12.2021 for implementation through TBCB route. The scope of works under this scheme(Part-A1) inter alia includes establishment of 400/220 kV,

I/20890/2022

2x500 MVA Fatehgarh-4 PS and Fatehgarh-4 PS – Fatehgarh-3 PS 400kV D/c Twin HTLS line (50 km) along with space provision of future scope at Fatehgarh-4 PS.

Further, Part A2 scheme includes augmentation of 3x500 MVA ICTs and 5 no. of 220 kV line bays at Fatehgarh-4 PS and is recommended by 5th NCT for implementation under RTM for evacuation of RE power beyond 1000 MW at Fatehgarh-4 PS. OM in this regard is yet to be issued by MoP as the implementing agency under RTM would be the Implementation Agency of Phase-III Part A1, which is yet to be identified.

2.2.1. Based on the SECI input on RE potential data, Fatehgarh-4 PS was planned for 2.1 GW of RE Potential. Against which, based on applications, CTU has already granted/agreed for grant of 2040 MW of Stage-II connectivity at Fatehgarh-4 PS. Further SECI has recently indicated 75 GW potential in Rajasthan mainly in the areas of Barmer, Jaisalmer, Jodhpur, Jalore, Sirohi, Ajmer, Nagaur, Pali districts as part of Government of India's target of 450 GW RE by 2030.

2.2.2. In view of the envisaged RE potential in the areas of Barmer/Jaisalmer district including nearby area of Fatehgarh-4 PS as well as considering the fact that SECI(REIA) has already awarded LoA to some of the RE Projects, who were granted connectivity/LTA at Fatehgarh-4 PS, the following proposal has been received from CTUIL vide its email dated 15.02.2022 :

- (i) Inclusion of the space provision to upgrade Fatehgarh-4 PS to 765 kV in the future scope of works of "Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part A1" which is presently under bidding stage.
- (ii) Considering the quantum of applications received at Fatehgarh-4 PS (Stage-II :2040 MW, LTA 510 MW), it is recommended to merge Part A1 and Part A2 as a single package for timely implementation of the transmission system.

2.2.3. Based on CTUIL's proposal, the revised scope of "Transmission system for evacuation of power from REZ in Rajasthan (20 GW) under phase III –Part A1" would be as tabulated below:

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

I/20890/2022

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

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

I/20890/2022

Note:

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

NCT members may deliberate.

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

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

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

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

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

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

S.no	Name of the Transmission Scheme	BPC	Survey Agency
(i)	Transmission system for evacuation of power from	RECPDCL	CTUIL

I/20890/2022

	Neemuch SEZ (1000 MW)		
(ii)	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part D	RECPDCL	
(iii)	Transmission system for evacuation of power from REZ in Rajasthan (20GW) under Phase- III Part H	PFCCL	

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

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

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

(1) The survey works of the ISTS projects for which CTUIL was assigned as the survey agency by the 5th NCT may be carried out by respective BPC's allocated by MoP.

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

NCT members may kindly note.

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

4.1. Inter-Regional (ER-WR) system strengthening:

S. No.	Items	Details
A.	Name of Scheme	Inter-Regional (ER-WR) system strengthening
B.	Scope of the scheme	<ul style="list-style-type: none"> • Jeypore – Jagdalpur 400kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage) (~80km.) • 2 no. of 400kV GIS line bays at Jeypore (POWERGRID) S/s for termination of above line • 2 no. of 400kV line bays at Jagdalpur (CSPTCL) S/s for termination of above line

I/20890/2022

S. No.	Items	Details
C.	Depiction of the scheme on Transmission Grid Map	Attached at Annexure-I
D.	Upstream/ downstream system associated with the scheme	Not applicable
E.	Objective / Justification	To facilitate reliability of power supply to Jagdalpur S/s of CSPTCL and Jeypore S/s of POWERGRID, enhance short circuit strengths of Jagdalpur and Jeypore S/s as well as to augment Inter-regional capacity between WR & ER Grids
F.	Estimated Cost	Rs. 293 Crore
G.	Impact on the total Annual Transmission charges in % along with the existing ATC	A. ATC (considering Levelized Tariff @15% of estimated cost): 43.95 Crore B. Present ATC: Rs. 41,292.01 Crore* C. A/B (%): 0.106%
H.	Need of phasing, if any	Not Applicable
I.	Implementation timeframe	24 months from allocation to implementing agency / SPV Transfer (as the case may be) or matching with WRES-XXVII (anticipated by Mar-24), whichever is later
J.	Inclusion of any wild life/protected area along the transmission line route	The line may pass through Kanger ghati national park or its buffer zone in the state of Chhattisgarh. However, for details of forest/protected areas survey is required to be done.
K.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT
L.	System Study for evolution of the proposal	Studies discussed and agreed in following meetings: <ul style="list-style-type: none"> • 2nd Joint study meeting on Transmission Planning for Western Region: 10.12.2021 • 2nd Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER): 27.12.2021 • 2nd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR): 28.12.2021 Load flow results attached at Annexure-III

**Total YTC allowed for Nov '21, as per Notification of Transmission Charges payable by DICs for Billing Month of January, 2022 dated 25.12.2021 posted on NLDC website*

