



भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केंद्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग- II

Power System Planning & Appraisal Division-II

सेवा में /To

As per list of Addresses

विषय: ट्रांसमिशन पर राष्ट्रीय समिति (एनसीटी) की बीसवीं बैठक के कार्यवृत्त - के सम्बन्ध में ।

Subject: Minutes of the 20th Meeting of National Committee on Transmission (NCT) – regarding.

महोदया (Madam) / महोदय (Sir),

The 20th meeting of the "National Committee on Transmission" (NCT) was held on 25th June, 2024 at CEA, New Delhi. Minutes of the meeting are enclosed herewith.

भवदीय / Yours faithfully,

(बी.एस. बैरवा/ B.S. Bairwa)

मुख्य अभियन्ता (इंचार्ज) एवं सदस्य सचिव, एन.सी.टी./
Chief Engineer (I/C) & Member Secretary (NCT)

प्रतिलिपि / Copy to:

Joint Secretary (Trans), Ministry of Power, New Delhi-110001

List of Addressees:

1.	Chairperson, Central Electricity Authority Sewa Bhawan, R.K. Puram, New Delhi – 110 066.	2.	Member (Power Systems), 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. Lalit Bohra, Joint Secretary Room no 602, Atal Akshay Urja Bhawan Opposite CGO Complex gate No. 2, 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, Grid Controller of India, B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi – 110016
9.	Sh. Ravinder Gupta Ex. Chief Engineer CEA		

Special Invitee

Chief Engineer (PCD), CEA

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Minutes of the 20th meeting of National Committee on Transmission (NCT)

The 20th meeting of NCT was held on 25th June, 2024 at CEA, New Delhi. List of participants is enclosed at **Annexure-I**. Agenda wise deliberations are given below.

1 Confirmation of the minutes of the 19th meeting of National Committee on Transmission.

1.1 The minutes of the 19th meeting of NCT held on 29.04.2024 were issued vide CEA letter no CEA-PS-12-13/3/2019-PSPA-II dated 28.05.2024. No comments were received on the minutes.

1.2 Members confirmed the minutes.

2 Status of the transmission schemes noted/approved/recommended to MoP in the 18th meeting of NCT:

2.1 Status of new transmission schemes approved/recommended:

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	BPC	Award/ Gazette notification
1.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-4 :3.5 GW): Part A	Recommended	TBCB	RECPDCL	Notified in Gazette by Ministry of Power on 14.06.2024
2.	Transmission system for evacuation of power from Rajasthan REZ Ph-IV (Part-4 :3.5 GW): Part B	Recommended	TBCB	RECPDCL	
3.	System strengthening at Koppal-II and Gadag-II for integration of RE generation projects	Recommended	TBCB	PFCCL	
4.	Transmission system strengthening to facilitate evacuation of power from Bhadla/Bikaner complex	Approved	TBCB	PFCCL	Notified in Gazette by CEA on 18.06.2024
5.	OPGW installation on existing 400 kV Kurukshetra - Malerkotla line	Approved		Not Applicable	CEA intimated to CTUIL on 28.05.2024. CTUIL vide

Sr. No	Name of the Transmission Scheme	Noted/ Recommended/ Approved	Mode of Implementation	BPC	Award/ Gazette notification
	alongwith FOTE at both ends Part – A				letter dated 29.05.2024 informed to respective implementing agencies.
6.	OPGW installation on existing 400 kV Kurukshetra - Malerkotla line alongwith FOTE at both ends – Part-B	Approved	RTM	Not applicable	
7.	OPGW installation on existing 400 kV Kota – Merta line alongwith LILO portion at Shree Cement including FOTE at all 3 locations	Approved	RTM	Not applicable	
8.	OPGW installation on one circuit of existing of 765 kV Fatehpur-Agra D/c (2x S/c) Line which is to be LILOed at new Ghiror S/s (ISTS) including FOTE at Fatehpur & Agra locations (2 Nos.)	Approved	RTM	Not applicable	
9.	Supply and installation of OPGW on 400 kV Fatehgarh-I (Adani) - Fatehgarh-II (PG) line (6.5 kms.) upto LILO portion of Fatehgarh-II (PG).	Approved		Not applicable	
10.	Additional FOTE /Cards in view of resource disjoint and critical locations (12 Nos. of FOTE)	Approved	RTM	Not applicable	
11.	Supply and Installation of 11 Nos. FOTE at Backup SLDCs in Northern Region & Backup NRLDC (Guwahati)	Approved	RTM	Not applicable	

2.2 Status of transmission schemes where modifications was suggested by NCT:

S. No.	Scheme where modifications was suggested	Status
1.	Implementation of Jhatikara – Dwarka 400 kV (Quad) D/c line under Rajasthan REZ Ph-III, Part-D- Ph-II Scheme	CTUIL vide letter dated 29.05.2024 informed to implementing agency, i.e. POWERGRID
2.	Delinking of EHVAC System beyond Kaithal from Transmission system for evacuation of RE power from renewable energy parks in Leh (5 GW Leh-Kaithal transmission corridor)	MoP issued O.M. dated 18.06.2024
3.	Change in Scope of transmission scheme "Eastern Region Expansion Scheme- XXXIV (ERES-XXXIV)"	Informed to PFCCL vide letter dated 28.05.2024
4.	Change in implementation timeframe of Eastern Region Generation Scheme-I (ERGS-I)	Informed to PFCCL vide letter dated 28.05.2024

2.3 Members noted the status.

3 Modifications in the earlier approved/notified transmission schemes:

3.1 Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL) – PART-B

3.1.1 Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL)- PART B was approved in the 18th meeting of the "National Committee on Transmission" (NCT) held on 05th March, 2024, with cost estimate of INR 310 Cr. under TBCB route with PFCCL as the BPC as mentioned below

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Creation of New 220 kV Bus Section-II at Jam Khambhaliya PS Space to be kept for 1 No. 220 kV line bay in the same GIS Hall for RE Interconnection being implemented by the RE developer (in addition to 2 Nos. bays at Sl. 4)	220 kV Bus sectionaliser bay - 1 Set (to be kept normally CLOSED and may be opened based on system requirement) 220 kV BC – 1 No.
2.	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 2x500 MVA, 400/220 kV ICT (5th & 6th)	500 MVA, 400/220 kV ICTs: 2 Nos. 400 kV ICT bays: NIL* 220 kV ICT bays: 2 Nos.

Sl. No.	Scope of the Transmission Scheme	Capacity /km
	(terminated on New 220 kV bus section-II)	
3.	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 1x500 MVA, 400/220 kV ICT (7th) (terminated on New 220 kV bus section-II)	500 MVA, 400/220 kV ICTs: 1 No. 400 kV ICT bay: NIL (bay being implemented under Jamnagar scheme, which is currently under tendering, with schedule of Apr/May-26). Bus duct outside GIS hall along with termination equipment shall be provided. 220 kV ICT bay: 1 No.
4.	Implementation of 220 kV GIS line bays at Jam Khambhaliya PS for RE Projects on New 220 kV bus section-II	220 kV line bay – 2 No. (GIS) (1 for ACME Sun Power Pvt Ltd and 1 for Juniper Green Energy Pvt Ltd.)
5.	Creation of New 220 kV Bus Section at Jam Khambhaliya PS (Section III) (with space for 4 Nos. 220 kV line bays: in same GIS hall. Implementation of 2 Nos. GIS bays to be taken up as per Sl.No.8 and space to be kept for future 2 Nos.)	220 kV Bus sectionaliser bay - 1 Set (<i>to be kept normally OPEN and may be closed based on system requirement</i>) 220 kV BC – 1 No.
6.	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 1x500 MVA, 400/220 kV ICT (8th) (terminated on New 220 kV bus section-III)	500 MVA, 400/220 kV ICT: 1 Nos. 400 kV ICT bay: NIL (bay being implemented under Jamnagar scheme, which is currently under tendering, with schedule of Apr/May-26). Bus duct outside GIS hall along with termination equipment shall be provided. 220 kV ICT bay: 1 No.
7.	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 1x500 MVA, 400/220 kV (9 th) ICT terminated on New 220 kV bus section-III	500 MVA, 400/220 kV ICTs: 1 No. 400 kV ICT bays: 1 No. (TSP to implement complete dia. in all respect with the other 400 kV bay to be utilized by EETFEL (Bulk consumer)) 220 kV ICT bays: 1 No.

Sl. No.	Scope of the Transmission Scheme	Capacity /km
8.	Implementation of 220 kV GIS line bays at Jam Khambhaliya PS for Kuvadia 220 kV D/c line	220 kV line bay – 2 Nos. (GIS) (on Bus Section-III)
<p><i>Note:</i></p> <ol style="list-style-type: none"> 1. JKTL to provide space for above scope of work. 2. GETCO shall implement Jam Khambhaliya PS - Kuvadia 220 kV D/c line in matching time-frame 		
<p><i>*Note: Termination of the 2x500 MVA ICTs under present scope shall be in the '2' separate dia's which are being developed by POWERGRID for RIL for termination of 400 kV Jam Khambhaliya - Jamnagar D/c line. TSP shall implement 400 kV side GIS Duct required for interconnection of ICT-5 & 6 at 400 kV Jam Khambhaliya PS [length is approx. 350 M. (Actual length shall be finalized based upon final layout)] along with associated equipment as required</i></p>		
<p>Tentative implementation timeframe:</p> <ul style="list-style-type: none"> • For scope at Sl. No. 1: 18 months • For scope at Sl. No. 3 & 6: Matching with SCOD of 400 kV bays at Jam Khambhaliya PS (being implemented under “Network Expansion scheme in Gujarat for drawl of about 3.6 GW load under Phase-I in Jamnagar area” scheme which is currently under tendering) and subject to minimum implementation schedule of 21 months. • For scope at Sl. No. 4: 30.03.2026 and 30.06.2027 respectively (subject to minimum schedule of 21 months from date of award of balance works). • For balance scope: 21 months 		

- 3.1.2 Representative of CTUIL mentioned that Mounting Renewable Pvt Ltd (MRPL) vide letter dated 07.05.2024 has informed them that the 220 kV bay which they had initially decided to implement themselves, may be implemented under ISTS in matching timeframe of implementation of the subject ISTS scheme. Further, M/s EETFEL (Bulk Consumer) has withdrawn their GNA application vide letter dated 30.04.2024.
- 3.1.3 CTUIL proposed that 1 No. 220 kV bay for M/s MRPL on Bus Section-II may be added to the approved scope of works and references to EETFEL in scope of work may be removed. Further, implementation time-frame of Creation of New 220 kV Bus Section-II at Jam Khambhaliya PS may also be kept as 21 months instead of 18 months.
- 3.1.4 The tentative cost of the original scheme was Rs. 310 Cr., however, the same has been revised to Rs. 321 Cr. based on finalised cost of original scheme. Further, with the

above additional 1 No. 220 kV bay (Cost ~8 Cr.), revised cost of the scheme comes out to be Rs. 329 Cr. which is an increase of about 6%.

- 3.1.5 After deliberations, NCT approved the following modifications in the scope at Sl. 1, 2, 4 & 7 of the transmission scheme “Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL)- PART-B”.

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Implementation Time-frame
1	Creation of New 220 kV Bus Section-II at Jam Khambhaliya PS	220 kV Bus sectionaliser bay – 1 Set (to be kept normally CLOSED and may be opened based on system requirement) 220 kV BC – 1 No.	21 months
2	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 2x500 MVA, 400/220 kV ICT (5th & 6th) (terminated on New 220 kV bus section-II)	500 MVA, 400/220 kV ICTs: 2 Nos. 400 kV ICT bays: NIL* 220 kV ICT bays: 2 Nos. Bus duct outside GIS hall along with termination equipment shall be provided.	No change
4	Implementation of 220 kV GIS line bays at Jam Khambhaliya PS for RE Projects on New 220 kV bus section-II	220 kV line bay – 3 Nos. (GIS) (1 for ACME Sun Power Pvt Ltd, 1 for Juniper Green Energy Pvt Ltd. & 1 no. for Mounting (MRPL))	MRPL Bay: 21 months ACME Bay: 21 months# Juniper Bay: Jun-27 subject to minimum schedule of 21 months from date of award of balance works.
7	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 1x500 MVA, 400/220 kV	500 MVA, 400/220 kV ICTs: 1 No. 400 kV ICT bay: 1 No. (TSP to implement complete dia. in all respects)	No change

	(9th) ICT terminated on New 220 kV bus section-III	with the other 400 kV bay to be utilized by EETTEL (Bulk consumer) in future) 220 kV ICT bay: 1 No.	
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**Note: Termination of the 2x500 MVA ICTs under present scope shall be in the '2' separate dia's which are being developed by POWERGRID for RIL for termination of 400 kV Jam Khambaliya - Jamnagar D/c line. TSP shall implement 400 kV side GIS Duct required for interconnection of ICT-5 & 6 at 400 kV Jam Khambaliya PS [length is approx. 350 M. (Actual length shall be finalized based upon final layout)] along with associated equipment as required*

Earlier schedule was specified as March-26 subject to minimum schedule of 21 months from date of award of balance works. However, considering present status, schedule of 21 months may directly be specified.

3.2 **Modification in design / layout of Kurnool-III PS due to receipt of large quantum of Connectivity applications at 400 kV level**

- 3.2.1 Representative of CTUIL stated that Kurnool-III PS has been identified for integration of 4.5 GW RE potential from Kurnool REZ as part of 66.5 GW RE Projects. Presently, Kurnool-III 765/400/220 kV PS is under implementation by POWERGRID through RTM route and is expected to be completed by Nov'24. Additional space provision had been kept for further expansion / augmentation of the pooling station for integration of additional RE generation. Presently, for integration of RE capacity, 9 Nos. of 220 kV line and 8 Nos. of 400 kV line bays have been allocated to various RE generation developers.
- 3.2.2 The CTUIL representative further informed that they have granted/agreed connectivity for 8000 MW (2650 MW at 220 kV level & 5350 MW at 400 kV level). For injection of 2,650 MW RE power from 220 kV level, 7x500 MVA 400/220 kV ICTs are required. Due to receipt of large Nos. of Connectivity applications at 400 kV level, it was observed that under the present arrangement of Kurnool-III PS, balance 2x500 MVA 400/220 kV ICTs and 6 Nos. of 220 kV line bays may be difficult to be utilized for injection of power.
- 3.2.3 After deliberations, NCT approved following modifications in the scope of design / layout of Kurnool-III PS:

Sl. No.	Bay Type	Present scope	Revised Present scope	Future Scope	Revised Future scope
765 kV Switchyard: No change					
400 kV switchyard					
1	Line with Reactor	0	0	10	22
2	Tie	9	10	11	12
3	400/220 kV Transformer Bay	9	9 (2 shifted to new section)	11	5

Sl. No.	Bay Type	Present scope	Revised Present scope	Future Scope	Revised Future scope
4	765/400 kV Transformer Bay	3	3	4	4
5	Bus Sectionaliser	0	0	1 set	2 set
6	Bus Reactor	1	1	-	Any Line with reactor bay may be used as Bus reactor bay
220 kV switchyard					
1	Line	15	15 (5 Nos. Shifted to new section)	11	5
2	400/220 kV Transformer Bay	9	9 (2 shifted to new section)	11	5
3	Bus Coupler	3	3	3	1
4	Transfer Bus coupler	3	3	3	1
5	Bus section	2 set	2 set	3 set	0

Additional works due to rearrangement / revised scope:

Sl. No.	Items
1	Land development for additional area for 400 & 220 kV Switchyard
2	400 kV Bus works for 8 Nos. additional diameters
3	Earth mat for additional area for 400 & 220 kV Switchyard
4	Other Auxiliary items i.e. additional requirement of Power & Control Cables, illumination, VMS etc.
5	Associated civil works including dismantling of foundations already casted

3.3 Change in Implementation time-frame of Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX)

- 3.3.1 Representative of CTUIL stated that in the 16th meeting of NCT held on 30.11.2023, Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX) was recommended to be implemented through TBCB mode with tentative implementation timeframe of 30-06-2026 and estimated cost of Rs. 2898 crores. This scheme inter alia includes establishment of 765/400 kV ISTS substation at Gopalpur alongwith Angul (POWERGRID) – Gopalpur 765 kV D/c line & Gopalpur (ISTS) – Gopalpur (OPTCL) 400 kV D/c line in Odisha. Bidding of the scheme is under progress.
- 3.3.2 OPTCL vide letter no. CP/INDUSTRY DEPT/82/2023/122 dated 05-06-2024 have informed them that the expected commissioning schedule of their substation is changed from March 2026 to December 2026. One GNA_{RE} applicant viz. M/s Avaada has been granted 700 MW GNA_{RE} w.e.f. 30-06-2026 at Gopalpur (ISTS) S/s. Subsequently, M/s

Avaada vide letter dated 22-03-2024 had requested to shift the start date of GNA_{RE} to Dec 2027.

