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**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 6<sup>th</sup> बैठक की कार्यसूची।**Subject: Agenda for the 6<sup>th</sup> Meeting of "National Committee on Transmission" (NCT)**

महोदया / महोदय / Madam / Sir,

The 6<sup>th</sup> meeting of the "National Committee on Transmission" (NCT) is scheduled to be held on **29.10.2021 (Friday) at 3.00 PM** 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,

(ईशान शरण/ Ishan Sharan)

मुख्य अभियन्ता एवं सदस्य सचिव/

**Chief Engineer & Member Secretary (NCT)****Copy to:**

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

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**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

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**Agenda for the 6<sup>th</sup> meeting of National Committee on Transmission****1. Confirmation of the minutes of the 5<sup>th</sup> NCT meeting held on 25.08.2021 and 02.09.2021.**

- 1.1. Two sittings of 5<sup>th</sup> meeting of the “National Committee on Transmission (NCT)” were held on 25.08.2021 and 2.09.2021. Subsequently, the minutes of the meeting were issued vide CEA letter No. File No. CEA-PS-11-15(11)/1/2020-PSPA-I Division dated 29.09.2021.
- 1.2. Comments/observations have not been received on the minutes. Hence, the minutes of the meeting may please be confirmed.

**2. New Transmission schemes recommended by Southern Regional Power Committee (Transmission Planning) [SRPC(TP)]****2.1 Requirement of 765 kV spare (1-Ph) Reactors units**

- 2.1.1 In 3<sup>rd</sup> SRPC(TP) meeting held on 24<sup>th</sup> August 2021, it was agreed to provide one spare unit (1-Ph) of 80 MVAR reactor at 765 kV Warangal New and Chilkaluripeta substations along with necessary arrangement to take spare reactor units into service as per the operational requirement. Details of the scheme is as follows:

**“Requirement of 765 kV spare (1-Ph) Reactors units at 765 kV Warangal New and Chilkaluripeta”**

Sl. No	Scope of the Transmission Scheme	Capacity /km
1	One spare unit (1-Ph) of 80 MVAR reactor at 765 kV Warangal New	80 MVAR (1-Ph)
2	One spare unit (1-Ph) of 80 MVAR reactor at 765 kV Chilkaluripeta	80 MVAR (1-Ph)
	<b>Total Estimated Cost (Rs Crores)</b>	<b>11</b>

Members may deliberate.

**2.2 Scheme to bypass NGR to use Switchable Line Reactor as Bus Reactor**

- 2.2.1 In 3<sup>rd</sup> SRPC(TP) meeting held on 24<sup>th</sup> August 2021, it was agreed to implement NGR bypass arrangement to use switchable line reactors (240 MVAR each) as bus reactors installed on each circuit of Vemagiri – Chilkaluripeta 765 kV D/c line and Chilkaluripeta – Cuddapah 765 kV D/c line at Chilkaluripeta 765 kV S/s. Details of the scheme is as follows:

**“Scheme to bypass NGR to use Switchable Line Reactor as Bus Reactor”**

Sl. No	Scope of the Transmission Scheme
1	NGR bypass arrangement to use switchable line reactors (240 MVAR each) as bus reactors installed on each circuit of Vemagiri – Chilkaluripeta 765 kV D/c line
2	NGR bypass arrangement to use switchable line reactors (240 MVAR each) as bus reactors installed on each circuit of Chilkaluripeta – Cuddapah 765 kV D/c line.

*The details regarding cost estimates to be provided subsequently.*

Members may deliberate.

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**2.3 1 no. 400 kV bay at 765/400 kV Kurnool (New) Substation**

- 2.3.1 In 3<sup>rd</sup> SRPC(TP) meeting held on 24<sup>th</sup> August 2021, 1 no. of 400 kV bay at 765/400 kV Kurnool (New) Substation was agreed for connecting the Greenko AP01 IREP Pvt. Ltd – Kurnool New 400 kV S/c line.

**“1 no. 400 kV bay at 765/400 kV Kurnool (New) Substation”**

Sl. No	Scope of the Transmission Scheme	Capacity /km
1	1 no. of 400 kV bay at 765/400 kV Kurnool (New)	400kV line bay-1 no
	<b>Total Estimated Cost (Rs Crores)</b>	<b>9</b>

Members may deliberate.