I/20890/2022

4.2. Western Region Expansion Scheme-XXV (WRES-XXV)

S. No.	Items	Details
M.	Name of Scheme	Western Region Expansion Scheme-XXV (WRES-XXV)
N.	Scope of the scheme	Augmentation of transformation capacity at Raigarh(Kotra) by 1x1500MVA, 765/400kV ICT at Section-A (3rd ICT on Section A) and by 2x1500MVA, 765/400kV ICTs at Section-B (3 rd & 4 th ICTs on Section B) along with associated ICT bays as elaborated below: <u>Raigarh(Kotra) Section-A</u> <ul style="list-style-type: none"> • 765/400kV ICT: 1x1500MVA • 765kV ICT bay: 1 no. • 400kV ICT bay: 1 no. <u>Raigarh(Kotra) Section-B</u> <ul style="list-style-type: none"> • 765/400kV ICT: 2x1500MVA • 765kV ICT bay: 2 nos. • 400kV ICT bay: 2 nos.
O.	Depiction of the scheme on Transmission Grid Map	Attached at Annexure-II
P.	Upstream/downstream system associated with the scheme	Not applicable
Q.	Objective / Justification	Scheme has been evolved to facilitate N-1 compliancy of the 765/400kV ICTs at Raigarh (Kotra) S/s under various operating conditions (after bus split arrangement)
R.	Estimated Cost	Rs. 210 Crore
S.	Impact on the total Annual Transmission charges in % along with the existing ATC	A. ATC (considering Levelized Tariff @15% of estimated cost): 31.5 Crore B. Present ATC: Rs. 41,292.01 Crore* C. A/B (%): 0.076%
T.	Need of phasing, if any	Not Applicable
U.	Implementation timeframe	12 months from date of allocation to implementing agency
V.	Inclusion of any wild life/protected area along the transmission line route	Not applicable
W.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT

I/20890/2022

S. No.	Items	Details
X.	System Study for evolution of the proposal	<p>Studies discussed and agreed in following meetings:</p> <ul style="list-style-type: none"> ➤ Joint study meeting on Transmission Planning for Western Region and Southern Region: 16.12.2021 ➤ 2nd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR): 28.12.2021 <ul style="list-style-type: none"> • Studies indicate that when Raigarh – Pugalur HVDC line is operated in reverse direction to the tune of 3000MW (i.e. 1500MW reverse flow on each section of Raigarh(Kotra) 400kV bus), the 765/400kV ICTs become N-1 non-compliant on each section. • With the proposed ICTs on Sections A & B, N-1 ICT Flows are observed to be – Section A: 2x1335MW; Section B: 3x1304MW and N-1 compliancy is maintained. • The proposed ICTs also help to maintain N-1 compliancy under forward flow case (full dispatch of 6000MW) and under low generation at either of the Raigarh (Kotra) 400kV bus sections • With the above proposed ICTs on both the sections, fault level at 400kV Section-A is about 45kA and Section-B is about 30kA. <p>Load flow results attached at Annexure-IV</p>

**Total YTC allowed for Nov '21, as per Notification of Transmission Charges payable by DICs for Billing Month of January, 2022 dated 25.12.2021 posted on NLDC website*

4.3. Western Region Expansion Scheme-XXVII (WRES-XXVII):

S. No.	Items	Details
A.	Name of Scheme	Western Region Expansion Scheme-XXVII (WRES-XXVII)
B.	Scope of the scheme	<p>(a) Raipur Pool – Dhamtari 400 kV D/c line (conductor with minimum capacity of 2100 MVA/Ckt at nominal voltage) (~80km.)</p> <p>(b) 2 no. of 400kV line bays at Raipur Pool (POWERGRID) S/s for termination of above line</p> <p>(c) 2 no. of 400kV line bays at Dhamtari (CSPTCL) S/s for termination of above line</p>

I/20890/2022

S. No.	Items	Details
C.	Depiction of the scheme on Transmission Grid Map	Attached at Annexure-I
D.	Upstream/downstream system associated with the scheme	Downstream System: <ul style="list-style-type: none"> Dhamtari(Kurud) – Gurur 220 kV D/c (2nd) line (Dec'23) 3rd 400/220kV, 315MVA ICT at Dhamtari S/s (Mar'24)
E.	Objective / Justification	For improvement of import capability of Chhattisgarh and reliability of power supply to Dhamtari S/s of CSPTCL and for relieving loading on NSPCL ICTs which are critically loaded in present time-frame
F.	Estimated Cost	Rs. 260 Crore
G.	Impact on the total Annual Transmission charges in % along with the existing ATC	A. ATC (considering Levelized Tariff @15% of estimated cost): 39 Crore B. Present ATC: Rs. 41,292.01 Crore* C. A/B (%): 0.094%
H.	Need of phasing, if any	Not Applicable
I.	Implementation timeframe	Matching with downstream system mentioned at Sl. 4 (expected progressively by Mar'24)
J.	Inclusion of any wild life/protected area along the transmission line route	No major National Park, Wildlife Sanctuary or other protected areas observed. However, for details of forest/protected areas, survey is required to be done.
K.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT
L.	System Study for evolution of the proposal	Studies discussed and agreed in following meetings: <ul style="list-style-type: none"> 2nd Joint study meeting on Transmission Planning for Western Region: 10.12.2021 2nd Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER): 27.12.2021 2nd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR): 28.12.2021 <p>Load flow results attached at Annexure-III</p>