- 3.3.3 Completion schedule of ERES-XXXIX scheme was finalized keeping in view expected schedule of Gopalpur (OPTCL) S/s and GNA_{RE} requirement. Considering the present completion schedule of ERES-XXXIX i.e. 30-06-2026, no drawal arrangement at Gopalpur ISTS S/s would be available between July 2026 and Dec 2026. Accordingly, CTUIL proposed that the completion schedule of ERES-XXXIX scheme may be modified to 31-12-2026 from 30-06-2026.
- 3.3.4 Representative of RECPDCL stated that presently only land has been identified for Gopalpur (OPTCL) substation. OPTCL has not yet submitted the substation plan and bay coordinates to them for inclusion in RfP.
- 3.3.5 After deliberations, NCT approved the change in Implementation time-frame of Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX) from 30th June, 2026 to 31st December, 2026. Further, CTUIL was directed to reconfirm commissioning schedule of Gopalpur (OPTCL) from Odisha. Based on the response from Odisha, completion timeframe of ERES-XXXIX may again be reviewed at a later stage.

3.4 **System strengthening at Koppal-II and Gadag-II for integration of RE generation**

- 3.4.1 Representative of CTUIL stated that transmission scheme for Koppal-II PS & Gadag-II PS was approved in 10th meeting of the "National Committee on Transmission" (NCT) held on 7th November, 2022, with cost estimate of INR 310 Cr. under TBCB route with RECPDCL as the BPC with the following space provisions:
- **Koppal-II PS:** 220kV Bus Sectionalizer: 3 sets, 220 kV Bus Coupler (BC) Bay – 3 Nos., 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos. and 400 kV Bus Sectionalizer : 1 set.
 - **Gadag-II PS:** 220kV Bus Sectionalizer: 3 sets, 220 kV Bus Coupler (BC) Bay – 3 Nos., 220 kV Transfer Bus Coupler (TBC) Bay – 3 Nos.
- 3.4.2 He further added that Transmission scheme for System strengthening at Koppal-II and Gadag-II for integration of RE generation was agreed for implementation in the 19th meeting of the "National Committee on Transmission" (NCT) held on 29th April, 2024 with cost estimate of INR 1354.4 Cr. under TBCB route with PFCCCL as the BPC with the following scope:
- Augmentation of 3x1500 MVA (5th - 7th), 765/400 kV ICTs, 5x500 MVA, 400/220kV ICTs (5th - 9th) & 6 Nos. of 220 kV line bays at Koppal-II PS
 - Augmentation of 7x500 MVA, 400/220 kV ICTs (3rd - 9th), 1 No. of 400kV line bay & 5nos. of 220kV line bays at Gadag-II PS & Gadag-II PS – Koppal-II PS 400 kV (Quad) 2nd D/c line.

- 3.4.3 However, during the detailing of scope, provision of Bus Sectionalizers/BC/TBC were inadvertently missed out which are required considering the large number of connectivity.
- 3.4.4 After deliberations NCT, approved following scope of work to be appended to the ***“System strengthening at Koppal-II and Gadag-II for integration of RE generation”*** agreed in the 19th NCT meeting:
- **Koppal-II PS:** 220kV Bus Sectionalizer : 2 sets, 220 kV Bus Coupler (BC) Bay – 2 Nos., 220 kV Transfer Bus Coupler (TBC) Bay – 2 Nos. and 400kV Bus Sectionalizer :1 set
 - **Gadag-II PS:** 220 kV Bus Sectionalizer : 2 sets, 220 kV Bus Coupler (BC) Bay – 2 Nos. and 220 kV Transfer Bus Coupler (TBC) Bay – 2 Nos.
- 3.5 **Transmission system for evacuation of power from Luhri Stage-I HEP**
- 3.5.1 Representative from CTUIL stated that Transmission system for evacuation of power from Luhri Stage-I HEP was discussed and agreed in the 8th NCT meeting held on 25.03.2022. Scheme was notified in Gazette dated 02.06.2022 and RECPDCL was appointed as the BPC of the transmission scheme. The timeframe of the above transmission scheme was revised to 31st August 2026 in the 14th NCT meeting held on 09.06.2023. The transmission scheme is currently under bidding. During the course of bidding, the logistics issues in transportation of large size equipment was highlighted by bidders. Regarding this matter, multiple meetings were held.
- 3.5.2 In the meeting taken by Addl. Secretary (Trans), MoP on 07.06.2024 to discuss the Logistics issues in the ongoing bidding of Luhri Stage -I HEP Transmission scheme, SJVN suggested to shift the location of Nange (ISTS) Pooling Station (presently proposed at Ogli village) to a suitable location near Koldam area adjacent to National Highway (NH) in order to remove the hurdles associated with transportation of heavy equipment to the proposed location of pooling station and accordingly, SJVN would bring 220 kV dedicated line from Luhri-I & Sunni Dam to the new ISTS Pooling station near Koldam. Further, SJVN has informed that that the new location of ISTS Pooling station would be about 6-7 kms (BEE length) from Koldam HEP switchyard as per initial survey.
- 3.5.3 He further added that in view of revised location of Pooling station (near Koldam), line length of Pooling station (near Koldam)-Ropar section is reduced and therefore 50 MVAr line reactor at Ropar S/s is not required due to reactive over compensation (~95%). Overall there will be reduction in cost of the scheme from Rs. 432 cr to Rs. 305 cr.
- 3.5.4 After deliberations, NCT approved following modifications in the Transmission system for evacuation of power from Luhri Stage-I HEP scheme:

Sl. No.	Earlier Scope of Transmission Scheme	Revised Scope of Transmission Scheme
1	<p>Establishment of 7x105 MVA, 400/220 kV Nange GIS Pooling Station along with 125 MVAR (420kV) Bus Reactor at Nange (GIS) PS(1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 315MVA, 400/220kV ICT: 2 Nos.(7x105 MVA including 1 spare ICT) • 400kV ICT bays: 2 Nos. • 220kV ICT bays: 2 Nos. • 400 kV, 125 MVAr Bus Reactor[#] – 1 No. • 400 kV Bus Reactor bay- 1 No. • 400 kV Line Bays- 2 Nos. <p>Future provisions: Space for</p> <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. • 220kV bus sectionalizer: 1 set 	<p>Establishment of 7x105 MVA, 400/220kV Pooling Station near Koldam (GIS) along with 125 MVAR (420kV) Bus Reactor (1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 315MVA, 400/220 kV ICT: 2 Nos. (7x105 MVA including 1 spare ICT) • 400kV ICT bays: 2 Nos. • 220 kV ICT bays: 2 Nos. • 400 kV, 125 MVAr Bus Reactor – 1 No. • 400 kV Bus Reactor bay- 1 No. • 400 kV Line Bays- 2 Nos. <p>Future provisions: Space for</p> <ul style="list-style-type: none"> • 400/220 kV 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. • 220kV bus sectionalizer: 1 set
2	<p>Nange (GIS) Pooling Station – Koldam 400 kV D/C line (Triple snowbird) (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)-40 km</p>	<p>Pooling Station near Koldam (GIS)– Koldam (NTPC) 400 kV D/C line (Triple snowbird) (only one circuit is to be terminated at Koldam(NTPC) while second circuit would be connected to bypassed circuit of Koldam(NTPC) – Ropar/Ludhiana 400kV D/C line) – 7 km</p>
3	<p>1 no. of 400kV line bay at Koldam S/S for termination of Nange (GIS) Pooling Station – Koldam 400 kV line along with 125 MVAR (420kV) Bus Reactor at Koldam S/s (1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 400 kV Line Bay- 1 no. • 400 kV, 125 MVAr Bus Reactor[#] - 1 no. 	<p>1 no. of 400kV line bay at Koldam S/s for termination of Pooling Station near Koldam (GIS)– Koldam(NTPC) 400 kV line along with 125 MVAR (420kV) Bus Reactor at Koldam(NTPC) S/s (1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 400 kV Line Bay- 1 no. • 400 kV, 125 MVAr Bus Reactor[#] - 1 no. (to be terminated in existing

Sl. No.	Earlier Scope of Transmission Scheme	Revised Scope of Transmission Scheme
	<ul style="list-style-type: none"> 400 kV, 125 MVA_r Bus Reactor[#] - 1 no. (to be terminated in existing line bay at Koldam, which would be available due to bypassing of one circuit of Koldam – Ropar/Ludhiana 400 kV D/c line at Koldam S/s) 	line bay at Koldam(NTPC), which would be available due to bypassing of one circuit of Koldam – Ropar/Ludhiana 400 kV D/c line at Koldam(NTPC) S/s)
4	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)	Bypassing one ckt of Koldam(NTPC) – Ropar/Ludhiana 400kV D/C line (Triple snowbird) at Koldam(NTPC) and connecting it with one of the circuit of Pooling Station near Koldam (GIS) – Koldam(NTPC) 400kV D/c line (Triple snowbird), thus forming Pooling Station near Koldam – Ropar/ Ludhiana one line (Triple snowbird)
5	1x50 MVAR switchable line reactor at Ropar end of Nange-Ropar/ Ludhiana 400kV line <ul style="list-style-type: none"> 400 kV, 50MVA_r Line Reactor- 1 no. 400 kV Reactor Bay- 1 no 	--- Deleted ---
	Earlier Estimated Cost: Rs. 432 Cr.	Revised Estimated Cost: Rs. 305 Cr.

4 New Transmission and Communications Schemes:

4.1 Network Expansion scheme in Western Region to cater to Pumped storage potential near Talegaon (Pune)

4.1.1 Representative of CTUIL stated that potential of more than 10 GW Pumped Storage Plants has been identified by MoP in Maharashtra. Application has already been received from Tata power for Bhivpuri PSP (1150 MW) for connectivity from 01.01.2028. Further, TPC is also planning PSP at Shirawata (1980 MW) in the same area. Considering the huge PSP potential in the area, which are likely to tie up power for pumping mode from RE generation projects located far away, it was proposed to establish a 765/400 kV substation near South Kalamb. Further, considering huge demand of Mumbai area, space for HVDC terminal is proposed to be kept for future use. CTUIL mentioned that MSETCL has proposed 8 Nos. of 400 kV lines from Sec-III of South Kalamb S/s to feed demand of Mumbai area.

4.1.2 It was mentioned that the scheme has been deliberated and agreed in the Special meeting of WRPC held on 27th March 2024 with following views:

“Although agreeing to the proposed scheme in principle, WRPC has the view that PSP projects have a long gestation period and require several clearances before the construction commences. Pumped storage projects take around four years to be commissioned after DPR approval by CEA and Environment Clearance by MoEF; compared to this, it takes substantially lesser time for the ISTS system to be developed. Hence, to ensure optimal utilization of transmission assets, the proposed transmission scheme should be awarded only after receipt of the following:

a) Environment Clearance by the Ministry of Environment, Forest and Climate Change (MoEF&CC) under Clause 8 of the EIA Notification, 2006 issued under the Environment (Protection) Act, 1986.

b) Approval of Detailed Project Report (DPR) from the Central Electricity Authority (CEA) as per the applicable "Guidelines for Formulation of Detailed Project Reports for Pumped Storage Schemes".

The above conditions would ensure that the construction schedule of the proposed transmission scheme is in sync with the schedule of the PSP.”

- 4.1.3 He further added that the estimated cost of the scheme is INR 1663 Crore with Implementation timeframe of 01.01.2028 (as per start date of connectivity sought by TPC for Bhivpuri PSP). However, application from Data Centre load (50 MW) has recently been received in Mumbai area in May'24 (~40km. from South Kalamb) (with communication that the capacity shall be increased to 1.4 GW progressively) with start date of 01.01.2027. The said application is presently under process. Hence, in case grant is finalised at South Kalamb S/s, the Implementation time-frame may be kept as 24 months or 01.01.2027 (i.e. start date of GNA), whichever is later.
- 4.1.4 CMD, Grid-India stated that the bulk consumers including data centers, may be coming up with battery energy storage systems(BESS) in view of net zero commitments as well as for ensuring reliability of supply. There is possibility that during operation, data centre may charge BESS alongwith normal power consumption, this would result in higher drawl from grid. He further stated that as the pumping mode operation will coincide with peak demand period of Maharashtra / Mumbai region, there is a possibility of low voltages in the nearby system. The same was observed and reported in the study cases also. Reactive power planning in the complex may therefore be carried out accordingly.
- 4.1.5 CTUIL informed that they have kept the provision that one of the PSP units would be mandated to operate as SynCon when the plant is idle.
- 4.1.6 CMD, Grid-India mentioned that the synchronous condenser mode operation of the hydro/pumped storage plants is currently not mandated in the CEA Connectivity Standards. However, following provision is available in CEA Construction Standards:

“Hydro generating units having rated capacity of 50 MW and above shall be capable of operation in synchronous condenser mode, wherever feasible.”

He suggested that the same may be mandated for deriving reactive power and inertial support from these units in future.

- 4.1.7 Director (SO), Grid-India stated the issues related to power quality (harmonics) etc. are also envisaged with integration of large quantum of inverter-based data center load in future. Therefore, it is important that suitable standards covering these aspects are timely notified for inverter interface loads.
- 4.1.8 Chairperson, CEA requested CTUIL and Grid-India to submit detailed proposal regarding amendments required in Grid Connectivity Standards to CEA to address the above issues.
- 4.1.9 On the issue of VSC vs LCC technology for the envisaged HVDC from Rajasthan to South Kalamb, Chairperson, CEA directed that a committee comprising of members from CEA, Grid-India, CTUIL & other stakeholders (as may be required) to be constituted to conduct a detailed study and prepare a report which can be used as reference for deciding the appropriate technology, among VSC vs LCC based on line length, power transfer requirement, voltage support and other reliability aspects.
- 4.1.10 Chairperson, CEA mentioned that there is a much need of PSPs in Indian Grid and efforts are being carried out for preponing the commissioning schedule of PSPs. Further, implementation timeframe for this scheme may be aligned with the timeframe of Data Centre, i.e. January, 2027. He also added that the decision of space requirement for future HVDC projects will be made based on the report for identification of optimal technology among VSC vs LCC. However, as the present scheme is urgently required, , space requirement for LCC (being more than VSC) may be mentioned in the scope of present scheme.
- 4.1.11 After deliberations, NCT recommended Network Expansion scheme in Western Region to cater to Pumped storage potential near Talegaon (Pune) as mentioned below:

4.1.11.1 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Network Expansion scheme in Western Region to cater to Pumped storage potential near Talegaon (Pune) Tentative implementation timeframe : 01.01.2027 subject to minimum implementation schedule of 24 months from SPV transfer	1663	Recommended under TBCB with RECPDCL as BPC