**2.4 Augmentation of Transformation Capacity in Southern Region:**

- 2.4.1 In the 3<sup>rd</sup> meeting of SRPC (TP) held on 24<sup>th</sup> August 2021, members agreed for following ICT Augmentation under regional system strengthening due to ‘N-1’ non-compliance of existing ICTs under peak load conditions:

**“Augmentation of Transformation Capacity in Southern Region”**

Sl. No	Scope of the Transmission Scheme	Capacity /km
1.	Augmentation with 400/220kV, 1x500 MVA Transformer (3 <sup>rd</sup> ) at Palakkad (PG) ( 2x 315 MVA already existing )	400/220kV 500 MVA ICT:1 no 400 kV ICT bays – 1 no. 220 kV ICT bays – 1 no
2.	Augmentation with 400/220 kV, 1x500 MVA Transformer (3 <sup>rd</sup> ) at Kolar (PG) ( 2x 500 MVA already existing )	400/220 kV 500 MVA ICT:1 no 400 kV ICT bays – 1 no. 220 kV ICT bays – 1 no
3.	Augmentation with 765/400 kV, 1x1500 MVA Transformer (3 <sup>rd</sup> ) at Nizamabad (PG) (2x 1500 MVA already existing)	765/400 kV, 1x1500 MVA ICT:1 no 765 kV ICT bays – 1 no. 400 kV ICT bays – 1 no
	<b>Total Estimated Cost (Rs Crores)</b>	<b>125</b>

Members may deliberate.

**3. New Transmission schemes recommended by Northern Regional Power Committee (Transmission Planning) [NRPC(TP)]**

Following schemes were agreed in the 4<sup>th</sup> meeting of Northern Regional Power Committee (Transmission Planning) [NRPC(TP)] held on 05.10.2021 and 12.10.2021.

**3.1 Transmission System Strengthening for ‘Srinagar – Leh Transmission System’**



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**3.2.1** MoP had directed MNRE and POWERGRID to explore the possibility of developing and evacuating 10 GW of renewable energy from Leh and POWERGRID was directed to prepare a DPR for 10 GW capacity transmission infrastructures for evacuating renewable energy from Leh.

Accordingly, two locations were identified for pooling of renewable energy in Leh i.e. Nyoma and Pang with a capacity of 5 GW each and Powergrid proposed following transmission schemes for evacuation of 10 GW renewable energy from Leh:

- (i) Evacuation from Leh UMSPP at Pang (5 GW) through VSC based HVDC system upto Kaithal (Haryana) beyond which it shall be integrated with Meerut/Moga and Aligarh in the National Grid.
- (ii) Evacuation from Leh UMSPP at Nyoma (5 GW) through VSC based HVDC system upto Kashipur (UKD) beyond which it shall be integrated with Narela (Delhi) and Bareilly (UP) in the National Grid.

**3.2.2** Subsequently, MoP decided that the transmission system for evacuation of 10 GW RE generation would comprise of 5 GW transmission link from Pang to Kaithal along with 12 GWh battery energy storage system (BESS) as Phase I. The Phase II of 5 GW with Nyoma-Kashipur section is fraught with uncertainty because of Changthang wild life area coming in between. Accordingly, Powergrid was directed to submit revised DPR for transmission project with BESS.

**3.2.3** Powergrid in its DPR has mentioned that by integrating 12 GWh of BESS at Pang, one transmission system corridor of 5 GW from Pang to Kaithal shall be sufficient to cater to the evacuation up to 13 GW (9 GW Solar + 4 GW Wind) RE capacity. The requirement of BESS storage capacity can be determined on the basis of RE generation being set up in Leh region during implementation of Phase-I of the project. BESS can be scaled up to 12 GWh in stages, matching with the additional RE generation in Leh.

Similarly, implementation of Phase – II of the project can be taken up after Phase – I is commissioned and depending on the scale of RE generation, i.e., if it goes beyond 13 GW, thus entirely utilising Phase-I transmission system as well as Battery energy storage system.

**3.2.4** MNRE in its letter dated 24.3.2021 has informed that DoE has granted its in-principle approval for providing Central grant of 40% of the project cost for ISTS component related to Ladakh RE projects.