*Total YTC allowed for Nov '21, as per Notification of Transmission Charges payable by DICs for Billing Month of January, 2022 dated 25.12.2021 posted on NLDC website

I/20890/2022

4.4. Western Region Expansion Scheme-XXVIII (WRES-XXVIII)

S. No.	Items	Details		
A.	Name of Scheme	Western Region Expansion Scheme-XXVIII (WRES-XXVIII)		
B.	Scope of the scheme	Sl.	Scope of the Transmission Scheme	
			Capacity /km	
		1.	Creation of 220 kV level (GIS) at Raipur Pool S/s with 765/400 kV Raipur Pool S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays (220kV-GIS)	500MVA, 400/220kV ICT: 2 nos. 400kV ICT bays: 2 nos. 220kV ICT bays: 2 nos. (GIS)
		2.	2 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of Raipur Pool – Rajnandgaon 220 kV D/c line	220kV line bays: 2 nos. (GIS)
		3.	Augmentation of 1x500 MVA, 400/220 kV ICT at Raipur Pool S/s along with associated ICT bays (220kV-GIS)	500MVA, 400/220kV ICT: 1 no. 400kV ICT bays: 1 no. 220kV ICT bays: 1 no. (GIS)
		4.	6 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of various lines planned by CSPTCL*	220kV line bays: 6 nos. (GIS)
	5.	Conversion of 2x240MVA Non-switchable line reactors at Raipur PS (associated with Raipur PS – Champa PS 765kV ckts 1 & 2) into Switchable line reactors along with NGR bypass arrangement	Switching equipment along with NGR bypass arrangement – 2 nos.	
* Raipur Pool – Gendpur 220 kV D/c line, Raipur Pool – Bemetra 220 kV D/c line and LILO of Borjhara – Urla 220kV S/c line at Raipur Pool (To be implemented by CSPTCL by Mar '24)				
C.	Depiction of the scheme on Transmission Grid Map	Annexure-V		
D.	Upstream/downstream	Downstream System (for elements at Sl. 1 to 4 under		

I/20890/2022

S. No.	Items	Details																		
	system associated with the scheme	<p>Scope of work): Raipur Pool – Rajnandgaon 220 kV D/c line – Dec'23* Raipur Pool – Gendpur 220 kV D/c line – Mar'24* Raipur Pool – Bemetra 220 kV D/c line – Mar'24* LILO of Borjhara – Urla 220kV S/c line at Raipur Pool – Mar'24* *As confirmed by CSPTCL in 3rd CMETS-WR meeting on 31.01.2022</p>																		
E.	Objective / Justification	<p>Elements at Sl. 1 to 4 under Scope of work shall facilitate drawl of power at 220kV level from 765/400 kV Raipur Pool S/s as well as provide direct feed to Borjhara/Urla area, which are major load centres in Chhattisgarh, so as to ease power flow on Raipur(PG) 400/220kV ICTs (existing).</p> <p>Element at Sl. 5 shall facilitate flexibility in system operation so that the 2x240MVA line reactors at Raipur PS (associated with for Raipur PS – Champa PS 765kV ckt 1 & 2) may be utilized as bus reactors for voltage control at Raipur PS after line opening.</p>																		
F.	Estimated Cost	Rs. 193.04 Crore																		
G.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>A. ATC (considering Levelized Tariff @15% of estimated cost): Rs. 28.956 Crore B. Present ATC: Rs. 41,296.79 Crore* C. A/B (%): Less than 0.07%</p>																		
H.	Need of phasing, if any	Not Applicable																		
I.	Implementation timeframe	<table border="1"> <thead> <tr> <th>Sl.</th> <th>Scope of the Transmission Scheme</th> <th>Impl. Time frame</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Creation of 220 kV level (GIS) at 765/400 kV Raipur Pool S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays (220kV-GIS)</td> <td>Dec'23</td> </tr> <tr> <td>2.</td> <td>2 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of Raipur Pool – Rajnandgaon 220 kV D/c line</td> <td>Dec'23</td> </tr> <tr> <td>3.</td> <td>Augmentation of 1x500 MVA, 400/220 kV ICT at Raipur Pool S/s along with associated ICT bays (220kV-GIS)</td> <td>Mar'24</td> </tr> <tr> <td>4.</td> <td>6 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of various lines planned by CSPTCL</td> <td>Mar'24</td> </tr> <tr> <td>5.</td> <td>Conversion of 2x240MVA Non-</td> <td>Jun'23</td> </tr> </tbody> </table>	Sl.	Scope of the Transmission Scheme	Impl. Time frame	1.	Creation of 220 kV level (GIS) at 765/400 kV Raipur Pool S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays (220kV-GIS)	Dec'23	2.	2 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of Raipur Pool – Rajnandgaon 220 kV D/c line	Dec'23	3.	Augmentation of 1x500 MVA, 400/220 kV ICT at Raipur Pool S/s along with associated ICT bays (220kV-GIS)	Mar'24	4.	6 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of various lines planned by CSPTCL	Mar'24	5.	Conversion of 2x240MVA Non-	Jun'23
Sl.	Scope of the Transmission Scheme	Impl. Time frame																		
1.	Creation of 220 kV level (GIS) at 765/400 kV Raipur Pool S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays (220kV-GIS)	Dec'23																		
2.	2 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of Raipur Pool – Rajnandgaon 220 kV D/c line	Dec'23																		
3.	Augmentation of 1x500 MVA, 400/220 kV ICT at Raipur Pool S/s along with associated ICT bays (220kV-GIS)	Mar'24																		
4.	6 nos. 220kV line bays (GIS) at Raipur Pool S/s for termination of various lines planned by CSPTCL	Mar'24																		
5.	Conversion of 2x240MVA Non-	Jun'23																		