4.1.11.2 Detailed scope of the scheme is given below:

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
1.	<p>Establishment 2x1500 MVA, 765/400 kV Substation near South of Kalamb with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor</p> <p>Future provision (space for):</p> <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 10 Nos. (2 Nos. on Sec-I, 4 Nos. in Sec-II & 4 Nos. on Sec-III) ➤ 765 kV line bays along with switchable line reactors – 6 Nos. (4 Nos. on Sec-II & 2 Nos. on Sec-III) ➤ 765 kV Bus Reactor along with bay: 4 Nos. (2 Nos. on Sec-II & 2 No. on Sec-III) ➤ 765 kV Sectionalizer: 2 -sets ➤ 400 kV line bays along with switchable line reactors– 20 Nos. (6 Nos. on Sec-I, 6 Nos. on Sec-II & 8 Nos. on Sec-III) ➤ 400/220 kV ICT along with bays -4 Nos. (on 400 kV Sec-III: 2 Nos. on 220 kV Sec-I & 2 Nos. on 220 kV Sec-II) ➤ 400 kV Bus Reactor along with bays: 4 Nos. (2 Nos. on Sec-II & 2 No. on Sec-III) ➤ 400 kV Sectionalization bay: 2- set ➤ 220 kV line bays: 8 Nos. (4 Nos. on Sec-I & 4 Nos. on Sec-II) ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC and TBC: 2 Nos. ➤ Establishment of 6000 MW, \pm 800 kV South Kalamb (HVDC) [LCC] terminal station (4x1500 MW) along with associated interconnections with 400 kV HVAC Switchyard (2x1500 MW on 400 kV Sec-I & 2x1500 MW on 400 kV Sec-II) & all associated equipment (incl. filters)/bus extension, etc. 	<p>765/400 kV, 1500 MVA ICT – 2 Nos. (7x500 MVA single phase units including one spare ICT Unit)</p> <p>765 kV ICT bays – 2 Nos.</p> <p>400 kV ICT bays – 2 Nos.</p> <p>765 kV Line bays – 4 Nos.</p> <p>330 MVar, 765 kV bus reactor- 2 Nos. (7x110 MVAR single phase Reactors including one spare Unit for bus /line reactor)</p> <p>765 kV Bus reactor bay – 2 Nos.</p> <p>125 MVar, 420 kV reactor- 2 Nos.</p> <p>400 kV Reactor bay- 2 Nos.</p> <p>400 kV line bays - 2 Nos. (for interconnection of PSP)</p>
2.	LILO of Pune-III – Boisar-II 765 kV D/c line at South Kalamb S/s with associated bays at South Kalamb S/s	<ul style="list-style-type: none"> • LILO Route length: 40 km (160 ckm.) • The Pune-III – Boisar-II 765 kV D/c line is of Hexa Zebra configuration and LILO shall be of similar conductor configuration
3.	Installation of 1x240 MVar switchable line reactor on each ckt at South Kalamb end of Boisar-II – South Kalamb 765 kV D/c line (formed after above LILO)	<ul style="list-style-type: none"> • 1x240 MVar, 765 kV switchable line reactor – 2 Nos. • Switching equipment for 765 kV line reactor – 2 Nos. • Spare Reactor (1-ph, 1x80 MVar) unit at 765/400 kV South Kalamb S/s

4.2 Provision of ICT Augmentation and Bus Reactor at Bhuj-II PS

4.2.1 Representative of CTUIL stated that Bhuj-II PS is an existing substation with 4x500 MVA, 400/220 kV ICTs and 2x1500 MVA, 765/400 kV ICTs. To cater to applications received beyond 2000 MW (upto 2500 MW considering N-1) at Bhuj-II PS, creation of New 220 kV Bus Section at Bhuj-II PS, installation of 2x500 MVA, 400/220 kV ICTs (5th & 6th) and 1x1500 MVA, 765/400 kV ICT (3rd) and Implementation of 220 kV GIS line bay at Bhuj-II PS for ABREL (RJ) Projects Limited (Terminated at New 220 kV Bus Section) was agreed in the 16th NCT meeting held on 30.11.2023 through TBCB route. The scheme is presently under bidding.

4.2.2 He further informed that Connectivity under GNA for entire 4000 MW has been received at Bhuj-II PS till date. Further, Considering the rapid pace of applications being received at Bhuj-II PS (beyond 2.5 GW), there is requirement to install all remaining ICTs and 220 kV bays at Bhuj-II PS in one go so as to minimize multiple implementation time-lines / co-ordination issues, etc.

4.2.3 The scheme has been deliberated and agreed in the Special meeting of WRPC held on 27th March 2024.

4.2.4 After deliberations, NCT recommended implementation of the transmission scheme “Provision of ICT Augmentation & Bus Reactor at Bhuj-II PS” to be undertaken under TBCB with Implementation timeframe of 21 months as mentioned below:

4.2.4.1 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Provision of ICT Augmentation & Bus Reactor at Bhuj-II PS Tentative implementation timeframe: 21 months from SPV transfer	587	Recommended under TBCB route with PFCCL as BPC

4.2.4.2 Detailed scope of the scheme is:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Augmentation of transformation capacity at Bhuj-II PS (GIS) by 3x500 MVA, 400/220 kV ICT (7 th , 8 th & 9 th)	500 MVA, 400/220 kV ICTs: 3 No. 400 kV ICT bays: 3 No. (with addl. 3 Nos. for dia completion) 220 kV ICT bays: 3 No..

Sl. No.	Scope of the Transmission Scheme	Capacity /km
2.	Augmentation of transformation capacity at Bhuj-II PS (GIS) by 1x1500 MVA, 765/400 kV ICT (4 th)	1500 MVA, 765/400 kV ICT: 1 No. 765 kV ICT bay: 1 No. (with addl. 1 No. for dia completion) 400 kV ICT bay: Nil. (1 No. considered at SI. No.1 above)
3.	Installation of 1x330 MVA 765 kV Bus Reactor (2nd) along-with associated bay	330 MVA, 765 kV Bus Reactor: 1 No. 765 kV BR bay: Nil (1 No. considered at SI. No.2 above)
4.	Implementation of 220 kV GIS line bay at Bhuj-II PS for Aditya Birla Renewables Subsidiary Limited (ABRSL) [Appln No: 2200000321(362MW)]	220 kV line bay – 1 No. (GIS) (Bus Sec-II)
5.	Implementation of 220 kV GIS line bay at Bhuj-II PS for ACME Cleantech Solutions Private Limited (ACSPL) [Appln No: 2200000382(350 MW)]	220 kV line bay – 1 No. (GIS) (Bus Sec-II)
6.	Implementation of 220 kV GIS line bay at Bhuj-II PS for ACME Cleantech Solutions Private Limited (ACSPL) [Appln No: 2200000431(50 MW)]	220 kV line bay – 1 No. (GIS) (Bus Sec-II)
7.	Implementation of 220 kV GIS line bay at Bhuj-II PS for Avaada Energy Pvt Ltd. (AEPL) [Appl. No: 2200000444(100 MW)]	220 kV line bay – 1 No. (GIS) (Bus Sec-II)
8.	Implementation of 220 kV GIS line bays at Bhuj-II PS for Adani Green Energy Thirty-Two Ltd. (AGE32L) [Appl. No: 2200000514 (260.5MW)]	220 kV line bay – 1 No. (GIS) (Bus Sec-II)
9.	Implementation of 220 kV GIS line bays at Bhuj-II PS for Adani Renewable Energy Eight Ltd. (ARE8L) [Appl. No: 2200000545 (115MW)]	220 kV line bay – 1 No. (GIS) (Bus Sec-II)

4.3 Transmission System for Offshore Wind Zone Phase-1 (500 MW VGF off the coast of Gujarat for Subzone B3)

- 4.3.1 MNRE has identified about 30 GW Offshore wind potential each off the coast of Gujarat and Tamil Nadu. Initially 5 GW Offshore wind potential each at Gujarat (CUF – 38%) and Tamil Nadu (CUF – 48%) has been prioritized for implementation wherein 2 GW transmission capacity (1 GW each off the coast of Gujarat and Tamil Nadu) will be developed in the 1st Phase and further 4 GW each off the coast of Gujarat and Tamil Nadu shall be developed subsequently.
- 4.3.2 In the meeting held on 22.12.2023, following broad decisions regarding tentative timelines for the offshore wind energy projects were taken:
- 500 MW VGF project off-Gujarat coast to be commissioned by March 2028. Tender for the project to be published by March 2024
 - 500 MW VGF project off-Tamil Nadu coast to be commissioned by March 2029. Tender for the project to be published by March 2025.
 - 4 GW non-VGF project off-Tamil Nadu coast to be commissioned in FY 2029-30. Tender for the projects to be published on 01.02.2024
 - Non-VGF project off-Gujarat coast will be tendered based on the response for the Tamil Nadu non-VGF project
- 4.3.3 Representative of CTUIL stated that the scheme has been deliberated and agreed in the Special meeting of WRPC held on 27th March 2024 with following views:
- “Although agreeing to the proposed scheme in principle, WRPC concluded that the transmission scheme should be awarded only after the signing of PPAs and submission of requisite BGs for the 500 MW VGF Offshore Wind tender to the Tender Issuing Authority, so as to ensure optimal utilization of transmission assets. However, the scheme may be initiated immediately if the time between the signing of PPA and COD is less than 3.5 years. This would ensure that the transmission scheme matches with the schedule of the 500 MW VGF Offshore Wind Projects”.*
- 4.3.4 Representative of CTUIL further referred a meeting on “Offshore development” held under chairmanship of Hon’ble Minister of Power and New & Renewable Energy on 14.06.2023, wherein it was decided that initially 2 GW offshore evacuation infrastructure (1 GW in Gujarat and 1 GW in Tamil Nadu) may be developed by PGCIL under RTM and further, 4GW evacuation infrastructure will be developed under TBCB.
- 4.3.5 CMD, Grid-India enquired whether the point of interconnection (POI) would be the onshore station or the offshore one. CTUIL clarified that the point of interconnection of RE generators shall be at the 66 kV level of the offshore substation,
- 4.3.6 On the present status of offshore wind projects, MNRE stated that stage-I clearance has been obtained. SECI will carry out bidding process. Tentative timeline for bidding and signing of PPA may be 6 months and implementation time will be 4 years. Accordingly, implementation timeframe may be considered as March, 2029.

4.3.7 Representative of CTUIL referred that as per the PIB Press Release dated 19.06.2024, the Union Cabinet have approved the Viability Gap Funding (VGF) scheme for offshore wind energy projects for installation and commissioning of 1 GW of offshore wind energy projects (500 MW each off the coast of Gujarat and Tamil Nadu)

4.3.8 After Deliberations, NCT recommended the transmission scheme for Offshore Wind Zone Phase-1 (500 MW VGF off coast of Gujarat for Subzone B3) under RTM route as mentioned below:

4.3.8.1 Summary of the scheme is given below:

Sl. No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission scheme for Offshore Wind Zone Phase-1 (500 MW VGF off coast of Gujarat for Subzone B3) Implementation timeframe: Matching with the associated RE generation (48 months from effective date of PPA), presently anticipated by 31 st March, 2029	Rs 6900 Crs { Onshore Portion: 2200, Offshore Portion: 4700 }	Recommended under RTM to POWERGRID

4.3.8.2 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
A. Transmission System onwards Onshore Pooling Station		
1.	Establishment of 2x500 MVA, 400/220 kV Mahuva Onshore Pooling Station (GIS) (Mahuva PS) alongwith 1x125 MVAR, 420 kV bus reactor (with space provision for upgradation to 765 kV level to cater to future Offshore Wind Projects adjacent to B3, B4, B5 pockets in future) Future Space Provisions: <ol style="list-style-type: none"> 765/400 kV ICT along with bays- 6 Nos. 765 kV line bays along with switchable line reactors – 8 Nos. 765 kV Bus Reactor along with bay: 2 Nos. 765 kV Sectionaliser: 1 -set 400 kV line bays along with switchable line reactors– 8 Nos. 400/220 kV ICT along with bays -8 Nos. 	<ul style="list-style-type: none"> 400/220kV, 500 MVA, ICTs – 2 nos. 400kV ICT bays – 2 nos. 220kV ICT bays – 2 nos. 1x125 MVAR, 420kV Bus Reactor – 1 no. 400kV Bus Reactor bay – 1 no. 400kV line bays – 2 nos. (for termination of Mahuva Onshore PS (GIS) – Vataman 400 kV D/c line) 220kV line bays – 2 nos. (for termination of B3-OSS-1 – Mahuva Onshore PS 220 kV 2xS/c (3 core) cables) 220 kV Bus Coupler (BC) Bay – 1 no.

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
A. Transmission System onwards Onshore Pooling Station		
	vii. 400 kV Bus Reactor along with bays: 3 Nos. viii. 400 kV Sectionalization bay: 1-set ix. 220 kV line bays: 16 Nos. x. 220 kV Sectionalization bay: 1 set xi. 220 kV BC and TBC: 1 No. xii. STATCOM (± 300 MVAR) alongwith associated bay at 220 kV - 3 Nos. xiii. 220kV Bus Reactor along with bays: 7 Nos. xiv. VSR (420kV, 1x125 MVAR Variable Bus Shunt Reactor with OLTC with control range between 50 – 125 MVAr for each VSR) alongwith associated bay at 400 kV – 3 Nos.	
2.	Creation of 400kV switchyard along with Installation of 2x1500 MVA, 765/400 kV ICTs at Vataman (AIS) with 2x125 MVAR (420 kV) Bus Reactors	<ul style="list-style-type: none"> • 765/400kV, 1500 MVA, ICTs – 2 nos. (7x500MVA incl. spare unit) • 765kV ICT bays – 2 nos. • 400kV ICT bays – 2 nos. • 2x125 MVAR, 420kV Bus Reactor – 1 no. • 400kV Bus Reactor bay – 2 no.
3.	2 nos. 400kV bays at Vataman for termination of Mahuva Onshore PS (GIS) – Vataman 400 kV D/c line	<ul style="list-style-type: none"> • 400kV line bays – 2 nos.
4.	Mahuva Onshore PS (GIS) – Vataman 400 kV D/c line (Quad ACSR/AAAC/AL59 moose equivalent) with 63MVAr & 50 MVAr, 420 kV switchable line reactors on each ckt at Mahuva & Vataman ends respectively.	Line length: 190 km 420 kV, 63 MVAr switchable line reactors at Mahuva S/s end– 2 Nos. Switching equipment for 420 kV, 63 MVAr switchable line reactors at Mahuva S/s end – 2 no 420 kV, 50 MVAr switchable line reactors at Vataman S/s end– 2 Nos. Switching equipment for 420 kV, 50 MVAr switchable line reactors at Vataman S/s end – 2 no
5.	± 300 MVAr STATCOM at 220 kV level of Mahuva PS (GIS) with 1 No. of 220 kV bay	<ul style="list-style-type: none"> • ± 300 MVAr STATCOM – 1 No. • 220 kV bay – 1 no.

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
A. Transmission System onwards Onshore Pooling Station		
6.	420 kV, 1x125 MVAR Variable Bus Shunt Reactor with OLTC (control range between 50 – 125 MVAR for VSR) with 1 No. of 400 kV bay	<ul style="list-style-type: none"> • 1x125 MVAR, 420kV Variable Bus Shunt Reactor with OLTC – 1 no. • 400kV Bus Reactor bay – 1 no.
7.	245 kV, 3x50 MVAR Bus Reactors at 220 kV level of Mahuva PS (GIS)	<ul style="list-style-type: none"> • 50 MVAR, 245kV Bus Reactor– 3 no. • 220kV Bus Reactor bay – 3 no.
B. Transmission System for integration of Offshore Wind Farms with Onshore PS		
Offshore Substation-1 {500 MW VGF}		
1.	Establishment of 2x315 MVA, 220/66 kV Gujarat Offshore B3 Sub-Station Station-1 (B3-OSS-1) with 66 kV line bays – 10 Nos. for RE Interconnection	<ul style="list-style-type: none"> • 220/66kV, 315 MVA, ICTs – 2 nos. • 220kV ICT bays – 2 nos. • 66kV ICT bays – 2 nos. • 220kV line bays – 2 nos. (at B3-OSS-1 for termination of B3-OSS-1 – Mahuva Onshore PS (GIS) 220 kV two nos. (3 core) cables) • 66kV line bays – 10 nos.
2.	B3-OSS-1 – Mahuva Onshore PS (GIS) 220 kV two nos. (3 core) cables (45 km-under sea cable of about 35 km & under ground cable of about 10 km) alongwith associated line bays at both ends (with capacity of 300 MVA/ckt at nominal voltage) with 1x50 MVAR switchable line reactors at B3-OSS-1 end on each cable	<ul style="list-style-type: none"> • Cable length ~45 km • 220 kV, 50MVAR switchable line reactors at OSS-1 end – 2 nos. • Switching equipment for 220 kV, 50 MVAR switchable line reactors at OSS-1 end – 2 nos.