**3.2.5** The details of Phase-I scheme as per Powergrid's DPR is as under:

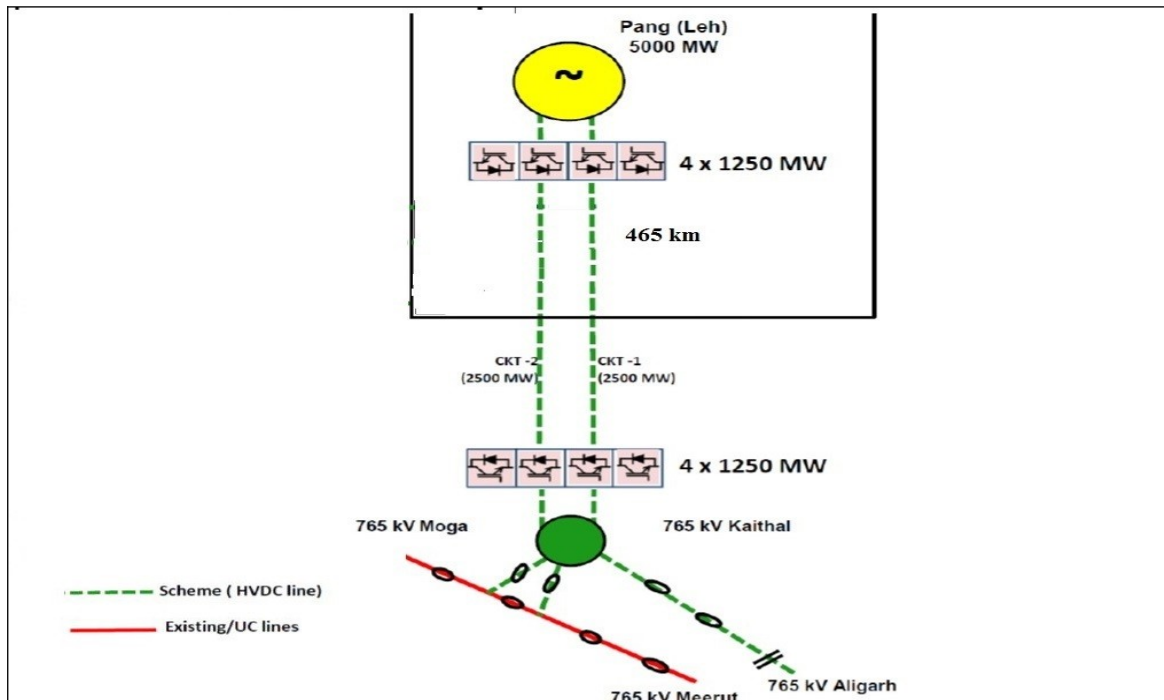
**A. Pang (Leh) to Kaithal (Haryana) transmission system: Phase-I, Part-A**

Transmission system with a capacity of 5 GW on continuous power flow basis from Pang area is proposed through Voltage Source Converter (VSC) based High Voltage Direct Current (HVDC) system upto Kaithal (Haryana), beyond which it shall be integrated with Meerut/Moga and Aligarh in the national grid.

**B. Battery Energy Storage System (12 GWh): Phase-I, Part-B**

BESS with a peak storage capacity up to 12GWh is proposed to be installed at Pang depending on the scale of RE generation that will be set up towards the later stages of implementation of Phase – I, Part A. The BESS will be integrated with the transmission system of Pang – Kaithal evacuation system and the same would also improve utilisation of this corridor.

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**3.2.6** After deliberations in the 4<sup>th</sup> meeting of NRPCTP, Pang- Kaithal VSC based HVDC system (5 GW) was agreed. Further, due to constraints observed in integration of the system with Moga and Aligarh, it was decided that the AC interconnections from VSC terminal at Kaithal would be worked out again and discussed with the constituents separately.