I/20890/2022

S. No.	Items	Details
		switchable line reactors at Raipur PS (associated with Raipur PS – Champa PS 765kV ckts 1 & 2) into Switchable line reactors along with NGR bypass arrangement
J.	Inclusion of any wild life/protected area along the transmission line route	None envisaged
K.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT
L.	System Study for evolution of the proposal	<p>Studies discussed and agreed in following meetings:</p> <ul style="list-style-type: none"> • 2nd Joint study meeting on Transmission Planning for Western Region: 10.12.2021 • 3rd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR): 31.01.2022 <p>Load flow results for creation of 220 kV level (GIS) at 765/400 kV Raipur Pool S/s along with downstream system is attached at Annexure-VII.</p> <p>Regarding, conversion of 2x240MVAR Non-switchable line reactors at Raipur PS (associated with Raipur PS – Champa PS 765kV ckts 1 & 2) into Switchable line reactors, it is observed that the utilisation of each 240MVAR line reactor as bus reactor at Raipur Pool (after line opening) leads to drop in voltage to the tune of 2.2kV at Raipur PS (Durg).</p>

**Total YTC allowed for Dec '21, as per Notification of Transmission Charges payable by DICs for Billing Month of February, 2022 dated 31.01.2022 posted on NLDC website*

4.5. Western Region Expansion Scheme-XXIX (WRES-XXIX)

S. No.	Items	Details						
A.	Name of Scheme	Western Region Expansion Scheme-XXIX (WRES-XXIX)						
B.	Scope of the scheme	<table border="1"> <thead> <tr> <th>Sl.</th> <th>Scope of the Transmission Scheme</th> <th>Capacity /km</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Creation of 220 kV level at 765/400 kV Dharamjaigarh S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT</td> <td>500MVA, 400/220kV ICT: 2 nos.</td> </tr> </tbody> </table>	Sl.	Scope of the Transmission Scheme	Capacity /km	1.	Creation of 220 kV level at 765/400 kV Dharamjaigarh S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT	500MVA, 400/220kV ICT: 2 nos.
Sl.	Scope of the Transmission Scheme	Capacity /km						
1.	Creation of 220 kV level at 765/400 kV Dharamjaigarh S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT	500MVA, 400/220kV ICT: 2 nos.						

I/20890/2022

S. No.	Items	Details		
			bays	400kV ICT bays: 2 nos. 220kV ICT bays: 2 nos.
		2.2	nos. 220kV line bays at Dharamjaigarh S/s (for termination of Dharamjaigarh – Chhuri 220 kV D/c line)	220kV line bays: 2 nos.
		3.2	nos. 220kV line bays at Dharamjaigarh S/s (for termination of Dharamjaigarh – Dharamjaigarh CSP 220 kV D/c line)	220kV line bays: 2 nos.
C.	Depiction of the scheme on Transmission Grid Map	Annexure-VI		
D.	Upstream/downstream system associated with the scheme	1. Dharamjaigarh – Chhuri 220 kV D/c line – Mar'24* 2. Dharamjaigarh – Dharamjaigarh CSP 220 kV D/c line – Dec'24* *As confirmed by CSPTCL in 3 rd CMETS-WR meeting on 31.01.2022		
E.	Objective / Justification	To facilitate drawl of power at 220kV level from 765/400 kV Dharamjaigarh S/s to Chhuri & Dharamjaigarh CSP substations of CSPTCL		
F.	Estimated Cost	Rs. 115.24 Crore		
G.	Impact on the total Annual Transmission charges in % along with the existing ATC	A. ATC (considering Levelized Tariff @15% of estimated cost): Rs. 17.286 Crore B. Present ATC: Rs. 41,296.79 Crore* C. A/B (%): Less than 0.042%		
H.	Need of phasing, if any	Not Applicable		
I.	Implementation timeframe	Sl.	Scope of the Transmission Scheme	Impl. Time frame
		1.	Creation of 220 kV level at 765/400 kV Dharamjaigarh S/s with Installation of 2x500 MVA, 400/220 kV ICTs along with associated ICT bays	Mar'24
		2.	2 nos. 220kV line bays at Dharamjaigarh S/s (for termination of Dharamjaigarh – Chhuri 220 kV D/c line)	Mar'24
		3.	2 nos. 220kV line bays at Dharamjaigarh S/s (for termination of Dharamjaigarh – Dharamjaigarh CSP	Dec'24

I/20890/2022

S. No.	Items	Details
		220 kV D/c line)
J.	Inclusion of any wild life/protected area along the transmission line route	None envisaged
K.	Deliberations with RPC along with their comments	The estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to WRPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT
L.	System Study for evolution of the proposal	Studies discussed and agreed in following meetings: 2nd Joint study meeting on Transmission Planning for Western Region: 10.12.2021 3rd Consultation Meeting for Evolving Transmission Schemes in Western Region (CMETS-WR): 31.01.2022 Load flow results attached at Annexure-VIII