Note:

- TSP of Vataman S/s (Vataman Transmission Ltd.) shall provide space for augmentation works at Vataman S/s
- Vataman switching S/s has been planned through LILO of Lakadia-Vadodara 765 kV D/c line at Vataman under Khavda Ph-III (7 GW) and is presently under implementation by POWERGRID (under TBCB) with implementation schedule of Dec'25 (SCOD).
- Distances indicated above are tentative and may change based on actual survey.

4.4 Transmission System for 1 GW Offshore wind farm (Phase-I) in Tamil Nadu

- 4.4.1 MNRE has identified about 30 GW Offshore wind potential each off the coast of Gujarat and Tamil Nadu. Initially 5 GW Offshore wind potential each at Gujarat (CUF – 38%) and Tamil Nadu (CUF – 48%) has been prioritized for implementation wherein 2 GW transmission capacity (1 GW each off the coast of Gujarat and Tamil Nadu) will

be developed in the 1st Phase and further 4 GW each off the coast of Gujarat and Tamil Nadu shall be developed subsequently.

4.4.2 In the meeting held on 22.12.2023, following broad decisions regarding tentative timelines for the offshore wind energy projects were taken:

- 500 MW VGF project off-Gujarat coast to be commissioned by March 2028. Tender for the project to be published by March 2024
- 500 MW VGF project off-Tamil Nadu coast to be commissioned by March 2029. Tender for the project to be published by March 2025.
- 4 GW non-VGF project off-Tamil Nadu coast to be commissioned in FY 2029-30. Tender for the projects to be published on 01.02.2024
- Non-VGF project off-Gujarat coast will be tendered based on the response for the Tamil Nadu non-VGF project

4.4.3 Representative of CTUIL referred the meeting on “Offshore wind” under the chairmanship of Hon’ble Minister of Power & NRE held on 14.06.2023 wherein it was decided that “Initial 2 GW offshore evacuation infrastructure (1.0 GW in Gujarat and 1.0 GW in Tamil Nadu) may be developed by PGCIL under Regulated Tariff Mechanism (RTM) and further 4.0 GW evacuation infrastructure will be developed under TBCB. Accordingly, Transmission System for 1 GW Offshore wind farm (Phase-I) in Tamil Nadu have been identified and deliberated with Southern Region beneficiaries.

4.4.4 Representative of CTUIL referred that as per the PIB Press Release dated 19.06.2024, the Union Cabinet have approved the Viability Gap Funding (VGF) scheme for offshore wind energy projects for installation and commissioning of 1 GW of offshore wind energy projects (500 MW each off the coast of Gujarat and Tamil Nadu).

4.4.5 MNRE stated that implementation of Tamil Nadu offshore project may take one year more than Gujarat. Accordingly, timeline for the same may be considered as March, 2030.

4.4.6 Chairperson, CEA opined that the 500 MW non-VGF project off- Tamil Nadu coast may be taken up for implementation at later stage based on the development of 500 MW VGF offshore project in Tamil Nadu & recommendations given by MNRE.

4.4.7 After deliberations, NCT recommended implementation of the transmission system for Offshore wind farm in Tamil Nadu {500 MW VGF} to be taken-up through RTM route

4.4.7.1 Details of the Schemes are given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
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1	<p>Transmission System for Offshore wind farm in Tamil Nadu {500 MW VGF}</p> <p>Tentative implementation timeframe: 31st March 2030</p>	<p>Rs 6242 Crs { Onshore Portion: ₹ 1096 Crs, Offshore Portion: ₹ 5146 Crs }</p>	<p>Recommended under RTM to POWERGRID</p>
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4.4.7.2 Scope of the scheme is given below:

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
A. Transmission System onwards Onshore Pooling Station		
i.	<p>Establishment of 2x500 MVA, 400/230 kV Onshore Pooling Station near Avaraikulam, Tirunelveli District in Tamil Nadu with provision of expansion upto 5 GW</p> <p>Future Space Provisions:</p> <ul style="list-style-type: none"> • 400/230kV, 500 MVA, ICTs – 10 nos. • 400kV ICT bays – 10 nos. • 230kV ICT bays – 10 nos. • 400kV line bays – 12 nos. (with provision for SLR) • 230kV line bays – 18 nos. • 230kV Bus Sectionalizer : 3 sets • 230 kV Bus Coupler (BC) Bay – 3 nos. • 230 kV Transfer Bus Coupler (TBC) Bay – 3 nos. 	<ul style="list-style-type: none"> • 400/230kV, 500 MVA, ICTs – 2 nos. • 400kV ICT bays – 2 nos. • 230kV ICT bays – 2 nos. • 400kV line bays – 2 nos. (at Avaraikulam Onshore PS for termination of Avaraikulam Onshore PS – Tuticorin PS line) • 230kV line bays – 2 nos. • 230 kV Bus Coupler (BC) Bay – 1 no. • 230 kV Transfer Bus Coupler (TBC) Bay – 1 no.
ii.	Avaraikulam Onshore PS – Tuticorin PS 400 kV D/c quad line	<ul style="list-style-type: none"> • Line length ~100 km • 400kV line bays - 2 (at Tuticorin PS)
ii.	± 300 MVar STATCOM along with 2x125 MVar MSR	<ul style="list-style-type: none"> • 400 kV bay – 1 no.
B. Transmission System for integration of Offshore Wind Farms with Onshore PS		
Offshore Substation-1 {500 MW VGF}		
1.	Establishment of 2x315 MVA, 230/66kV Off-Shore Substation-1 with 10 nos. of 66kV line bays for RE integration	<ul style="list-style-type: none"> • 230/66kV, 315 MVA, ICTs – 2 nos. • 230kV ICT bays – 2 nos. • 66kV ICT bays – 2 nos. • 230kV line bays – 2 nos. (at Off-Shore Substation-1 for termination of Offshore substation 1 (OSS-1) – Avaraikulam Onshore PS line) • 66kV line bays – 10 nos.
2.	Offshore substation 1 (OSS-1) – Avaraikulam Onshore PS 2 nos. 230kV	<ul style="list-style-type: none"> • Cable length ~35 - 40 km • 230 kV, 50MVar switchable line reactors at OSS-1 end – 2 nos.

<i>Sl. No.</i>	<i>Scope of the Transmission Scheme</i>	<i>Capacity /km</i>
A. Transmission System onwards Onshore Pooling Station		
	(atleast 300 MVA capacity) Submarine cables (~35 - 40 km) with 2x50MVA _r switchable line reactors at OSS-1 end	

4.5 Transmission System for evacuation of power from Mahan Energen Limited Generating Station in Madhya Pradesh

4.5.1 Representative of CTUIL stated that Mahan Energen Limited (2x600 MW) Generating Station in Madhya Pradesh is already connected with ISTS. Under the CERC 2009, Connectivity/LTA Regulations, Mahan Energen Limited was granted connectivity only & the power was being being evacuated vide implementation of SPS. Now the generator has applied for connectivity under GNA regulations for the entire 1200MW capacity which needs to be evacuated reliably without any SPS. To fully evacuate the power, Mahan (existing bus) – Rewa PS (PG) 400 kV D/c (quad) line is required to be implemented. CTUIL also mentioned that the proposed line may infringe reserved forest (Sone Crocodile Sanctuary) in the state of state of MP as seen from PM Gati-Shakti plot. Therefore, implementation timeframe of the scheme may be kept as 30 months.

4.5.2 The scheme has been deliberated and agreed in the Special meeting of WRPC held on 27th March 2024.

4.5.3 After deliberations, scheme of transmission System for evacuation of power from Mahan Energen Limited Generating Station in Madhya Pradesh was recommended under TBCB route with implementation time frame of 30 Months.

4.5.4 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission System for evacuation of power from Mahan Energen Limited Generating Station in Madhya Pradesh Tentative implementation timeframe: 30 months from SPV transfer	558	Recommended Under TBCB with PFCCCL as BPC

4.5.5 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	Mahan (existing bus) – Rewa PS (PG) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent)line	110 km.
2.	2 Nos. 400 kV bays at Rewa PS (PG) for termination of Mahan (existing bus) – Rewa PS (PG) 400 kV D/c line (Quad ACSR/AAAC/AL59 moose equivalent)line	400 kV bays: 2 Nos.

Note:

- 2 Nos. 400 kV line bays at MEL (existing) shall be under the scope of MEL
- POWERGRID to provide space at Rewa PS (PG) for scope at Sl. 2

4.6 Augmentation of transformation capacity at 765/400 kV Lakadia S/s (WRSS XXI (A) Transco Ltd) in Gujarat – Part B

4.6.1 Representative of CTUIL stated that Cumulative RE connectivity granted/agreed at Lakadia till date is 3,500 MW. To enable evacuation of RE power from various generation projects in Lakadia REZ, transmission system for Augmentation of transformation capacity at 765/400 kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat – Part B is proposed.

4.6.2 He further mentioned that this scheme has been deliberated and agreed in the Special meeting of WRPC meeting held on 27th March 2024.

4.6.3 After deliberations, scheme for transmission system for Augmentation of transformation capacity at 765/400 kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat – Part B was recommended by NCT in TBCB.

4.6.4 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for Augmentation of transformation capacity at 765/400 kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat – Part B Tentative implementation timeframe: As per Detailed Scope	636	Recommended under TBCB with RECPDCL as BPC

4.6.5 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Time-frame
1.	Installation of 2x500 MVA, 400/220 kV ICTs (3 rd & 4 th) at Lakadia PS along with associated ICT bays	<ul style="list-style-type: none"> • 400/220 kV, 1x500 MVA ICT – 2 Nos. • 400 kV ICT bay – 2 Nos. • 220 kV ICT bay – 2 Nos. (220 kV bus section-I) 	18 months from date of allocation to implementing agency
2.	Implementation of 220 kV line bay at Lakadia PS for TEQ Green Power XVII Private Limited (TGPXVIIPL: 300 MW)	<ul style="list-style-type: none"> • 220 kV line bay – 1 no. (220 kV bus section-I) 	18 months from date of allocation to implementing agency
3.	Implementation of 220 kV line bay at Lakadia PS for Arcelor Mittal Nippon Steel India Limited (AMNSIL: 350 MW)	<ul style="list-style-type: none"> • 220 kV line bay – 1 no. (220 kV bus section-I) 	18 months from date of allocation to implementing agency
4.	Implementation of 220 kV line bay at Lakadia PS for Renew Solar (Shakti Eight) Private Limited (RS(S8)PL: 200 MW)	<ul style="list-style-type: none"> • 220 kV line bay – 1 no. (220 kV bus section-I) 	30.09.2026 (as per start date requested by applicant)*
5.	Creation of New 220 kV Bus Section-II at Lakadia PS along with 220 kV Sectionaliser arrangement between 220 kV Bus sec-I & Sec-II	<ul style="list-style-type: none"> • 220 kV Bus Sectionaliser - 1 set • BC – 1 No. • TBC – 1 No. 	18 months from date of allocation to implementing agency
6.	Augmentation of transformation capacity at Lakadia PS by 4x500 MVA, 400/220 kV ICTs (5 th , 6 th , 7 th & 8 th) terminated on new 220 kV Bus Section-II		
6a	2x500MVA ICTs (5 th & 6 th)	<ul style="list-style-type: none"> • 500 MVA, 400/220 kV ICTs: 2 No. • 400 kV ICT bays: 2 Nos. • 220 kV ICT bays: 2 No. (New Bus Section-II) 	18 months from date of allocation to implementing agency
6b	1x500MVA ICT (7 th)	<ul style="list-style-type: none"> • 500 MVA, 400/220 kV ICT: 1 No. • 400 kV ICT bay: 1 No. • 220 kV ICT bays: 1 No. (New Bus Section-II) 	31.12.2026
6c	1x500MVA ICT (8 th)	<ul style="list-style-type: none"> • 500 MVA, 400/220 kV ICT: 1 No. • 400 kV ICT bay: 1 No. • 220 kV ICT bays: 1 No. (New Bus Section-II) 	30.06.2027
7.	Implementation of 220 kV line bay at Lakadia PS for Juniper Green Energy	<ul style="list-style-type: none"> • 220 kV line bay – 1 No. (New Bus Section-II) 	30.06.2027 (as per start date requested by applicant)

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Time-frame
	Private Limited (JGEPL) (Appl. No. 2200000376: 300 MW)		
8.	Implementation of 220 kV line bay at Lakadia PS for TEQ Green Power XVI Pvt. Ltd. (TGPXVIPL) (Appl. No. 2200000398: 76MW)	• 220 kV line bay – 1 No. (New Bus Section-II)	30.09.2026 (as per start date requested by applicant)*
9.	Implementation of 220 kV line bay at Lakadia PS for Ganeko Solar Pvt. Ltd. (GSPL) (Appl. No. 2200000458: 290 MW)	• 220 kV line bay – 1 No. (New Bus Section-II)	31.12.2026 (as per start date requested by applicant)*
10.	Implementation of 220 kV line bay at Lakadia PS for Juniper Green Energy Private Limited (JGEPL) (Appl. No. 2200000500: 150 MW)	• 220 kV line bay – 1 No. (New Bus Section-II)	31.03.2027 (as per start date requested by applicant)
11.	Implementation of 220 kV line bay at Lakadia PS for Serentica Renewables India Private Limited (SRIPL) (Appl. No. 2200000610: 200 MW)	• 220 kV line bay – 1 No. (New Bus Section-II)	30.06.2026*
12.	Implementation of 220 kV line bay at Lakadia PS for RDS Solar Park Private Limited (RDSSPPL) (Appl. No. 2200000639: 350 MW)	• 220 kV line bay – 1 No. (New Bus Section-II)	30.06.2026*
13.	Implementation of 220 kV line bay at Lakadia PS for Percentum Renewables Private Limited (PRPL) (Appl. No. 2200000673: 148 MW)	• 220 kV line bay – 1 No. (New Bus Section-II)	30.06.2026*
14.	Installation of 1x330 MVA 765 kV Bus Reactor (2nd) along-with associated bay	• 330 MVA, 765 kV Bus Reactor: 1 No. • 765 kV BR bay: 1 No.	18 months from date of allocation to implementing agency
15.	Augmentation of transformation capacity at Lakadia PS by 1x1500 MVA, 765/400 kV ICTs (3rd)	• 1500 MVA, 765/400 kV ICT: 1 No. • 400 kV ICT bay: 1 No. • 765 kV ICT bay: 1 No.	18 months from date of allocation to implementing agency

**subject to minimum schedule of 18 months from the date of allocation to implementing agency.*

Note: TSP of Lakadia S/s (WRSS XXI(A) Transco Ltd.) shall provide space for above augmentation works at Lakadia S/s

4.7 Transmission System for evacuation of RE power from Raghanesda area of Gujarat – 3 GW under Phase-I

- 4.7.1 Raghanesda region in Banaskantha District of Gujarat has been declared a potential Renewable Energy (RE) zone with potential of 5 GW in the initial phase (i.e. related to 1 GW RE park of GPCL and 4 GW RE park of M/s Torrent for which land allocation by Government of Gujarat is under process).
- 4.7.2 Representative of CTUIL stated that out of 4 GW Solar Capacity of Torrent, 2.5 GW is under ISTS. Out of 1 GW RE park of GPCL, 0.5 GW is being considered under ISTS in 1st phase planning. Presently, connectivity under GNA has been received for 0.6GW (3x200 MW from M/s Sprng) at Raghanesda PS with start date progressively from June28 to Dec-29.
- 4.7.3 The scheme has been deliberated and agreed in the Special meeting of WRPC held on 27th March 2024.
- 4.7.4 After deliberations, NCT Recommended the scheme transmission system for evacuation of RE power from Raghanesda area of Gujarat – 3 GW under Phase-I under TBCB route with implementation time frame of 30 months
- 4.7.5 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission system for evacuation of RE power from Raghanesda area of Gujarat – 3 GW under Phase-I Tentative implementation timeframe : 30 months from SPV transfer	1855	Recommended under TBCB with PFCCCL as BPC

- 4.7.6 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme	Capacity /km
1.	<p>Establishment of 3x1500 MVA, 765/400 kV Substation near Raghanesda (GIS) with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor</p> <p>Future provision (space for):</p> <ul style="list-style-type: none"> ➤ 765/400 kV ICT along with bays- 5 Nos. (1 No. in Sec-I & 4 Nos. on Sec-II) ➤ 765 kV line bays along with switchable line reactors – 10 Nos. (4 Nos. on Sec-I & 6 Nos. on Sec-II) 	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA ICT – 3 Nos. (10x500 MVA single phase units including one spare ICT Unit) • 765 kV ICT bays – 3 Nos. • 400 kV ICT bays – 3 Nos. • 765 kV Line bays – 2 Nos. • 1x330 MVAR, 765 kV bus reactor- 2 Nos. (7x110 MVAR single phase Reactors including one spare Unit for bus /line reactor) • 765 kV Bus reactor bay – 2 Nos. • 125 MVAR, 420 kV reactor- 2 Nos.