**3.2.7** Further, considering that the time required for implementation of HVDC system would be more, the following Transmission system for evacuation of RE generation in Leh was agreed:

Detailed scope of works:

**“Transmission system for evacuation of 10 GW RE power from renewable energy parks in Leh: Pang (Leh) to Kaithal (Haryana) transmission system- Part-1”**

- i.) **Pooling point in Pang (Leh):**  $\pm 350$  kV, 2 nos. of 2500 MW HVDC terminal
- ii.) **Pooling point in Kaithal (Haryana):**  $\pm 350$  kV, 2 nos. of 2500 MW HVDC terminal (Each 2500 MW Symmetrical monopole link shall consist of 2 x 1250 MW parallel converter of symmetric monopoles along with Interface transformers of suitable capacity at both terminals)
- iii.) 4 Nos. of 400 kV converter (VSC) bays at Pang
- iv.) 4 Nos. of 765 kV converter (VSC) bays at Kaithal
- v.) 2 Nos. of 400/220/33 kV, 200 MVA Transformers along with associated Bays at Pang
- vi.) 2 Nos. of 765/400/33 kV, 1500 MVA Transformers along with associated bays at Kaithal alongwith 2 nos. of 400kV line bays and 2 nos. of 765 kV line bays.

**DC GIS/ AIS -**

- vii.) DC GIS / AIS at Pang and DC AIS at Kaithal
- viii.) 3 nos. of transition stations with DC GIS/ AIS

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<b>HVDC Line (OHL and UG Cable)</b>
ix.) 480 kms of $\pm 350$ kV HVDC line between Pang & Kaithal PS (combination of 465km overhead line (Quad) and 15 km underground cable)
x.) 6 nos. 400kV line bays at Pang for termination of lines from renewable energy Park developer's PS in Leh
<b>Total Estimated Cost (Rs. Crore) : 18,500</b>

Note: (i) Suitable clause needs to be added in the bid document to enable the TSP to provide the dynamic data and PSCAD model of the VSC HVDC to CTUIL and POSOCO.

(ii) Space provision to be kept at Kaithal for future augmentation of AC system.

Members may deliberate.

### 3.3 Grant of 400 kV & 220 kV bays to RE generators at ISTS Pooling Stations and ICT augmentation at Bikaner-II PS

3.3.1 Establishment of 400/220 kV, 6x500 MVA Bikaner-II Pooling Station along with 10 nos. of 220kV line bays was agreed as a part of Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase-II in the 5th meeting of Northern Region Standing Committee on Transmission (NRSCT) held on 13.09.2019. The scheme was also agreed in 46th NRPC meeting and 6th NCT meeting held on 24.09.2019 and 30.09.2019 respectively.

3.3.2 Subsequently, in the meeting held on 16.10.2020 amongst CEA, CTU, MNRE and SECI, it was discussed that since none of the connectivity/LTA applications had been received at Bikaner-II P.S, continuing with the bidding of the scheme might lead to creation of stranded asset. However, 400 kV transmission corridor included in the scheme was required for onward disbursement of power being pooled at Bikaner (PG) and other pooling stations at Fatehgarh and Bhadla. It was agreed that bidding of this scheme may be continued, however, RfP submission may be done after deleting the scope of 400/220 kV transformation capacity at Bikaner-II PS. Accordingly, 400/220 kV ICTs and 220 kV line bays were deleted from the scope in 4th meeting of the NCT (newly constituted) held on 20.01.2021 and 28.01.2021. 400 kV Bikaner-II PS is currently under implementation.

3.3.3 Recently, two Stage-II Connectivity applications for 290 MW and 200 MW have been received at 220 kV level of Bikaner-II PS. The same was agreed in the 4th meeting of NRPC(TP) along with 1x500MVA, 400/220 kV ICT at Bikaner-II PS for effecting connectivity.

3.3.4 Detailed scope of the scheme is given below:

#### “Grant of 400 kV & 220 kV bays to RE generators at ISTS Pooling Stations and ICT augmentation at Bikaner-II PS”

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	1x500MVA, 400/220 kV ICT at Bikaner-II PS	400/220 kV, 500 MVA ICT- 1 no. 400 kV ICT bays-1 no. 220 kV ICT bays- 1 no.
2.	220 kV bays at Bikaner-II PS	220 kV line bays- 2 nos.
	<b>Total Estimated Cost (Rs. Crore)</b>	<b>35</b>

Members may deliberate.



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### 3.4 Transmission system for evacuation of power from Kaza Solar Power Project to be developed by SJVN limited (880 MW):

3.4.1 SJVNL had applied for grant of connectivity to its solar project of 880 MW at Kaza, Lahul & Spiti, Himachal Pradesh. SJVNL had informed CTUIL that they would be developing the solar project at seven nos. of locations with the capacity as (4x100+130+150+200) MW.