**Total YTC allowed for Dec '21, as per Notification of Transmission Charges payable by DICs for Billing Month of February, 2022 dated 31.01.2022 posted on NLDC website.*

4.6. North Eastern Region Expansion Scheme-XVI (NERES-XVI)

Sl. No.	Items	Details
A.	Name of scheme	North Eastern Region Expansion Scheme-XVI (NERES-XVI)
B.	Scope of the scheme	<p>i. Establishment of New Gogamukh 400/220/132kV substation</p> <ul style="list-style-type: none"> • 400/220kV, 2x500MVA ICTs alongwith associated ICT bays at both levels • 220/132kV, 2x200MVA ICTs alongwith associated ICT bays at both levels • 420kV, 2x125MVA bus reactor along with associated bays • 400kV line bays <ul style="list-style-type: none"> - 4 no. for termination of LILO of one D/c line (ckt-1 & ckt-2 of line-1) of Lower Subansiri –Biswanath Chariali 400kV (Twin Lapwing) 2xD/c lines • 220kV line bays <ul style="list-style-type: none"> - 2 no. for termination of Bihpuria – Gogamukh 220kV D/c line (line to be implemented by AEGCL) • 132kV line bays <ul style="list-style-type: none"> - 2 no. for termination of LILO of one circuit of North Lakhimpur – Dhemaji 132kV new D/c line (LILO to be implemented by AEGCL) - 2 no. for termination of Gogamukh

I/20890/2022

Sl. No.	Items	Details
		<p>(ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line</p> <ul style="list-style-type: none"> • Additional space for future expansion: <ul style="list-style-type: none"> - 220/132kV, 1x200MVA ICT - 1 no. (along with associated bays at both levels) - 400/220kV, 1x500MVA ICT - 1 no. (along with associated bays at both levels) - 420kV, 1x125MVA r bus reactor along with associated bays - 12 nos. of 400kV line bays for future lines <ul style="list-style-type: none"> ○ 4 nos. of 400V line bays for termination of Dibang – Gogamukh 2xD/c lines ○ 2 nos. of 400kV line bays (along with 2x80MVA r switchable line reactor) for termination of Gogamukh – Biswanath Chariali 400kV D/c (Quad) line ○ 6 nos. of 400kV line bays (along with switchable line reactor) for future lines - 6 nos. of 220kV line bays for future lines - 6 nos. of 132kV line bays for future lines ii. Extension works at Gerukamukh (Arunachal Pradesh) 132kV S/s <ul style="list-style-type: none"> - 2 no. of 132kV line bays for termination of Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line iii. Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c (Zebra[#]) line iv. LILO of one D/c (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400kV (Twin Lapwing) 2xD/c lines at Gogamukh S/s <p>Note:</p> <p>(a) Lower Subansiri – Biswanath Chariali 400kV (Twin Lapwing) D/c line is under implementation by POWERGRID and is expected to be commissioned by Aug 2022.</p> <p>(b) Arunachal Pradesh to provide space at Gerukamukh S/s for implementation of 2 no. 132kV line bays.</p>
C.	Depiction of the scheme on Transmission Grid Map	Refer Annexure-IX .
D.	Upstream/downstream system associated with the	<u>Upstream network to be implemented under ISTS:</u> i. Lower Subansiri – Biswanath Chariali 400kV

I/20890/2022

Sl. No.	Items	Details
	scheme	(Twin Lapwing) 2xD/c lines <u>Downstream system to be implemented by AEGCL, Assam:</u> i. Bihpuria – Gogamukh 220kV D/c line ii. Construction of North Lakhimpur – Dhemaji 132kV new D/c line along with LILO of one circuit at Gogamukh (ISTS)
E.	Objective / Justification	There is no source (EHV substation or generation) in upper Assam or in eastern part of Arunachal Pradesh. Accordingly, a new 400kV substation is planned to be established at Gogamukh for feeding power to upper Assam above Brahmaputra river. Further, the same substation is also planned to be utilised for providing additional feed and strength to under construction long 132kV Pasighat to Khupi corridor in Arunachal Pradesh through Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV D/c line. Further, Gogamukh 400/220/132kV substation would also serve the purpose of acting as a pooling point for upcoming large HEPs in Arunachal Pradesh. One such project is Dibang HEP (2880MW, 12x240MW) of M/s NHPC Ltd. in Arunachal Pradesh. The same is planned to be pooled through Dibang – Gogamukh 400kV 2xD/c (Quad) line and for onward power transfer to other parts of Indian grid, Biswanath Chariyali – Gogamukh 400kV D/c (Quad) line has been planned.
F.	Estimated Cost	INR 289 Cr.
G.	Impact on the total Annual Transmission Charges in % along with the existing ATC	A. ATC (considering levelized tariff @15% of estimated cost): ₹43.35 Cr. B. Present ATC: ₹41292.01 Cr.* C. A/B: 0.105%
H.	Need of phasing, if any	No phasing required.
I.	Implementation timeframe	Mar 2025
J.	Inclusion of any wild life/protected area along the transmission line route	No major National park, Wild life sanctuary, other protected areas observed. However, for details of forest/protected areas survey is required to be done.