	<ul style="list-style-type: none"> ➤ 765 kV Bus Reactor along with bay: 2 Nos. (on Sec-II) ➤ 765 kV Sectionalizer: 1 -set ➤ 400 kV line bays along with switchable line reactors– 12 Nos. (4 Nos. on Sec-I & 8 Nos. on Sec-II) ➤ 400/220 kV ICT along with bays - 8 Nos. (4 Nos. on each 400 kV Section) ➤ 400 kV Bus Reactor along with bays: 2 Nos. (Sec-II) ➤ 400 kV Sectionalization bay: 1- set ➤ 220 kV line bays: 12 Nos. (6 Nos. on each 220 kV Section) ➤ 220 kV Sectionalization bay: 1 set ➤ 220 kV BC: 1 No. ➤ Establishment of 6000 MW, \pm 800 kV Raghnesda (HVDC) [LCC] terminal station (4x1500 MW) along with associated interconnections with 400 kV HVAC Switchyard & all associated equipment (incl. filters)/bus extension, etc. 	<ul style="list-style-type: none"> • 400 kV Reactor bay- 2 Nos. • 400 kV line bays - 4 Nos. (for interconnection of RE Projects)
2.	Raghnesda (GIS) – Banaskantha (PG) 765 kV D/c line	95 km
3.	2 Nos. 765 kV line bays at Banaskantha (PG) S/s	765 kV line bays – 2 Nos.

Note:

- TSP of Banaskantha S/s (POWERGRID) shall provide space for scope at Sl. 3 above.

4.8 Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW)

- 4.8.1 Representative of CTUIL stated that Ratle HEP (850 MW) has applied for connectivity with ISTS. Accordingly a Comprehensive Transmission system for Ratle HEP has been identified. Recently CTU has received also connectivity application from Kiru HEP (624 MW) with commissioning schedule of Sep'26 (01.09.26) for which comprehensive Transmission system identified for Ratle HEP (commissioning progressively from 30.09.26) will be utilized along with some additional ICT augmentations, if required. Therefore, the scheme may be considered combindly for Ratle (850 MW) & Kiru HEP (624 MW).
- 4.8.2 The transmission scheme was discussed and technically approved in the 72nd NRPC meeting held on 30.03.24.
- 4.8.3 CMD, Grid-India enquired whether the upgradation of 400 kV Kishenpur – Moga D/C at 765 kV level was explored as part of the scheme. CTUIL representative informed that the option was explored but due to large quantum of incoming solar generation

injection at Moga (from Rajasthan), the line after upgradation cannot utilized for evacuation of power from Ratle & Kiru HEPs due to sub optimal loading of line as well as drawl constraint in Moga S/s.

- 4.8.4 CTUIL representative further added that presently Dulhasti (NHPC) station is connected with single path via 400 kV Kishenpur – Dulhasti D/c line with OPGW. As Dulhasti is radially connected and also on AGC operation, it is proposed to provide redundant communication path for this station. Further, New Kishtwar Substation is also proposed to be connected over radial path with Kishenpur.

For provided redundant communication to Dulhasti & Kishtwar stations OPGW installation is proposed on the 400 kV Kishenpur – Dulhasti S/c line (120 kms.) alongwith reconductoring work. Also 2 nos. FOTE are proposed at Kishenpur & Dulhasti stations (1 at each locations). Tentative Cost of the scheme is Rs. 7.2 Crs. Scheme deliberated and technically approved under 73rd NRPC held on 21.05.2024.

- 4.8.5 After deliberations, NCT recommend/approved the transmission scheme for evacuation of power from Ratle (850 MW) & Kiru (624 MW) HEPs under {TBCB- Rs. 1213.87 Cr.; RTM- Rs. 195.67 Cr.} with the implementation time frame of 24 months.

- 4.8.6 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW): Part-A Tentative implementation timeframe : 24 Months from the date of SPV transfer	1213.87	Recommended under TBCB with RECPDCL as BPC
2.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW): Part-B Tentative implementation timeframe : 24 Months or matching with Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW) : Part-A scheme whichever is later	195.67	Approved Under RTM

- 4.8.7 Detailed scope of the scheme is given below:

Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW): Part-A

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/km/no. of bays etc.)
1	LILO of 400 kV Kishenpur- Dulhasti line (Twin) at Kishtwar S/s along with associated bays at Kishtwar S/s	LILO Length- 3km <ul style="list-style-type: none"> • 400 kV Kishenpur -Kishtwar (LILO section) shall be on Twin HTLS (with minimum 2100 MVA capacity) configuration • 400 kV Dulhasti -Kishtwar (LILO section) shall be on Twin Zebra configuration • 400 kV line bays at Kishtwar – 2 Nos. (GIS) (line bays at Kishtwar S/s end shall be rated accordingly)
2	400 kV Kishenpur-Samba D/c line (Quad) (only one circuit is to be terminated at Kishenpur utilizing 1 no. of 400 kV vacated line bay at Kishenur S/s (formed with bypassing of one ckt of 400 kV Kishtwar – Kishenpur 400 kV D/c line (Quad) at Kishenpur) while second circuit would be connected to bypassed circuit of 400 kV Kishtwar – Kishenpur line (Quad))	Length -36 km (Quad)
3	Bypassing of one ckt of 400 kV Kishtwar – Kishenpur 400 kV D/c line (Quad) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400 kV D/c line(Quad), thus forming 400 kV Kishtwar - Samba (Quad) direct line (one ckt)	
4	1x80 MVar Switchable line reactor at Samba end of 400 kV Kishtwar-Samba 400 kV line- 165 km (Quad) [formed after bypassing of 400 kV Kishtwar – Kishenpur line (Quad) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400 kV D/c line(Quad))	<ul style="list-style-type: none"> • 420 kV, 80 MVar switchable line reactors at Samba S/s end– 1 Nos. • Switching equipment for 420 kV, 80 MVar switchable line reactors at Samba S/s end – 1 no
5	1x63 MVar Switchable line reactor on each ckt at Jalandhar end of Kishenpur– Jalandhar D/c direct line -171km(Twin) (formed after bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and	<ul style="list-style-type: none"> • 420 kV, 63 MVar switchable line reactors at Jalandhar S/s end– 2 Nos. • Switching equipment for 420 kV, 63 MVar switchable line reactors at Jalandhar S/s end – 2 no

	connecting them together to form Kishenpur–Jalandhar D/c direct line (Twin))	
6	400 kV Samba- Jalandhar D/c line(Quad) (only one circuit is to be terminated at Jalandhar utilizing 1 no. of 400 kV vacated line bay at Jalandhar S/s (formed with bypassing of 400 kV Jalandhar – Nakodar line (Quad) at Jalandhar) while second circuit would be connected to bypassed circuit of Jalandhar – Nakodar 400 kV line (Quad))	Line Length -145 km
7	1x80 MVar Switchable line reactor at Samba end of Samba –Nakodar direct line (Quad) (187km) formed after bypassing of 400 kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400 kV D/c line(Quad Moose), thus forming Samba –Nakodar line (Quad)	<ul style="list-style-type: none"> • 420 kV, 80 MVar switchable line reactors at Samba S/s end– 1 no. • Switching equipment for 420 kV, 80 MVar switchable line reactors at Samba S/s end – 1 no.
8	Bypassing 400 kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400 kV D/c line(Quad Moose), thus forming 400 kV Samba –Nakodar (Quad) direct line	

Note:

- M/s Sterlite shall provide space for 2 Nos. of 400 kV line bays (GIS) at Kishtwar S/s
- M/s POWERGRID shall provide space for 1 no. 80 MVar Switchable line reactor (along with switching equipment) at Samba end of 400 kV Kishtwar-Samba 400 kV line
- M/s POWERGRID shall provide space for 2 Nos. 63 MVar Switchable line reactor (along with switching equipment) at Jalandhar end of Kishenpur– Jalandhar D/c direct line (on each ckt)
- M/s POWERGRID shall provide space for 1 no. 80 MVar Switchable line reactor (along with switching equipment) at Samba end of Samba –Nakodar direct line

Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru (624 MW) HEP : Part B

1.	Reconductoring of 400 kV Kishenpur-Kishtwar section (up to LILO point) with Twin HTLS (minimum 2100 MVA capacity) (formed after LILO of Kishenpur-Dulhasti line at Kishtwar S/s) along with bay upgradation works (2000 A to 3150 A) at Kishenpur end for above line.	Length – 120 km <ul style="list-style-type: none"> • 400 kV Bay upgradation work- 1 no. bay at Kishenpur end
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2	Bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form 400 kV Kishenpur–Jalandhar D/c direct line (Twin) (4 Nos. of vacated 400 kV line bays at Samba S/s will be utilized for 400 kV Kishenpur-Samba D/c line (Quad) & 400 kV Samba- Jalandhar D/c line(Quad),	Length -0.5 km (Twin)
3	Bays upgradation works (2000A to 3150A) at Samba end (4 Nos. bays vacated after bypassing of Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin))	400 kV Bay upgradation works- 4 Nos. bays
4	Redundant Communication System for Dulhasti (NHPC) & Kishtwar (Sterlite) stations by installing OPGW on 400 kV Kishenpur-Kishtwar S/c line alongwith reconductoring work and FOTE at Dulhasti & Kishenpur.	Length – 120 km

Note:

- TSP shall also install OPGW on bypass section to form link between 400 kV Kishenpur– Jalandhar .

4.9 **Augmentation with 400/220 kV, 1x500 MVA Transformer (10th) at Fatehgarh-2 PS**

4.9.1 Representative of CTUIL stated that augmentation with 400/220 kV, 1x500 MVA, Transformer (10th) at Fatehgarh-2 PS was agreed as part of “transmission system for evacuation of power from REZ in Rajasthan (20 GW) under Phase-III Part J” in 5th NCT meeting held on 25.08.2021 and 02.09.2021. In that meeting, it was also agreed that Implementation of above ICT shall be taken up after LTA of 4490 MW at 220 kV level of Fatehgarh-2 PS. Subsequently, based on NCT recommendation, MoP vide OM dated 01.12.2021 awarded above transmission scheme to CTUIL with implementation timeframe of 15 months from MoP OM or evacuation requirement beyond 4490 MW at 220 kV level of Fatehgarh-2 PS, whichever is later. Further, CTUIL vide letter dated 02.12.2021 allocated above scheme to POWERGRID based on MoP OM dated 01.12.2021.

4.9.2 He further informed that 220 kV level of Fatehgarh-2 PS is implemented in two sections i.e. Section-I & II. Further, both the 220kV sections are implemented in geographically opposite sides (way apart from each other and not electrically connected) as per GA and layout of pooling station. However, 400 kV & 765 kV bus remained common for both the yards. At present, RE Connectivity of 2490MW under GNA is granted at Section-I and 1970MW is granted at Section-II, thus making total connectivity at Fatehgarh-2 PS as 4460MW which is less than 4490 MW.

- 4.9.3 Subsequently, Manual on Transmission Planning Criteria was published by CEA in Mar'23. As per the above, 'N-1' reliability criteria may be considered for ICTs at the ISTS / STU pooling stations for renewable energy based generation of more than 1000 MW. As both the 220kV sections of Fatehgarh-2 PS are electrically isolated and have more than 1000MW RE connectivity in respective sections, 'N-1' criteria to be fulfilled at both the sections. Keeping above in view, 1x500MVA, 400/220kV ICT (6th) at Section-I was awarded which is under implementation (Jul'24).
- 4.9.4 Considering requirement of 400/220kV ICT (in Fatehgarh-II Section-II) for N-1 compliance in Fatehgarh-II PS (Section-II), it was proposed that 1x500 MVA, 400/220 kV ICT (now 11th ICT) at Fatehgarh-II PS as approved by MoP vide OM dated 01.12.2021 based on recommendation in 5th NCT meeting may be taken up for implementation with 18 month implementation schedule considering present timeline for ICT augmentation (instead of earlier 15 months) to fulfil 'N-1' criteria as per CEA Manual on Transmission Planning Criteria, 2023.
- 4.9.5 After deliberations, NCT approved modification in the transmission scheme for "Augmentation with 400/220 kV, 1x500 MVA Transformer (10th) at Fatehgarh-2 PS" as mentioned below so that same can be taken up for implementation:

Earlier (as per MOP OM dated 01.12.21)	Amendment
<p>Augmentation with 400/220 kV, 1x500 MVA Transformer (10th) at Fatehgarh-2 PS</p> <ul style="list-style-type: none"> • 400/220 kV 500 MVA ICT:1 no • 400 kV ICT bays – 1 Nos. • 220 kV ICT bays - 1 Nos. <p>Implementation Timeframe- 15 months from MOP OM or evacuation requirement beyond 4490 MW at 220 kV level of Fatehgarh-2, whichever is later.</p>	<p>Augmentation with 400/220 kV, 1x500 MVA Transformer (11th) at Fatehgarh-II PS (5th ICT in Fatehgarh-II section-II)</p> <ul style="list-style-type: none"> • 400/220 kV 500 MVA ICT:1 no • 400 kV ICT bays – 1 no. • 220 kV ICT bays - 1 no. <p>Implementation Timeframe- 18 months [for N-1 compliance in Fatehgarh-II PS (Section-II)]</p>

- 4.10 **Transmission system strengthening at Kurnool-III PS for integration of additional RE generation projects**
- 4.10.1 Representative of CTUIL stated that presently, Kurnool-III 765/400/220 kV PS is under implementation by POWERGRID through RTM route and is expected by Nov'24. CTU have granted/agreed Connectivity for 8000 MW (2650 MW at 220 kV level & 5350 MW at 400 kV level).
- 4.10.2 For immediate integration & evacuation of power from additional RE generation projects agreed for grant of Connectivity beyond 4.5 GW, 400 kV line bays and augmentation of

transformation capacity at Kurnool-III are required. Further, Kurnool-III PS – Chilakaluripeta 765 kV D/c line will also be required.

4.10.3 After deliberations, NCT recommended the scheme for Transmission system strengthening at Kurnool-III PS for integration of additional RE generation projects under TBCB mode.