3.4.2 After deliberations in the 4<sup>th</sup> meeting of NRPC(TP), following transmission system was agreed for providing connectivity to Kaza Solar Power Project being developed by SJVNL:

1. Establishment of 3x315 MVA (10x105 MVA single phase units including one spare unit), 400/132 kV substation at Kaza (under ISTS)
2. Kaza - Wangtoo (HPPTCL) 400 kV D/c line (length ~180 km) along with the associated 400 kV bays at both ends (under ISTS)#  
*# Line capacity to be min 900 MW per ckt upto LILO point for Jangi Thopan HEP. Beyond Jhangi Thopan LILO point, line capacity shall be 2500 MW per circuit at nominal voltage*
3. 1x80 MVAR switchable line reactor on each circuit at Kaza end of Kaza– Wangtoo 400 kV D/c line (under ISTS)
4. 132 kV line bays for termination of lines from 7 pockets of solar projects of SJVNL (under the scope of applicant)

Detailed scope of works:

**“Transmission system for evacuation of power from Kaza Solar Power Project”**

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Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Establishment of 3x315 MVA (10x105 MVA single phase units including one spare unit), 400/132kV substation at Kaza	400/132 kV, 315 MVA ICT- 3 nos. (10x105 MVA, including one spare) 400 kV ICT bays- 3 nos. 132 kV ICT bays- 3 nos. 400 kV line bays- 2 nos.
2.	Kaza– Wangtoo (HPPTCL) 400 kV D/c line along with 80 MVAR switchable line reactor at Kaza end	Length- 180 km 400 kV, 80 MVAR Switchable line reactor- 2 nos. Switching equipment for 400 kV 80 MVAR switchable line reactor –2
3.	400 kV line bays at Wangtoo for Kaza– Wangtoo (HPPTCL) D/c line	400 kV line bays- 2 nos.
	<b>Total Estimated Cost (Rs crore)</b>	<b>580</b>

Note:

- (i) *Line capacity for Kaza– Wangtoo (HPPTCL) 400 kV D/c line to be min 900 MW per ckt upto LILO point for Jangi Thopan HEP. Beyond Jhangi Thopan LILO point, line capacity shall be 2500 MW per circuit at nominal voltage*
- (ii) *The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey*
- (iii) *HPPTCL to provide space for 2 nos. of 400kV bays at Wangtoo S/s*

Members may deliberate.

### 3.5 400 kV Khandukhal(Srinagar)-Rampura (Kashipur) D/c line

**3.5.1** In the 3<sup>rd</sup> meeting of NRPC(TP), implementation of 400 kV D/c Khandukhal(Srinagar)-Rampura (Kashipur) line was agreed to be taken up under central sector as an ISTS scheme with the matching time frame of commissioning of Vishnugad Pipalkoti HEP of THDC or Tapovan Vishnugad HEP of NTPC, whichever is earlier. Subsequently, the scheme was taken up for discussions in 5<sup>th</sup> meeting of NCT for decision on its mode of implementation. In the NCT meeting, it was pointed out by CTUIL that the conductor configuration of the line, Quad Bersimis needs to be mentioned. Also, earlier the line length noted was 150 km and now, it has been modified to 195 km, which would require the need of line reactor. 2x80 MVAR switchable line reactors with inter-tripping arrangement could be utilized at both ends.

**3.5.2** The availability of space for construction of 400 kV bays along with space for installation of switchable line reactor at 400 kV S/s Khandukhal (Srinagar) and 400 kV S/s Rampura (Kashipur) was enquired from PTCUL in the 4<sup>th</sup> meeting of NRPC(TP). PTCUL in response stated that there is no space for reactor at Khandukhal (Srinagar). The space at Kashipur S/s needs to be checked. PTCUL also informed that the two number of 400 kV bays for termination of Khandukhal(Srinagar) - Rampura(Kashipur) 400 kV D/c line is existing at Khandukhal (Srinagar) S/s.

**3.5.3** Subsequently, PTCUL informed that space is available for 80 MVAR switchable line reactor at Kashipur end. Therefore, based on the inputs from PTCUL, the details of the scheme is as under:

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**“400 kV Khandukhal (Srinagar)-Rampura (Kashipur) D/c line”:**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1	400 kV D/c Khandukhal(Srinagar)-Rampura (Kashipur) line (Quad Bersimis)	Length – 195 km
2	1x80MVAr switchable line reactor at Rampura (Kashipur) end on each ckt 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	2 nos. of 400 KV bays both at Rampura(Kashipur) S/s	400 kV line bays -2
	<b>Total Estimated Cost (Rs. Crore)</b>	<b>770</b>

Note:

- (i) *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 2 nos. of 400kV bays at Rampura (Kashipur) along with the space for switchable line reactors*

Members may deliberate.