I/20890/2022

Sl. No.	Items	Details
K.	Deliberations with RPC along with their comments	Estimated cost of the scheme is less than INR 500 Cr. Accordingly, the same is not required to be sent to NERPC for deliberation in line with MoP office order no. 15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
L.	System study for evolution of the proposal	Refer Annexure-X.

#This line was agreed to be implemented with ACSR Panther in the 1st Consultation Meeting for Evolving Transmission Schemes in NER. However, with the commissioning of Dibang HEP (2880MW) in 2029, it has been observed that power flow on the line under N-1 is exceeding the thermal limit of ACSR Panther, accordingly, ACSR Zebra is being proposed. The change in conductor has been agreed in the 3rd meeting of CMETS-NER held on 25-01-2022 (minutes awaited).

**Total YTC allowed for Nov'21, as per notification of transmission charges payable by DICs for billing month of January, 2022 dated 25-12-2021 posted on NLDC website (available at <https://posoco.in/transmission-pricing/notification-of-transmission-charges-for-the-dics/>)*

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

S. No.	Items	Details
A.	Name of Scheme	Transmission system for evacuation of power from Luhri Stage-I HEP
B.	Scope of the scheme	<ul style="list-style-type: none"> ➤ Establishment of 7x105 MVA, 400/220kV Nange GIS Pooling Station Future provisions: Space for <ul style="list-style-type: none"> • 400/220kV ICTs (315 MVA with single phase units) along with associated bays: 3 nos. • 400 kV line bays along with switchable line reactor: 3 nos. • 220 kV line bays: 10 nos. ➤ Nange (GIS) Pooling Station – Koldam 400 kV D/c line* (Triple snowbird) – 40 km ➤ Bypassing one ckt of Koldam – Ropar/Ludhiana 400kV D/c line (Triple snowbird) at Koldam and connecting it with one of the circuit of Nange-Koldam 400kV D/c line(Triple snowbird), thus forming Nange- Ropar/ Ludhiana one line (Triple snowbird) ➤ 1x50 MVAR switchable line reactor at Ropar end of Nange- Ropar/ Ludhiana 400kV line ➤ 1 no. of 400kV line bay at Koldam S/s for termination of Nange (GIS) Pooling Station – Koldam 400 kV line

I/20890/2022

S. No.	Items	Details
		<ul style="list-style-type: none"> ➤ 125 MVAR (420kV) Bus Reactor at Nange (GIS) PS (1-Ph units along with one spare unit) ➤ 125 MVAR (420kV) Bus Reactor at Koldam S/s (1-Ph units along with one spare unit) <p><i>*D/c line will be upto Koldam, however only one circuit is to be terminated at Koldam while second circuit would be connected to bypassed circuit of Koldam – Ropar/Ludhiana 400kV D/c line</i></p>
C.	Depiction of the scheme on Transmission Grid Map	Schematic diagram is attached in Exhibit-I
D.	Upstream/downstream system associated with the scheme	Connectivity of existing 400kV Koldam (NTPC) S/s includes 400kV D/c line to Ludhiana (PG), which would be LILOed at Ropar (PSTCL) S/s in future (under implementation). 400kV Koldam S/s is also interconnected to Banala (Parbati PS) as well as Nallagarh S/s through 400kV line.
E.	Objective / Justification	<ol style="list-style-type: none"> 1. The objective for the scheme includes evacuation of power from proposed Luhri Stage-I (210MW) HEP. The scheme will also facilitate interconnection of proposed Luhri-II (172 MW) & Sunni Dam (382 MW) near Shimla/Mandi/Kullu in HP with ISTS network 2. SJVN is granted Connectivity for above three HEPs viz. <ul style="list-style-type: none"> ➤ Luhri St-I (210 MW) [SCOD-April'25 onwards] ➤ Luhri St-II (172 MW) [SCOD-Oct'27 onwards] ➤ Sunni Dam(382 MW) [SCOD- Jan'27 onwards] <p>SJVN is also granted LTA for Luhri HEP St-I (Target NR- 210 MW). The system was agreed in 3rd meeting of NRPC (TP) held on 19.02.2021.</p> 3. Identified dedicated transmission system each from Luhri-I/Luhri-II/Sunni Dam upto Nange PS shall be under the scope of SJVN/generation developer 4. The scheme was taken up for discussion in the 5th meeting of NCT held on 25.08.2021 and 02.09.2021, wherein it was informed that NTPC