4.10.4 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	<p>Transmission system strengthening at Kurnool-III PS for integration of additional RE generation projects</p> <p>Tentative implementation timeframe: Package A– 24 months Package B – progressively from June’25 to Dec’27 Package C – 24 months</p>	Rs 2886 Crs	Recommend under TBCB mode with PFCCL as BPC

4.10.5 Detailed scope of the scheme is given below:

Pack	Scope of the Transmission Scheme	Capacity /km	Schedule
A	Augmentation of transformation capacity by 3x1500 MVA, 765/400 kV ICTs at Kurnool-III PS	<ul style="list-style-type: none"> • 3x1500 MVA, 765/400 kV ICT • 765 kV ICT bay – 3 Nos. • 400 kV ICT bay – 3 Nos. • 400 kV Bus Sectionalizer – 1 Set 	24 months
	Kurnool-III PS – Chilakaluripeta 765 kV D/c line with 240 MVar switchable line reactors at both ends	<p>~ 260 km</p> <ul style="list-style-type: none"> • 765 kV line bays – 2 Nos. (at Kurnool-III PS) • 765 kV line bays – 2 Nos. (at Chilakaluripeta) • 765 kV, 240 MVar SLR at Kurnool-III PS – 2 Nos. (6x80 MVar units) • 765 kV, 240 MVar SLR at Chilakaluripeta – 2 Nos. (6x80 MVar units) 	
B	2 Nos. of 400 kV line bays at Kurnool-III PS for termination of dedicated transmission line of M/s Adani Renewable Energy Forty Two Ltd.	• 400 kV line bays – 2 Nos.	30.06.26
	4 Nos. of 400 kV line bay at Kurnool-III PS for termination of dedicated transmission lines of M/s Indosol Solar Pvt. Ltd.	• 400 kV line bays – 1 Nos.	30.06.25
		• 400 kV line bays – 1 Nos.	24 months
		• 400 kV line bays – 2 Nos.	31.03.27

Pack	Scope of the Transmission Scheme	Capacity /km	Schedule
	2 Nos. of 400 kV line bays at Kurnool-III PS for termination of dedicated transmission line of M/s Adani Renewable Energy Fifty One Ltd.	• 400 kV line bays – 2 Nos.	31.12.27
C	Augmentation of 1x1500 MVA 765/400 kV ICT (7 th) at Kurnool-II PS	<ul style="list-style-type: none"> • 1x1500 MVA, 765/400 kV ICT • 765 kV ICT bay – 1 Nos. • 400 kV ICT bay – 1 Nos. 	24 months

4.11 Paradeep – Andaman HVDC link

4.11.1 Representative of CTUIL stated that the peak demand of North, Middle and South Andaman is expected to increase to about 79 MW by 2029-30. Presently, there is dependency on diesel generators to large extent. To supply clean and reliable power towards greening the island initiative and keeping in view the long-term power requirement of Andaman & Nicobar Islands (ANI), a HVDC link from mainland to ANI through undersea cable has been planned.

4.11.2 This interconnection would be established with 500 MW HVDC cable with 250 MW terminal in first phase at Andaman Islands and balance 250MW would be transferred to Nicobar Islands in future. The Paradeep – Andaman interconnection is planned as ± 320 kV, 500 MW HVDC Bipole link (about 1150 km) with 250 MW HVDC terminals to be installed in first phase at both ends.

4.11.3 CMD, Grid-India stated that for holistic review of the scheme, it is desirable that the agenda should cover the following:

- Requirement for the VSC link due to space constraints for large scale solar capacity addition in the island, limited wind potential etc. shall be mentioned.
- Comparison of the electricity tariff with - diesel based generation in the island v/s VSC link and the explicit subsidy granted by the Government to electricity consumers in Andaman could be used for upfront part-grant for HVDC link.
- Inclusion of the HVDC link as a strategic asset of national importance.
- The need for maintaining adequate local generation from reliability and resilience considerations

4.11.4 He also suggested to find out the frequency of outage and repair time of the cables in the existing undersea HVDC links worldwide.

4.11.5 Chairperson, CEA opined that following comparison/studies need to be carried out:

- Techno economic studies of comparison between diesel based plant and laying of subsea cable shall be carried out by considering the 30-35 years life span of cables.
- Financial support to bring down the transmission cost of the scheme and subsequently tariff.
- Probable ways of funding

- Sharing of cost/transmission charges

4.11.6 After deliberations, CTUIL was requested to carry out detailed studies and bring the agenda in the next meeting of NCT.

4.12 Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pool (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations.

4.12.1 Representative of CTUIL stated that this Scheme has been bifurcated into two parts for OPGW and FOTE

A: Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pooling (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations.

B: Supply and installation of 24 Fibre OPGW & FOTE to providing redundant communication for Parbati Pooling (Banala) (PG) S/s , Parbati-II (NHPC) & Parbati-III (NHPC) stations.

4.12.2 He added that the scheme was approved in the 72nd meeting of NRPC.

4.12.3 After Deliberations, NCT approved the scheme Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pool (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations under RTM mode.

4.12.4 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
A.	Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pooling (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations. Tentative implementation timeframe : 18 months from the date of allocation	5.31	Approved under under RTM mode through PKTCL
B.	Supply and installation of 24 Fibre OPGW & FOTE to providing redundant communication for Parbati Pooling (Banala) (PG), Parbati-II (NHPC) & Parbati-III (NHPC) stations Tentative implementation timeframe : 18 months from the date of allocation (with matching schedule with Scheme A)	1.24	Approved under RTM mode through POWERGRID

4.12.5 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme
A.	<p>Supply and installation of OPGW (24F) on following lines owned by PKTCL:</p> <p>(i) Parbati-II – Parbati-III – 9.643 km</p> <p>(ii) Parbati-III – Parbati Pooling (Banala) – 3.518 km</p> <p>(iii) Parbati Pooling (Banala) – Koldam (NTPC) – 62.636 km</p> <p>(iv) Parbati-II - Parbati Pooling (Banala) – 12.838 km</p> <p>Total km- 88.635</p>
B.	<p>i. Supply and installation of OPGW (24F) on Parbati Pooling (Banala) line (0.783Km) on POWERGRID portion.</p> <p>ii. Supply and installation of 4 Nos. FOTE (STM-16) at Parbati Pooling (Banala), Parbati-II (NHPC), Parbati-III (NHPC) & Koldam (NTPC) stations (1 no. at each location)</p>

4.13 Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo) using 3 pairs of fibers sharing from HPPTCL network.

4.13.1 Representative from CTUIL stated that Chamera-III & Budhil stations are presently connected via single fiber path to ISTS network. After implementation of the proposed scheme, Chamera-III & Budhil shall have ring protection as below:

Chamera PS – Chamera-III – Budhil – Lahal - Chamera PS

4.13.2 NCT approved the Scheme “Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo) using 3 pairs of fibers sharing from HPPTCL network” under RTM mode.

4.13.3 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	<p>Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo) using 3 pairs of fibers sharing from HPPTCL network</p> <p>Tentative implementation timeframe : 18 months from the date of allocation</p>	0.3	Approved under RTM mode through POWERGRID

4.13.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme
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1.	Supply and installation of 1 no. STM-16 FOTE at Lahal (HPPTCL)
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4.14 Additional FOTE requirements at AGC locations in Western Region

4.14.1 Representative of CTUIL stated that Additional FOTE requirements at AGC locations in Western Region scheme is proposed in view of resource disjoint and criticality of AGC operation for grid operation purpose and to maintain redundancy with route diversity for critical links.

4.14.2 NCT approved the Scheme “Additional FOTE requirements at AGC locations in Western Region” under RTM mode.

4.14.3 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Additional FOTE requirements at AGC locations in Western Region Implementation timeframe : 12 months from the date of allocation	3.90	Approved under RTM mode through POWERGRID

4.14.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme																																
1.	Supply and installation of 13 nos, 3 MSP (1+1) FOTE (STM-16 capacity) at following station:																																
	<table><tr><th>S. No.</th><th>Station Name</th><th>No of FOTE required</th></tr><tr><td>1</td><td>VSTPS III</td><td>2</td></tr><tr><td>2</td><td>VSTPS V</td><td>2</td></tr><tr><td>3</td><td>VSTPS II</td><td>2</td></tr><tr><td>4</td><td>NTPC Gandhar</td><td>1</td></tr><tr><td>5</td><td>NTPC Khargone</td><td>2</td></tr><tr><td>6</td><td>Mauda</td><td>1</td></tr><tr><td>7</td><td>Sipat</td><td>1</td></tr><tr><td>8</td><td>LARA</td><td>1</td></tr><tr><td>9</td><td>NSPCL</td><td>1</td></tr></table>	S. No.	Station Name	No of FOTE required	1	VSTPS III	2	2	VSTPS V	2	3	VSTPS II	2	4	NTPC Gandhar	1	5	NTPC Khargone	2	6	Mauda	1	7	Sipat	1	8	LARA	1	9	NSPCL	1		
S. No.	Station Name	No of FOTE required																															
1	VSTPS III	2																															
2	VSTPS V	2																															
3	VSTPS II	2																															
4	NTPC Gandhar	1																															
5	NTPC Khargone	2																															
6	Mauda	1																															
7	Sipat	1																															
8	LARA	1																															
9	NSPCL	1																															

4.15 Redundant OPGW communication path for Solapur STPP under AGC

4.15.1 Representative of CTUIL stated that Solapur STPP is connected to Solapur (PG) through 2 nos. of 400kV D/c Line. Both lines are owned by POWERGRID. At present, OPGW

is installed on one line only. In view of above it is proposed that for redundant communication path, OPGW need to be installed on second line.

4.15.2 NCT approved the Scheme “Redundant OPGW communication path for Solapur STPP under AGC” under RTM mode.

4.15.3 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Redundant OPGW communication path for Solapur STPP under AGC Implementation timeframe : 18 months from the date of allocation	1.15	Approved under RTM mode through POWERGRID

4.15.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme
1.	Supply and installation of <ul style="list-style-type: none"> • 24F OPGW on 400kV Solapur (NTPC)- Solapur (PG) ckt#1/2 (11.16 km) • STM-16, 3 MSP FOTE at Solapur STPP and Solapur PG Station (2 Nos FOTE).

4.16 Redundant OPGW communication path for 500 MW plant of NSPCL, Chhattisgarh.

4.16.1 Representative from CTUIL stated that NSPCL Generating station (500MW plant) is operating under AGC. NSPCL is connected to Raipur (PG) through 400kV D/C Line (with 24F OPGW). NSPCL plant is also connected electrically with 400kV Khedamara S/S of CSPTCL via MSDS-V of BSP. OPGW is available on NSPCL to MSDS-V (BSP) 220kV D/C line (4km). However, OPGW is not available on 220kV D/C line of CSPTCL from MSDS-V to Khedamara S/S. He further stated that OPGW installation on above line shall create one more OPGW path for data communication redundancy. Thus, OPGW needs to be provided by replacing one earth wire on the 220kV D/C line of CSPTCL from MSDS-V to Khedamara S/S.

4.16.2 NCT approved the Scheme “Redundant OPGW communication path for 500 MW plant of NSPCL, Chhattisgarh” under RTM mode.

4.16.3 Summary of the scheme is given below:

SI No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	Redundant OPGW communication path for 500 MW plant of NSPCL, Chhattisgarh Implementation timeframe : 18 months from the date of allocation	0.55	Approved under RTM mode through POWERGRID

4.16.4 Detailed scope of the scheme is given below:

Sl. No.	Scope of the Transmission Scheme
2.	Supply and installation of OPGW along with accessories by replacing the existing earth wire on one circuit by Live Line installation on the 220 kV D/C MSDS-V(BSP) – Khedamara line (approx.- 9 km)

4.17 Modification in scope of additional 400 kV feed to Goa State and Additional system for power evacuation from generation projects pooled at Raigarh (Tamnar) Pool

4.17.1 CE (PSPM), CEA stated that M/s GTTPL (a subsidiary of Sterlite Power TL) is implementing the transmission scheme “Additional 400 kV feed to Goa State and Additional system for power evacuation from generation projects pooled at Raigarh (Tamnar) Pool” under TBCB route. The original schedule of commissioning of the scheme was July, 2022. One of the elements of the mentioned transmission scheme is “LILO of one ckt. of Narendra (existing) - Narendra (New) 400 kV D/c quad line at Xeldem”. Length of LILO is 105 km (Approx.) out of which 55 km (Approx.) is in forest.

4.17.2 During implementation of the said transmission scheme, a petition was filed by Goa Foundation in Central Empowered Committee (CEC) constituted by Supreme Court and High Court of Mumbai & Goa. The CEC submitted its report to Supreme Court on 23rd April 2021 and recommended some modifications in the element of “LILO of one ckt. of Narendra (existing) – Narendra (new) 400 kV D/C line at Xeldem”. Supreme Court vide its order in hearing dated 07.04.2022 has approved the recommendation made by CEC to use the (ROW) of existing 110 kV line of Supa-Ponda & 220 kV line of Ambewadi -Ponda line and directed GTTPL to take suitable steps in accordance with the recommendation made therein.

4.17.3 KPTCL and GED, however, recommended to retain the existing 220 kV Ambewadi-Ponda line from reliability point of view and suggested M/s GTTPL to use multi circuit tower so that 400 kV line can be constructed in the existing corridor while retaining existing 220 kV line also on same towers.

- 4.17.4 Since the multi circuit tower was not in the original scope, M/s GTTPL sought consent from all LTTCs and submitted the cost implication details. LTTCs have not consented to the proposal citing that retention of 220 kV Ambewadi-Ponda line is the requirement of Karnataka and Goa and therefore, they may bear the cost of multi circuit multi voltage line and M/s GTTPL should seek approval from CERC before proceeding.
- 4.17.5 It was opined that the transmission line is already significantly delayed and since the existing corridor of 110 kV and 220 kV lines have to be used as per the Supreme court order, the most optimized option would be to allow M/s GTTPL to continue with the implementation works with use multi circuit tower so that 400 kV line can be constructed in the existing corridor while retaining existing 220 kV Ambewadi-Ponda line also.
- 4.17.6 After deliberations, NCT agreed for modification in scope of the transmission scheme “Additional 400 kV feed to Goa State and Additional system for power evacuation from generation projects pooled at Raigarh (Tamnar) Pool” to the extent that multi circuit towers to implemented in the existing corridor for construction of LILO of one ckt. of Narendra (existing) – Narendra (new) 400 kV D/C line at Xeldem to accommodate existing 220 kV lines.

5 Transmission System for integration of Nizamabad, Medak and Rangareddy REZs in Telangana

- 5.1 CTU representative informed that the transmission schemes “Transmission System for integration of Nizamabad, Medak and Rangareddy REZs” has been forwarded to CEA vide letter dated 11.07.2023 for consideration of the NCT along with the SRPC views. However, decision regarding further course of action for implementation of these transmission schemes is yet to be taken.
- 5.2 SECI representative informed that they have held deliberations with the RE developers for these locations in Telangana wherein the developers have informed that they are not in position to establish the RE projects in these locations in Telangana due to very high land prices/non-availability of land. SECI representative also informed that bids were invited by SECI for Telangana State specific capacities, however did not received any response.

SECI vide letter dated 04.03.2024 have communicated to MNRE that the 13 GW potential identified in the State of Telangana (Nizamabad, Medak, Rangareddy and Karimnagar districts) may be replaced by new alternative locations of Mahbubnagar, Nagarkurnool, Wanaparthi, Jogudumba Gadwal and Kamareddy. However, formal communication in this respect from MNRE is awaited. Accordingly, SECI representative suggested that the decision on implementation of the transmission schemes in Telangana may be kept on hold, till further communication from MNRE/SECI.

- 5.3 After deliberations, NCT decided that implementation of the transmission schemes in Telangana may be kept on hold till further communication from MNRE.

6 Status of the bids under process by BPCs

- 6.1 Both the Bid Process Coordinators [BPCs], i.e, PFCCL and RECPDCL made presentations on under bidding Inter State Transmission Schemes. Salient points of the discussion were as under:

- a) Transmission scheme “Creation of 400/220 kV, 2x315 MVA S/S at Siot, Jammu & Kashmir” is on hold from 2021 due to non-finalization of the downstream network by J&K. Chairperson, CEA, directed BPC to seek the timeframe of implementation of downstream network from JKPTCL.
- b) Transmission system for evacuation of power from Chhatarpur SEZ (1500 MW) in Madhya Pradesh is also on hold due to non-finalization of location by the REZ. Chairperson, CEA suggested PFCCL to take up the matter with Madhya Pradesh.
- c) Bidding Process for “Transmission System for Evacuation of Power from potential renewable energy zone in Khavda area of Gujarat under Phase-V (8 GW): Part C” to be reviewed in next meeting.
- d) On the matter of frequent shifting of bidding deadlines, BPCs informed that the bidding timeline are increased due to the queries raised by the bidders at the last moment. It was suggested that all the queries should be received on bidding portals which should have fixed window for submission of queries. No further queries should be entertained after a specified timeline. It was also decided that a Standing Committee for resolving bidder’s queries may be constituted with members from CEA, CTU and BPCs. The meeting of the Standing Committee would be convened by the concerned BPC for the specific queries not resolved within seven days by the BPCs at their level.