**3.6 Augmentation of transformation capacity at 400 kV PGCIL Ludhiana and 400 kV PGCIL Patiala Substations:**

3.6.1 Due to increasing load in Punjab, PSTCL requested for augmentation of transformation capacity at 400kV PGCIL Ludhiana and 400 kV PGCIL Patiala substations. Due to space constraints at these substations PSTCL suggested to replace one existing 315 MVA transformer by 500 MVA.

After deliberations in the 4<sup>th</sup> meeting of NRPC(TP), replacement of 1x315 MVA, 400/220 kV ICT by 1x 500 MVA at Ludhiana and Patiala were agreed with following scope of works:

**“Augmentation of Transformation capacity 400 kV PGCIL Ludhiana and PGCIL Patiala substations”**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Replacement of 1x315 MVA, 400/220 kV ICT by 1x 500 MVA at Ludhiana	400/220 kV, 500MVA ICT- 1 no.
2.	Replacement of 1x315 MVA, 400/220 kV	400/220 kV, 500 MVA ICT- 1 no.

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Sl. No.	Scope of the Transmission Scheme	Capacity /km
	ICT by 1x 500 MVA at Patiala	
	<b>Total Estimated Cost (Rs. Crore)</b>	<b>28</b>

Members may deliberate.

### 3.7 Additional ICT at Kurukshetra (PG):

3.7.1 NRLDC and SLDC, Haryana, highlighted overloading of existing 400/220kV ICTs at Kurukshetra. Therefore, HVPNL requested for additional (3<sup>rd</sup>) 500 MVA, 400/220kV ICT at Kurukshetra (PG) and same was agreed in 4<sup>th</sup> NRPC(TP) meeting. Powergrid confirmed that there is no space constraint for implementation of 3<sup>rd</sup> 400/220kV ICT at Kurukshetra and based on the deliberations, installation of 3<sup>rd</sup> 500 MVA, 400/220kV ICT at Kurukshetra was agreed.

#### “Additional ICT at Kurukshetra (PG)”

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	3 <sup>rd</sup> 500 MVA, 400/220kV ICT at Kurukshetra(PG)	400/220 kV, 500 MVA ICT- 1 no. 400 kV ICT bays- 1 nos. 220 kV ICT bays- 1 nos.
	<b>Total Estimated Cost (Rs. Crore)</b>	<b>27</b>

Members may deliberate.

## 4. New Transmission schemes recommended by Eastern Regional Power Committee (Transmission Planning) [ERPC(TP)]

### 4.1. Installation of new 400/220kV, 1x500MVA ICT along with associated bays at existing Ranchi (POWERGRID) S/s

4.1.1. In the 3<sup>rd</sup> meeting of ERPC(TP) held on 09.02.2021, it was discussed that the power flow through both the 400/220kV ICTs at Ranchi (POWERGRID) S/s having the transformation capacity of 630MVA (2x315MVA ICT), exceeds more than 450MW during peak hours, thereby not meeting the N-1 reliability criteria. After deliberations, installation of new 400/220kV, 500MVA ICT at Ranchi S/s along with associated bays under ISTS was agreed. **“Installation of new 400/220kV, 1x500MVA ICT along with associated bays at existing Ranchi (POWERGRID) S/s”**

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	3 <sup>rd</sup> 500 MVA, 400/220kV ICT at Ranchi(PG)	400/220 kV, 500 MVA ICT- 1 no. 400 kV ICT bays- 1 nos. 220 kV ICT bays- 1 nos.

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Sl. No.	Scope of the Transmission Scheme	Capacity /km
	<b>Total Estimated Cost (Rs. Crore)</b>	<b>27</b>

Members may deliberate.