I/20890/2022

S. No.	Items	Details
		<p>has forwarded some observation regarding the availability of space at Koldam S/s (NTPC) for 2 nos. of 400kV line bays. Therefore, the scheme was deferred and decided to be taken up again after resolution of the issue.</p> <p>5. Subsequently, a joint site visit of 400/220kV Koldam S/s was held on 07.01.2022 by a team comprising officers from CEA, CTUIL, NTPC & SJVN to assess the availability of space for 2 nos. of 400kV bays at Koldam (NTPC) which proposed two alternatives.</p> <p>6. For further deliberation on above alternatives, joint study meeting was held on 21.01.22 with CEA, CTU, POSOCO, NTPC, SJVNL, PSTCL and other STUs of Northern region</p> <p>7. Based on detailed deliberations in above Joint Study meeting, transmission scheme for evacuation of power from Luhri St-I was finalized. Existing ISTS system beyond Koldam/Ropar would also facilitate transfer of power from Luhri-I HEP.</p> <p>8. The above scheme was discussed & agreed in 3rd Consultation Meeting for Evolving Transmission Schemes in Northern Region (CMETS-NR) held on 28.01.2022 (Detailed scope of work in S.No. 2)</p>
F.	Estimated Cost	Rs. 432 Cr.
G.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>1. ATC(considering Levelized Tariff @15% of estimated cost) (A): Rs.64.8 Cr.</p> <p>2. Present ATC (B) : Rs. 41292.01 Cr.*</p> <p>3. A/B(%): 0.157%</p>
H.	Need of phasing, if any	Not Applicable
I.	Implementation timeframe	Matching time frame of Luhri Stage-I HEP i.e. 24 th April, 2025
J.	Inclusion of any wild life/protected area along the transmission line route	The line may pass through Sikari Devi WLS or its buffer zone in HP. However, for details of forest/protected areas survey is required to be done.
K.	Deliberations with RPC along with their	As the estimated cost of the scheme is less than Rs 500 Cr, the same is now not required to be sent to NRPC

I/20890/2022

S. No.	Items	Details
	comments	for deliberation in line with MoP office order no.15/3/2018-Trans-Pt(5) dated 28-10-2021 regarding reconstitution of NCT.
L.	System Study for evolution of the proposal	<p>Studies discussed and agreed in following meetings:</p> <ul style="list-style-type: none"> • Joint study meeting with CEA, CTU, POSOCO, NTPC, SJVNL, PSTCL and other STUs of Northern region held on 21.01.22(Minutes of meeting enclosed in Annexure-I) • 3rd Consultation Meeting for Evolving Transmission Schemes in Northern Region (CMETS-NR) held on 28.01.2022 (Minutes of meeting enclosed in Annexure-II) <p>Study assumptions are enclosed in Annexure-III</p> <p>Study Results are attached in Exhibit-II</p>

**Total YTC allowed for Nov'21, as per Notification of Transmission Charges payable by DICs for Billing Month of January, 2022 dated 25.12.2021 posted on NLDC website*

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

S. No.	Items	Details
A.	Name of Scheme	Transmission system for evacuation of power from Kaza Solar Power Project (880 MW)
B.	Scope of the scheme	<p>a) Establishment of 3x315 MVA (10x105 MVA single phase units including one spare) ^s 400/132kV Kaza PS (GIS)</p> <p>Future Scope at Kaza Pooling Station:</p> <p>Space provision for:</p> <ol style="list-style-type: none"> i. 5 nos. of 132 kV line bays for future projects[#] ii. 2 nos. of 400/132 kV Transformers <p>b) Kaza-Wangtoo (HPPTCL) 400 kV D/c (Quad) line along with the associated 400 kV bays at both ends (Line capacity shall be 2500 MVA per circuit at nominal voltage)</p> <p>c) 1x80 MVAR switchable line reactor on each circuit at Kaza end of Kaza- Wangtoo 400 kV D/ c line</p>

I/20890/2022

S. No.	Items	Details
		<p>d) 2x80 MVA (420kV) Bus Reactors at Kaza PS</p> <p>e) Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c (Twin HTLS*) Line along with 80 MVA switchable line reactor at Panchkula end at each circuit-210 Km</p> <p>^s <i>In case of transportation constraints, 5x200 MVA ICTs (16x66.67 MVA, 1-phase unit including one spare unit) shall be considered</i></p> <p>[#] <i>132 kV line bays (9 Nos.) at Kaza PS for termination of lines from 7 pockets of solar projects of SJVNL shall be under applicant scope for implementation. Space provision to kept additionally for above 9 nos. bays.</i></p> <p>[*] <i>with minimum capacity of 2100 MVA on each circuit at nominal voltage</i></p>
C.	Depiction of the scheme on Transmission Grid Map	Attached at Exhibit-I
D.	Upstream/downstream system associated with the scheme	Connectivity of existing 400/220kV Wangtoo (HPPTCL) S/s includes 400kV D/c interconnection with Kala Amb (PG). 400kV Wangtoo S/s is also interconnected to Karcham Wangtoo S/s through 400kV D/c line.
E.	Objective / Justification	<ol style="list-style-type: none"> 1. SJVN is developing a Solar power park (880 MW) in Lahul & Spiti (Kaza) in Himachal Pradesh. SJVN is also granted Stage-I connectivity in this regard. 2. In the 4th NRPC(TP) meeting held on 05.10.21, Transmission system to provide connectivity to Kaza Solar Power Project was discussed & agreed. It was also decided that for transfer of power beyond Wangtoo S/s (HPPTCL), a high-capacity corridor would be planned. 3. A Joint Study Meeting was held on 24.12.2021 with CEA, POSOCO, HVPN, PTCUL, HPPTCL, UPPTCL and other STUs of Northern region by CTU to finalize the transmission system for evacuation of power from Kaza Solar Power Project (880MW) beyond Wangtoo.