Summary of the deliberations of the 20th meeting of NCT held on 25th June, 2024

I. Modification in the earlier approved/notified transmission schemes:

1. Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL)-PART B.

NCT approved the following modifications in the scope at Sl. 1, 2, 4 & 7 of the transmission scheme “Augmentation of transformation capacity at Jam Khambhaliya PS (JKTL)- PART-B”.

Sl. No.	Scope of the Transmission Scheme	Capacity /km	Implementation Time-frame
1	Creation of New 220 kV Bus Section-II at Jam Khambhaliya PS	220 kV Bus sectionaliser bay – 1 Set (to be kept normally CLOSED and may be opened based on system requirement) 220 kV BC – 1 No.	21 months
2	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 2x500 MVA, 400/220 kV ICT (5th & 6th) (terminated on New 220 kV bus section-II)	500 MVA, 400/220 kV ICTs: 2 Nos. 400 kV ICT bays: NIL* 220 kV ICT bays: 2 Nos. Bus duct outside GIS hall along with termination equipment shall be provided.	No change
4	Implementation of 220 kV GIS line bays at Jam Khambhaliya PS for RE Projects on New 220 kV bus section-II	220 kV line bay – 3 Nos. (GIS) (1 for ACME Sun Power Pvt Ltd, 1 for Juniper Green Energy Pvt Ltd. & 1 no. for Mounting (MRPL))	MRPL Bay: 21 months ACME Bay: 21 months# Juniper Bay: Jun-27 subject to minimum schedule of 21 months from date of award of balance works.

7	Augmentation of transformation capacity at Jam Khambhaliya PS (GIS) by 1x500 MVA, 400/220 kV (9th) ICT terminated on New 220 kV bus section-III	500 MVA, 400/220 kV ICTs: 1 No. 400 kV ICT bay: 1 No. (TSP to implement complete dia. in all respects with the other 400 kV bay to be utilized by EETFEL (Bulk consumer) in future) 220 kV ICT bay: 1 No.	No change
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**Note: Termination of the 2x500 MVA ICTs under present scope shall be in the '2' separate dia's which are being developed by POWERGRID for RIL for termination of 400 kV Jam Khambhaliya - Jamnagar D/c line. TSP shall implement 400 kV side GIS Duct required for interconnection of ICT-5 & 6 at 400 kV Jam Khambhaliya PS [length is approx. 350 M. (Actual length shall be finalized based upon final layout)] along with associated equipment as required*

Earlier schedule was specified as March-26 subject to minimum schedule of 21 months from date of award of balance works. However, considering present status, schedule of 21 months may directly be specified.

2. Modification in design / layout of Kurnool-III PS due to receipt of large quantum of Connectivity applications at 400 kV level

NCT approved following modifications in the scope of design / layout of Kurnool-III PS:

Sl. No.	Bay Type	Present scope	Revised Present scope	Future Scope	Revised Future scope
765 kV Switchyard: No change					
400 kV switchyard					
1	Line with Reactor	0	0	10	22
2	Tie	9	10	11	12
3	400/220 kV Transformer Bay	9	9 (2 shifted to new section)	11	5
4	765/400 kV Transformer Bay	3	3	4	4
5	Bus Sectionalizer	0	0	1 set	2 set
6	Bus Reactor	1	1	-	Any Line with reactor bay may be used as Bus reactor bay
220 kV switchyard					
1	Line	15	15 (5 Nos. Shifted to new section)	11	5

Sl. No.	Bay Type	Present scope	Revised Present scope	Future Scope	Revised Future scope
2	400/220 kV Transformer Bay	9	9 (2 shifted to new section)	11	5
3	Bus Coupler	3	3	3	1
4	Transfer Bus coupler	3	3	3	1
5	Bus section	2 set	2 set	3 set	0

Additional works due to rearrangement / revised scope:

Sl. No.	Items
1	Land development for additional area for 400 & 220 kV Switchyard
2	400 kV Bus works for 8 Nos. additional diameters
3	Earth mat for additional area for 400 & 220 kV Switchyard
4	Other Auxiliary items i.e. additional requirement of Power & Control Cables, illumination, VMS etc.
5	Associated civil works including dismantling of foundations already casted

3. Change in Implementation time-frame of Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX)

NCT approved the change in Implementation time-frame of Eastern Region Expansion Scheme-XXXIX (ERES-XXXIX) from 30th June, 2026 to 31st December, 2026.

4. System strengthening at Koppal-II and Gadag-II for integration of RE generation

NCT, approved following scope of work to be appended to the ***“System strengthening at Koppal-II and Gadag-II for integration of RE generation”*** agreed in the 19th NCT meeting:

- **Koppal-II PS:** 220kV Bus Sectionalizer : 2 sets, 220 kV Bus Coupler (BC) Bay – 2 Nos., 220 kV Transfer Bus Coupler (TBC) Bay – 2 Nos. and 400kV Bus Sectionalizer :1 set
- **Gadag-II PS:** 220 kV Bus Sectionalizer : 2 sets, 220 kV Bus Coupler (BC) Bay – 2 Nos. and 220 kV Transfer Bus Coupler (TBC) Bay – 2 Nos.

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

NCT approved following modifications in the Transmission system for evacuation of power from Luhri Stage-I HEP scheme:

Sl. No.	Earlier Scope of Transmission Scheme	Revised Scope of Transmission Scheme
1	<p>Establishment of 7x105 MVA, 400/220 kV Nange GIS Pooling Station along with 125 MVAR (420kV) Bus Reactor at Nange (GIS) PS(1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 315MVA, 400/220kV ICT: 2 Nos.(7x105 MVA including 1 spare ICT) • 400kV ICT bays: 2 Nos. • 220kV ICT bays: 2 Nos. • 400 kV, 125 MVAr Bus Reactor[#] – 1 No. • 400 kV Bus Reactor bay- 1 No. • 400 kV Line Bays- 2 Nos. <p>Future provisions: Space for</p> <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. • 220kV bus sectionalizer: 1 set 	<p>Establishment of 7x105 MVA, 400/220kV Pooling Station near Koldam (GIS) along with 125 MVAR (420kV) Bus Reactor (1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 315MVA, 400/220 kV ICT: 2 Nos. (7x105 MVA including 1 spare ICT) • 400kV ICT bays: 2 Nos. • 220 kV ICT bays: 2 Nos. • 400 kV, 125 MVAr Bus Reactor – 1 No. • 400 kV Bus Reactor bay- 1 No. • 400 kV Line Bays- 2 Nos. <p>Future provisions: Space for</p> <ul style="list-style-type: none"> • 400/220 kV 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. • 220kV bus sectionalizer: 1 set
2	<p>Nange (GIS) Pooling Station – Koldam 400 kV D/C line (Triple snowbird) (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)-40 km</p>	<p>Pooling Station near Koldam (GIS)– Koldam (NTPC) 400 kV D/C line (Triple snowbird) (only one circuit is to be terminated at Koldam(NTPC) while second circuit would be connected to bypassed circuit of Koldam(NTPC) – Ropar/Ludhiana 400kV D/C line) – 7 km</p>
3	<p>1 no. of 400kV line bay at Koldam S/S for termination of Nange (GIS) Pooling Station – Koldam 400 kV line along with 125 MVAR (420kV) Bus Reactor at Koldam S/s (1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 400 kV Line Bay- 1 no. • 400 kV, 125 MVAr Bus Reactor[#] - 1 no. 	<p>1 no. of 400kV line bay at Koldam S/s for termination of Pooling Station near Koldam (GIS)– Koldam(NTPC) 400 kV line along with 125 MVAR (420kV) Bus Reactor at Koldam(NTPC) S/s (1-Ph units along with one spare unit)</p> <ul style="list-style-type: none"> • 400 kV Line Bay- 1 no. • 400 kV, 125 MVAr Bus Reactor[#] - 1 no. (to be terminated in existing

Sl. No.	Earlier Scope of Transmission Scheme	Revised Scope of Transmission Scheme
	<ul style="list-style-type: none"> 400 kV, 125 MVA_r Bus Reactor[#] - 1 no. (to be terminated in existing line bay at Koldam, which would be available due to bypassing of one circuit of Koldam – Ropar/Ludhiana 400 kV D/c line at Koldam S/s) 	line bay at Koldam(NTPC), which would be available due to bypassing of one circuit of Koldam – Ropar/Ludhiana 400 kV D/c line at Koldam(NTPC) S/s)
4	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)	Bypassing one ckt of Koldam(NTPC) – Ropar/Ludhiana 400kV D/C line (Triple snowbird) at Koldam(NTPC) and connecting it with one of the circuit of Pooling Station near Koldam (GIS)– Koldam(NTPC) 400kV D/c line (Triple snowbird), thus forming Pooling Station near Koldam – Ropar/ Ludhiana one line (Triple snowbird)
5	1x50 MVAR switchable line reactor at Ropar end of Nange-Ropar/ Ludhiana 400kV line <ul style="list-style-type: none"> 400 kV, 50MVA_r Line Reactor- 1 no. 400 kV Reactor Bay- 1 no 	--- Deleted ---
	Earlier Estimated Cost: Rs. 432 Cr.	Revised Estimated Cost: Rs. 305 Cr.

6. Augmentation with 400/220 kV, 1x500 MVA Transformer (10th) at Fatehgarh-2 PS

NCT approved modification in the transmission scheme for “Augmentation with 400/220 kV, 1x500 MVA Transformer (10th) at Fatehgarh-2 PS” as mentioned below so that same can be taken up for implementation:

Earlier (as per MOP OM dated 01.12.21)	Amendment
Augmentation with 400/220 kV, 1x500 MVA Transformer (10th) at Fatehgarh-2 PS <ul style="list-style-type: none"> 400/220 kV 500 MVA ICT:1 no 400 kV ICT bays – 1 Nos. 220 kV ICT bays - 1 Nos. Implementation Timeframe- 15 months from MOP OM or evacuation	Augmentation with 400/220 kV, 1x500 MVA Transformer (11th) at Fatehgarh-II PS (5 th ICT in Fatehgarh-II section-II) <ul style="list-style-type: none"> 400/220 kV 500 MVA ICT:1 no 400 kV ICT bays – 1 no. 220 kV ICT bays - 1 no. Implementation Timeframe- 18 months

requirement beyond 4490 MW at 220 kV level of Fatehgarh-2, whichever is later.	[for N-1 compliance in Fatehgarh-II PS (Section-II)]
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7. Modification in scope of additional 400 kV feed to Goa State and Additional system for power evacuation from generation projects pooled at Raigarh (Tamnar) Pool

NCT agreed for modification in scope of the transmission scheme “Additional 400 kV feed to Goa State and Additional system for power evacuation from generation projects pooled at Raigarh (Tamnar) Pool” to the extent that multi circuit towers to implemented in the existing corridor for construction of LILO of one ckt. of Narendra (existing) – Narendra (new) 400 kV D/C line at Xeldem to accommodate existing 220 kV lines.

II. ISTS Transmission schemes, costing between Rs 100 Crore to Rs 500 Crore, approved by NCT:

The transmission schemes approved by NCT under RTM route is given below:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Implementation timeframe	Estimated Cost (Rs. Crs)
1.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW) : Part B	RTM	24 Months or matching with Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW) : Part-A scheme whichever is later	195.67

The broad scope of the above schemes is as given below:

Sl. No.	Name of Transmission Scheme	Broad Scope
1.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW) : Part B	<ol style="list-style-type: none"> i. Reconductoring of 400 kV Kishenpur-Kishtwar section (up to LILO point) with Twin HTLS (minimum 2100 MVA capacity) (formed after LILO of Kishenpur-Dulhasti line at Kishtwar S/s) along with bay upgradation works (2000 A to 3150 A) at Kishenpur end for above line. ii. Bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form 400 kV Kishenpur– Jalandhar D/c direct line (Twin)

		<p>(4 Nos. of vacated 400 kV line bays at Samba S/s will be utilized for 400 kV Kishenpur-Samba D/c line (Quad) & 400 kV Samba-Jalandhar D/c line(Quad),</p> <p>iii. Bays upgradation works (2000A to 3150A) at Samba end (4 Nos. bays vacated after bypassing of Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin))</p> <p>iv. Redundant Communication System for Dulhasti (NHPC) & Kishtwar (Sterlite) stations by installing OPGW on 400 kV Kishenpur-Kishtwar S/c line alongwith reconductoring work and FOTE at Dulhasti & Kishenpur.</p>
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(Detailed scope as approved by 20th NCT and subsequent amendments thereof)

III. ISTS Transmission schemes, costing greater than Rs 500 Crore, recommended by NCT to MoP:

The ISTS transmission schemes recommended by NCT to MoP are given below:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	BPC	Estimated Cost (Rs. Crs)
1.	Network Expansion scheme in Western Region to cater to Pumped storage potential near Talegaon (Pune)	TBCB	01.01.2027 subject to minimum implementation schedule of 24 months from SPV transfer	RECPDCL	1663
2.	Provision of ICT Augmentation and Bus Reactor at Bhuj-II PS	TBCB	21 months from SPV transfer	PFCCL	587
3.	Transmission System for Offshore Wind Zone Phase-1 (500 MW VGF off the coast of Gujarat for Subzone B3)	RTM	Matching with the associated RE generation (48 months from effective date of PPA), presently anticipated by 31 st March, 2029		6900
4.	Transmission System for Offshore wind farm in Tamil Nadu {500 MW VGF}	RTM	31 st March 2030		6242
5.	Transmission System for evacuation of power from	TBCB	30 months from SPV transfer	PFCCL	558

	Mahan Energen Limited Generating Station in Madhya Pradesh				
6.	Transmission system for Augmentation of transformation capacity at 765/400kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat – Part B	TBCB	As per detailed scope	RECPDCL	636
7.	Transmission System for evacuation of RE power from Raghnesda area of Gujarat – 3GW under Phase-I	TBCB	30 months from SPV transfer	PFCCL	1855
8.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW): Part-A	TBCB	24 Months from the date of SPV transfer	RECPDCL	1213.87
9.	Transmission system strengthening at Kurnool-III PS for integration of additional RE generation projects	TBCB	Package A– 24 months Package B – progressively from June'25 to Dec'27 Package C – 24 months	PFCCL	2886

The broad scope of the above ISTS schemes to be notified in Gazette of India is as given below:

Sl. No.	Name of Scheme & Tentative implementation timeframe	Broad Scope	Bid Process Coordinator

1.	<p>Network Expansion scheme in Western Region to cater to Pumped storage potential near Talegaon (Pune)</p> <p>Implementation Timeframe: 01.01.2027 subject to minimum implementation schedule of 24 months from SPV transfer</p>	<p>i. Establishment 2x1500 MVA, 765/400 kV Substation near South of Kalamb with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor</p> <p>ii. LILO of Pune-III – Boisar-II 765 kV D/c line at South Kalamb S/s with associated bays at South Kalamb S/s</p> <p>iii. Installation of 1x240 MVA switchable line reactor on each ckt at South Kalamb end of Boisar-II – South Kalamb 765 kV D/c line (formed after above LILO)</p> <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	RECPDCL
2.	<p>Provision of ICT Augmentation and Bus Reactor at Bhuj-II PS</p> <p>Implementation timeframe : 21 months from SPV transfer</p>	<p>i. Augmentation of transformation capacity at Bhuj-II PS (GIS) by 3x500 MVA, 400/220 kV ICT (7th, 8th & 9th)</p> <p>ii. Augmentation of transformation capacity at Bhuj-II PS (GIS) by 1x1500 MVA, 765/400 kV ICT (4th)</p> <p>iii. Installation of 1x330 MVA 765 kV Bus Reactor (2nd) along-with associated bay</p> <p>iv. Implementation of 220 kV GIS line bay at Bhuj-II PS for Aditya Birla Renewables Subsidiary Limited (ABRSL) [Appln No: 2200000321(362MW)]</p> <p>v. Implementation of 220 kV GIS line bay at Bhuj-II PS for ACME Cleantech Solutions Private Limited (ACSPL) [Appln No: 2200000382(350 MW)]</p> <p>vi. Implementation of 220 kV GIS line bay at Bhuj-II PS for ACME Cleantech Solutions Private Limited (ACSPL) [Appln No: 2200000431(50 MW)]</p> <p>vii. Implementation of 220 kV GIS line bay at Bhuj-II PS for Avaada Energy Pvt Ltd. (AEPL) [Appl. No: 2200000444(100 MW)]</p> <p>viii. Implementation of 220 kV GIS line bays at Bhuj-II PS for Adani Green</p>	PFCCL