**5. New Transmission schemes recommended by North Eastern Regional Power Committee (Transmission Planning) [NERPC(TP)]:**

**5.1. CT of 132kV Imphal (POWERGRID) – Imphal (Manipur) bay-2 to be upgraded to 1200 A at Imphal (POWERGRID) end.**

5.1.1. MoP vide its OM dated 25<sup>th</sup> September' 2020 has allocated "Upgradation of switching scheme at Powergrid substation at Nirjuli and Imphal" to Powergrid for implementation RTM route. Subsequently, In the 03<sup>rd</sup> meeting of NERPC-TP held on 19.07.2021, it was agreed that, CT of 132 kV Imphal (PG) - Imphal (Manipur) Bay-2 at Imphal (PG) end will be upgraded to 1200 A under ISTS in matching time-frame of upgradation of bus-bar switching scheme at Imphal (PG).

**"CT of 132kV Imphal (POWERGRID) – Imphal (Manipur) bay-2 to be upgraded to 1200 A at Imphal (POWERGRID) end"**

Sl. No.	Scope of the Transmission Scheme
1.	CT of 132kV Imphal (POWERGRID) – Imphal (Manipur) bay-2 to be upgraded to 1200 A at Imphal (POWERGRID) end

Members may deliberate.

**6. Modification in intra-state component to be implemented in the similar timeframe of already approved and notified ISTS scheme recommended by North Eastern Regional Power Committee (Transmission Planning) [NERPC(TP)]:**

**6.1. Modification in intra-state transmission system to be implemented in the similar timeframe of ISTS scheme "Establishment of new 220/132kV substation at Nangalbibra"**

6.1.1. NCT in its 3<sup>rd</sup> meeting held on 26.05.2020 & 28.05.2020 has recommended the Transmission Scheme "Establishment of new 220/132kV substation at Nangalbibra" to be implemented through TBCB route. The scheme was notified vide Gazette notification dated 25.09.2020 by MoP for implementation through TBCB route. The details are as given below:

**"Establishment of new 220/132kV substation at Nangalbibra"**

Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
1.	Establishment of new 220/132kV, 2x160MVA substation at Nangalbibra.	220/132kV, 160 MVA ICT-2 220 kV ICT bays- 2

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Sl. No.	Scope of the Transmission Scheme	Capacity / line length km
	<p><b><u>Additional space for future expansion:</u></b></p> <p>220/132kV 200MVA ICT-1 (along with associated bays at both levels)</p> <p>400/220kV 500MVA ICT-3 (along with associated bays at both levels)</p> <p><b>Space for 400kV upgradation:</b></p> <p>Line bays along with space for switchable line reactor: 8 no. [2 no. for 400kV operation of Bongaigaon (POWERGRID) – Nangalbibra 400kV D/c line (initially operated at 220kV) and 6 no. for other lines]</p> <p>Bus reactor 420kV, 125MVA<sub>r</sub> -3      Bus reactor bays-3.</p> <p><b>Space for future 220 kV line bays:</b> 6 no. [2 no. for termination of Mawngap (Meghalaya) – Nangalbibra 220 kV D/c line of MePTCL and 4 no. for future lines]</p> <p><b>Space for future 132 kV line bays:</b> 6 no. (for future lines)</p>	<p>132 kV ICT bays- 2</p> <p>220 kV Line bays: 2 [for termination of Bongaigaon (POWERGRID) – Nangalbibra 400kV D/c line (initially operated at 220kV) – under this scheme]</p> <p>132 kV Line bays: 2 [for termination of Nangalbibra – existing Nangalbibra (MePTCL) 132kV D/c (Single Moose) line of MePTCL]</p> <p>Bus reactor 31.5 MVA<sub>r</sub>- 2 Bus reactor bays: 2 no.</p>
2	Extension at Bongaigaon (POWERGRID) S/s: 2 no. of line bays for termination of Bongaigaon (POWERGRID) – Nangalbibra 400kV D/c line (initiated operated at 220kV)	220 kV line bays - 2
3	Extension at Hatsinghmari (Assam) S/s: 2 no. of 132kV line bays for termination of Hatsinghmari (Assam) – Ampati (Meghalaya) 132kV D/c line.	132 kV line bays - 2
4	Extension at Ampati (Meghalaya) S/s: 2 no. of 132kV line bays for termination of Hatsinghmari (Assam) – Ampati (Meghalaya) 132kV D/c line.	132 kV line bays - 2
5	Bongaigaon (POWERGRID) – Nangalbibra 400kV D/c line (initially operated at 220kV)	140 km
6	Hatsinghmari (Assam) – Ampati (Meghalaya) 132kV D/c line	30 km