I/20890/2022

S. No.	Items	Details
		<p>4. In the above Joint study meeting, various transmission alternatives were deliberated and 400kV Wangtoo-Panchkula D/c line (Twin HTLS) was selected as preferred transmission alternative for evacuation of power beyond Wangtoo S/s</p> <p>5. The above scheme was also discussed in the 2nd Consultation Meeting for Evolving Transmission Schemes in Northern Region (CMETS-NR) held on 29/12/2021 as well as 50th NRPC held on 28.01.2022, wherein transmission scheme comprising connectivity and evacuation system for Kaza Solar-park was agreed</p> <p>6. Composite Inter-state transmission scheme for evacuation of 880 MW power from Kaza Solar Park is as shown in S. No. 2</p>
F.	Estimated Cost	Total: 2135 Cr.
G.	Impact on the total Annual Transmission charges in % along with the existing ATC	<p>D. ATC (considering Levelized Tariff @15% of estimated cost): Rs 320.2 Crore</p> <p>E. Present ATC: Rs. 41,292.01 Crore*</p> <p>F. A/B (%): 0.775%</p>
H.	Need of phasing, if any	Not Applicable
I.	Implementation timeframe	Matching with Kaza Solar Park i.e. Mar' 2024
J.	Inclusion of any wild life/protected area along the transmission line route	<p>Kaza - Wangtoo (HPPTCL) 400 kV D/c (Quad) line: The line may pass through Rupi Bhaba WLS, Lippa Asrang WLS, Sangla Vallay(Raksham Chitkul) WLS or its buffer zone in HP. However, for details of forest/protected areas survey is required to be done.</p> <p>Wangtoo (HPPTCL) - Panchkula (PG) 400 kV D/c: The line may pass through Rupi Bhaba WLS, Daranghati WLS, Chail WLS & Churdhar WLS or its buffer zone in the state of HP & Morni Hills WLS or its buffer zone in State of Haryana. However, for details of forest/protected areas survey is required to be done.</p>
K.	Deliberations with RPC along with their comments	<p>The above scheme was deliberated and agreed in 50th NRPC held on 28.01.2022. In NRPC meeting, 2x80 MVar (420kV) Bus Reactors was agreed in place of 1x125MVar (420kV) bus reactor at Kaza PS in earlier proposed scheme. Accordingly, modified scheme is as shown in S. No. 2.</p> <p>Further NRPC has opined that in view of higher</p>

I/20890/2022

S. No.	Items	Details
		transmission cost of about Rs 2.5 Cr/MW for proposed scheme, Govt. may also consider budgetary support/grant for the transmission scheme so as to rationalise transmission charges on the consumers.
L.	System Study for evolution of the proposal	<p>Studies discussed and agreed in following meetings:</p> <ul style="list-style-type: none"> • 4th NRPC(TP) meeting held on 05.10.21 & 12.10.21 (Minutes of meeting enclosed in Annexure-I) • 1st CMETS-NR meeting held on 29.11.2021 (Minutes of meeting enclosed in Annexure-II) • Joint Study Meeting held on 24.12.2021 with CEA, POSOCO, HVPN, PTCUL, HPPTCL, UPPTCL and other STUs of Northern region by CTU (Minutes of meeting enclosed in Annexure-III) • 2nd CMETS-NR meeting held on 29.12.2021 (Minutes of meeting enclosed in Annexure-IV) • 50th NRPC meeting held on 28.01.2022 (Minutes of meeting enclosed in Annexure-V) <p>Study assumptions are enclosed in Annexure-VI</p> <p>Load flow results attached at Exhibit-II</p>

**Total YTC allowed for Nov'21, as per Notification of Transmission Charges payable by DICs for Billing Month of January, 2022 dated 25.12.2021 posted on NLDC website.*

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

5.1. In the 1st Consultation Meeting for Evolving Transmission Schemes in Eastern Region held on 25-11-2021 space has been allocated to STUs in ER for implementation of new transmission lines by them under intra-state scheme. The details are as follows:

- (a) **Angul 765/400kV (POWERGRID) S/s:** Space for 2 no. of new 765kV lines bays has been allocated to OPTCL (Odisha) for implementation of Angul (POWERGRID) – Paradeep (OPTCL) 765kV D/c intra-state line (including suitable switchable line reactors).
- (b) **Rourkela 400/220kV (POWERGRID) S/s:** Space for 2 no. of new 220kV lines bays has been allocated to OPTCL (Odisha) for implementation of 2nd Rourkela (POWERGRID) – Tarkera (OPTCL) 220kV D/c intra-state line.
- (c) **Keonjhar 400/220kV (POWERGRID) S/s:** Space for 2 no. of new 220kV lines bays has been allocated to OPTCL (Odisha) for implementation of Keonjhar (POWERGRID) – Tikarpada (OPTCL) 220kV D/c intra-state line.

I/20890/2022

Members may note.

6. Evaluation of functioning of National Grid.

POSOCO may make the requisite presentation apprising NCT of the performance of national Grid.

7. Comprehensive presentation by CTU apprising NCT of measures taken for ensuring development of an efficient, co-ordinated and economical ISTS for smooth flow of electricity.

CTU may present

8. Five-year rolling plan for ISTS capacity addition.

As per the amended ToR of the NCT, CTU shall prepare a five-year rolling plan for ISTS capacity addition every year. The Annual Plan shall be put up to the NCT six months in advance.

CTU may present

Members may deliberate

9. Any other issues, with permission of chair