		<p>Energy Thirty-Two Ltd. (AGE32L) [Appl. No: 2200000514 (260.5MW)]</p> <p>ix. Implementation of 220 kV GIS line bays at Bhuj-II PS for Adani Renewable Energy Eight Ltd. (ARE8L) [Appl. No: 2200000545 (115MW)]</p> <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	
3.	<p>Transmission System for Offshore Wind Zone Phase-1 (500 MW VGF off the coast of Gujarat for Subzone B3)</p> <p>Implementation timeframe : Matching with the associated RE generation (48 months from effective date of PPA), presently anticipated by 31st March, 2029</p>	<p>A. Transmission System onwards Onshore Pooling Station</p> <ol style="list-style-type: none"> 1. Establishment of 2x500 MVA, 400/220 kV Mahuva Onshore Pooling Station (GIS) (Mahuva PS) alongwith 1x125 MVAR, 420 kV bus reactor (with space provision for upgradation to 765 kV level to cater to future Offshore Wind Projects adjacent to B3, B4, B5 pockets in future) 2. Creation of 400kV switchyard along with Installation of 2x1500 MVA, 765/400 kV ICTs at Vataman (AIS) with 2x125 MVA_r (420 kV) Bus Reactors 3. 2 nos. 400kV bays at Vataman for termination of Mahuva Onshore PS (GIS) – Vataman 400 kV D/c line 4. Mahuva Onshore PS (GIS) – Vataman 400 kV D/c line (Quad ACSR/AAAC/AL59 moose equivalent) with 63MVA_r & 50 MVA_r, 420 kV switchable line reactors on each ckt at Mahuva & Vataman ends respectively. 5. ± 300 MVA_r STATCOM at 220 kV level of Mahuva PS (GIS) with 1 No. of 220 kV bay 6. 420 kV, 1x125 MVAR Variable Bus Shunt Reactor with OLTC (control range between 50 – 125 	

		<p>MVAr for VSR) with 1 No. of 400 kV bay</p> <p>7. 245 kV, 3x50 MVAr Bus Reactors at 220 kV level of Mahuva PS (GIS)</p> <p>B. Transmission System for integration of Offshore Wind Farms with Onshore PS</p> <p>Offshore Substation-1 {500 MW VGF}</p> <ol style="list-style-type: none"> 1. Establishment of 2x315 MVA, 220/66 kV Gujarat Offshore B3 Sub-Station Station-1 (B3-OSS-1) with 66 kV line bays – 10 Nos. for RE Interconnection 2. B3-OSS-1 – Mahuva Onshore PS (GIS) 220 kV two nos. (3 core) cables (45 km- under sea cable of about 35 km & under ground cable of about 10 km) alongwith associated line bays at both ends (with capacity of 300 MVA/ckt at nominal voltage) with 1x50 MVAr switchable line reactors at B3-OSS-1 end on each cable <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	
4.	<p>Transmission System for Offshore wind farm in Tamil Nadu {500 MW VGF}</p> <p>Implementation timeframe : 31st March 2030</p>	<p>A. Transmission System onwards Onshore Pooling Station</p> <ol style="list-style-type: none"> 1. Establishment of 2x500 MVA, 400/230 kV Onshore Pooling Station near Avaraikulam, Tirunelveli District in Tamil Nadu with provision of expansion upto 5 GW 2. Avaraikulam Onshore PS – Tuticorin PS 400 kV D/c quad line 3. \pm 300 MVAr STATCOM along with 2x125 MVAr MSR 	

		<p>B. Transmission System for integration of Offshore Wind Farms with Onshore PS</p> <p>Offshore Substation-1 {500 MW VGF}</p> <ol style="list-style-type: none"> 1. Establishment of 2x315 MVA, 230/66kV Off-Shore Substation-1 with 10 nos. of 66kV line bays for RE integration 2. Offshore substation 1 (OSS-1) – Avaraikulam Onshore PS 2 nos. 230kV (at least 300 MVA capacity) Submarine cables (~35 - 40 km) with 2x50MVar switchable line reactors at OSS-1 end <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	
5.	<p>Transmission System for evacuation of power from Mahan Energen Limited Generating Station in Madhya Pradesh</p> <p>Implementation timeframe : 30 months from SPV transfer</p>	<ol style="list-style-type: none"> i. Mahan (existing bus) – Rewa PS (PG) 400 kV D/c (Quad ACSR/AAAC/AL59 moose equivalent)line ii. 2 Nos. 400 kV bays at Rewa PS (PG) for termination of Mahan (existing bus) – Rewa PS (PG) 400 kV D/c line (Quad ACSR/AAAC/AL59 moose equivalent)line <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	PFCCL
6.	<p>Transmission system for Augmentation of transformation capacity at 765/400kV Lakadia S/s (WRSS XXI(A) Transco Ltd) in Gujarat – Part B</p> <p>Implementation timeframe : as per</p>	<ol style="list-style-type: none"> i. Installation of 2x500 MVA, 400/220 kV ICTs (3rd & 4th) at Lakadia PS along with associated ICT bays ii. Implementation of 220 kV line bay at Lakadia PS for TEQ Green Power XVII Private Limited (TGPXVIPL: 300 MW) iii. Implementation of 220 kV line bay at Lakadia PS for Arcelor Mittal Nippon Steel India Limited (AMNSIL: 350 MW) 	RECPDCL

	Detailed Scope	<ul style="list-style-type: none"> iv. Implementation of 220 kV line bay at Lakadia PS for Renew Solar (Shakti Eight) Private Limited (RS(S8)PL: 200 MW) v. Creation of New 220 kV Bus Section-II at Lakadia PS along with 220 kV Sectionaliser arrangement between 220 kV Bus sec-I & Sec-II vi. Augmentation of transformation capacity at Lakadia PS by 4x500 MVA, 400/220 kV ICTs (5th 6th, 7th & 8th) terminated on new 220 kV Bus Section-II vii. Implementation of 220 kV line bay at Lakadia PS for Juniper Green Energy Private Limited (JGEPL) (Appl. No. 2200000376: 300 MW) viii. Implementation of 220 kV line bay at Lakadia PS for TEQ Green Power XVI Pvt. Ltd. (TGPXVIPL) (Appl. No. 2200000398: 76MW) ix. Implementation of 220 kV line bay at Lakadia PS for Ganeko Solar Pvt. Ltd. (GSPL) (Appl. No. 2200000458: 290 MW) x. Implementation of 220 kV line bay at Lakadia PS for Juniper Green Energy Private Limited (JGEPL) (Appl. No. 2200000500: 150 MW) xi. Implementation of 220 kV line bay at Lakadia PS for Serentica Renewables India Private Limited (SRIPL) (Appl. No. 2200000610: 200 MW) xii. Implementation of 220 kV line bay at Lakadia PS for RDS Solar Park Private Limited (RDSSPPL) (Appl. No. 2200000639: 350 MW) xiii. Implementation of 220 kV line bay at Lakadia PS for Percentum Renewables Private Limited (PRPL) (Appl. No. 2200000673: 148 MW) xiv. Installation of 1x330 MVA 765 kV Bus Reactor (2nd) along-with associated bay 	
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		<p>xv. Augmentation of transformation capacity at Lakadia PS by 1x1500 MVA, 765/400 kV ICTs (3rd)</p> <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	
7.	<p>Transmission System for evacuation of RE power from Raghanesda area of Gujarat – 3GW under Phase-I</p> <p>Implementation timeframe : 30 months from SPV transfer</p>	<p>i. Establishment of 3x1500 MVA, 765/400 kV Substation near Raghanesda (GIS) with 2x330 MVAR, 765 kV bus reactor and 2x125 MVAR, 420 kV bus reactor</p> <p>ii. Raghanesda (GIS) – Banaskantha (PG) 765 kV D/c line</p> <p>iii. 2 Nos. 765 kV line bays at Banaskantha (PG) S/s</p> <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	PFCCL
8.	<p>Transmission scheme for evacuation of power from Ratle HEP (850 MW)</p> <p>Implementation timeframe : 24 Months from the date of SPV transfer</p>	<p>i. LILO of 400 kV Kishenpur- Dulhasti line (Twin) at Kishtwar S/s along with associated bays at Kishtwar S/s</p> <p>ii. 400 kV Kishenpur-Samba D/c line (Quad) (only one circuit is to be terminated at Kishenpur utilizing 1 no. of 400 kV vacated line bay at Kishenpur S/s (formed with bypassing of one ckt of 400 kV Kishtwar – Kishenpur 400 kV D/c line (Quad) at Kishenpur) while second circuit would be connected to bypassed circuit of 400 kV Kishtwar – Kishenpur line (Quad))</p> <p>iii. Bypassing of one ckt of 400 kV Kishtwar – Kishenpur 400 kV D/c line (Quad) at Kishenpur and connecting it with one of the circuit of Kishenpur-Samba 400 kV D/c line(Quad), thus forming 400 kV Kishtwar - Samba (Quad) direct line (one ckt)</p> <p>iv. 1x80 MVA Switchable line reactor at Samba end of 400 kV Kishtwar-Samba 400 kV line-165 km (Quad) [formed after bypassing of 400 kV Kishtwar – Kishenpur line (Quad) at Kishenpur and connecting it with one</p>	RECPDCL

		<p>of the circuit of Kishenpur-Samba 400 kV D/c line(Quad))</p> <p>v. 1x63 MVA_r Switchable line reactor on each ckt at Jalandhar end of Kishenpur– Jalandhar D/c direct line - 171km(Twin) (formed after bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form Kishenpur– Jalandhar D/c direct line (Twin))</p> <p>vi. 400 kV Samba- Jalandhar D/c line(Quad)</p> <p>(only one circuit is to be terminated at Jalandhar utilizing 1 no. of 400 kV vacated line bay at Jalandhar S/s (formed with bypassing of 400 kV Jalandhar – Nakodar line (Quad) at Jalandhar) while second circuit would be connected to bypassed circuit of Jalandhar –Nakodar 400 kV line (Quad))</p> <p>vii. 1x80 MVA_r Switchable line reactor at Samba end of Samba –Nakodar direct line (Quad) (187km) formed after bypassing of 400 kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400 kV D/c line(Quad Moose), thus forming Samba –Nakodar line (Quad)</p> <p>viii. Bypassing 400 kV Jalandhar – Nakodar line (Quad) at Jalandhar and connecting it with one of the circuit of Samba-Jalandhar 400 kV D/c line(Quad Moose), thus forming 400 kV Samba –Nakodar (Quad) direct line</p> <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	
9.	Transmission system strengthening at Kurnool-III PS for integration of	<p>Package A</p> <p>i. Augmentation of transformation capacity by 3x1500 MVA, 765/400 kV ICTs at Kurnool-III PS</p>	PFCCL

	<p>additional RE generation projects</p> <p>Implementation timeframe : Package A– 24 months Package B – progressively from June’25 to Dec’27 Package C – 24 months</p>	<p>ii. Kurnool-III PS – Chilakaluripeta 765 kV D/c line with 240 MVar switchable line reactors at both ends</p> <p>Package B</p> <p>i. 2 Nos. of 400 kV line bays at Kurnool-III PS for termination of dedicated transmission line of M/s Adani Renewable Energy Forty Two Ltd. ii. 4 Nos. of 400 kV line bay at Kurnool-III PS for termination of dedicated transmission lines of M/s Indosol Solar Pvt. Ltd. iii. 2 Nos. of 400 kV line bays at Kurnool-III PS for termination of dedicated transmission line of M/s Adani Renewable Energy Fifty One Ltd.</p> <p>Package C</p> <p>i. Augmentation of 1x1500 MVA 765/400 kV ICT (7th) at Kurnool-II PS</p> <p>(Detailed scope as approved by 20th NCT and subsequent amendments thereof)</p>	
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IV. ISTS communication schemes approved by NCT:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Implementing Agency	Estimated Cost (Rs. Crs)
1.	A: Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pooling (Banala) (PG) S/s, Parbati-II (NHPC) &	RTM	18 months from the date of allocation	PKTCL	5.31

	<p>Parbati-III (NHPC) stations.</p> <p>B: Supply and installation of 24 Fibre OPGW & FOTE to providing redundant communication for Parbati Pooling (Banala) (PG) S/s , Parbati-II (NHPC) & Parbati-III (NHPC) stations.</p>	RTM	18 months from the date of allocation (with matching schedule with Scheme A)	POWERGRID	1.24
2.	Redundant Communication for Chamara-III (NHPC) & Budhil (GreenCo) using 3 pairs of fibers sharing from HPPTCL network	RTM	18 months from the date of allocation	POWERGRID	0.3
3.	Additional FOTE requirements at AGC locations in Western Region	RTM	12 months from the date of allocation	POWERGRID	3.90
4.	Redundant OPGW communication path for Solapur STPP under AGC	RTM	18 months from the date of allocation	POWERGRID	1.15
5.	Redundant OPGW communication path for 500 MW plant of NSPCL, Chhattisgarh.	RTM	18 months from the date of allocation	POWERGRID	0.55

(Detailed scope as approved by 20th NCT and subsequent amendments thereof)

Annexure-I

List of participants of the 20th meeting of NCT

CEA:

1. Sh. Ghanshyam Prasad, Chairperson, CEA & Chairman, NCT
2. Sh. Ajay Talegaonkar, Member (E&C)
3. Sh. A.K. Rajput, Member (Power Systems)
4. Sh. Ishan Sharan, Chief Engineer (PSPA-I)
5. Sh. Y.K. Swarnkar, Chief Engineer, PSPM
6. Sh. B.S. Bairwa, Chief Engineer (I/C) (PSPA-II)
7. Ms. Priyam Srivastava, Deputy Director (PCD)
8. Sh. Pranay Garg, Deputy Director (PSPA-II)
9. Sh. Manish Kumar Verma, Assistant Director (PSPA-II)

MoP:

1. Om Kant Shukla, Director (Trans.)

MNRE:

1. Sh. Tarun Singh, Scientist E
2. Sh. Rahul Rawat, Scientist D

SECI:

1. Sh. R.K. Agarwal, Consultant
2. Sh. Prashant Kumar Upadhyay, Sr, Manager

NITI Aayog:

1. Sh. Manoj Kumar Upadhyay, Deputy Advisor

CTUIL:

1. Sh. P C Garg, COO
2. Sh. Ashok Pal, Deputy COO
3. Sh. K K Sarkar, Sr GM
4. Sh. P.S. Das, Sr GM
5. Sh. Rajesh Kumar, Sr GM
6. Sh. Kashish Bhambhani, GM
7. Sh. Anil Kr. Meena, GM
8. Sh. Shiv Kumar Gupta, Sr DGM
9. Sh. Sandeep Kumawat, DGM
10. Sh. Kunal Sagar, DGM
11. Sh. Venkatesh Gorli, Chief Manager
12. Sh. Pratyush Singh, Chief Manager
13. Sh. Manish Ranjan Keshari, Chief Manager

GRID India:

1. Sh. S.R. Narasimhan, CMD

2. Sh. Rajiv Porwal, Director (SO)
3. Sh. Vivek Pandey, Senior GM
4. Sh. Rahul Shukla, Chief Manager
5. Sh. Priyam Jain, Chief Manager

RECPDCL

1. Sh. Satyaban Sahu, GM (Tech)
2. Sh. Harshavardhan

PFCCL

1. Sh. Navin Phogat, GM (Tech)
2. Sh. Deepak Kumar, Assistant Manager

Expert Member

1. Sh. Ravinder Gupta, Ex Chief Engineer, CEA