Implementation Timeframe: 24 months

**Note:**

- (a) POWERGRID to provide space for extension at Bongaigaon (POWERGRID) S/s: 2 no. of 220kV line bays for termination of Bongaigaon (POWERGRID) – Nangalbibra 400kV D/c line (initially operated at 220kV)

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- (b) AEGCL/Assam to provide space for extension at Hatsinghmari (Assam) S/s: 2 no. of 132kV line bays for termination of Hatsinghmari (Assam) – Ampati (Meghalaya) 132kV D/c line.
- (c) MePTCL/Meghalaya to provide space for extension at Ampati (Meghalaya) S/s: 2 no. of 132kV line bays for termination of Hatsinghmari (Assam) – Ampati (Meghalaya) 132kV D/c line.
- (d) To be implemented by MePTCL, Meghalaya under intra-state scheme in matching timeframe of this ISTS scheme
- (i) Mawngap (Meghalaya) – Nangalbibra (ISTS) 220kV D/c line alongwith 220kV line bays at both ends(space for construction of 2 no. 220kV line bays at Nangalbibra (ISTS) to be provided by licensee to MePTCL)
- (ii) Nangalbibra (ISTS) – existing Nangalbibra (MePTCL) 132kV D/c (Single Moose) line (2 no. 132kV line bays at Nangalbibra (MePTCL) is to be implemented by MePTCL, however, 2 no. 132kV line bays at Nangalbibra (ISTS) is under the scope of this ISTS scheme)

6.1.2. Subsequently, in the 03<sup>rd</sup> meeting of NERPC-TP held on 19.07.2021, it has been agreed that New Shillong (Meghalaya) – Nangalbibra (ISTS) 220kV D/c line alongwith 220kV line bays at both ends would be implemented by MePTCL under intra-state scheme instead of earlier approved Mawngap (Meghalaya) – Nangalbibra (ISTS) 220kV D/c line alongwith 220kV line bays at both ends.

6.1.3. Accordingly, in the notified scheme Nomenclature of 2 nos. of bays at Nangalbibra to Mawngap (Meghalaya) needs to be read as New Shillong (Meghalaya). This would have no implication on the scope of works of the already notified ISTS scheme to be implemented through TBCB route.

Members may recommend and note.

## 7. Recommendation of NCT: Transmission packages and their mode of implementation.

7.1. The proposed transmission schemes are summarized in the table given below. Members may deliberate and finalize the mode of implementation, agency for preliminary survey and timeline of the project.

Sl. No.	Transmission scheme	Implementation mode	Survey agency	Estimated cost (Rs. Crore)
1.	Requirement of 765 kV spare (1-Ph) Reactors units at 765 kV Warangal New and Chilkaluripeta			11
2.	Scheme to bypass NGR to use Switchable Line Reactor as Bus Reactor			Details to be provided
3.	1 no. 400 kV bay at 765/400 kV Kurnool (New) Substation			9
4.	Augmentation of Transformation Capacity in Southern Region			125
5.	Transmission System Strengthening for 'Srinagar – Leh Transmission System'			226
6.	Transmission system for			18500

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Sl. No.	Transmission scheme	Implementation mode	Survey agency	Estimated cost (Rs. Crore)
	evacuation of 10 GW RE power from renewable energy parks in Leh: Pang (Leh) to Kaithal (Haryana) transmission system-Part-1			
7.	Grant of 400 kV & 220 kV bays to RE generators at ISTS Pooling Stations and ICT augmentation at Bikaner-II PS			35
8.	Transmission system for evacuation of power from Kaza Solar Power Project			580
9.	400 kV Khandukhal (Srinagar)-Rampura (Kashipur) D/c line			770
10.	Augmentation of Transformation capacity 400 kV PGCIL Ludhiana and PGCIL Patiala substations			28
11.	Additional ICT at Kurukshetra (PG)			27
12.	Installation of new 400/220kV, 1x500MVA ICT along with associated bays at existing Ranchi (POWERGRID) S/s			27
13.	CT of 132kV Imphal (POWERGRID) – Imphal (Manipur) bay-2 to be upgraded to 1200 A at Imphal (POWERGRID) end			Details to be provided