सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड

(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)

(भारत सरकार का उदयम)

CENTRAL TRANSMISSION UTILITY OF INDIA LTD.

(A wholly owned subsidiary of Power Grid Corporation of India Limited)

(A Government of India Enterprise)

संदर्भ/Ref: CTU/E/00/13th CMETS-ER

दिनांक/Date: 06-12-2022

वितरण सूची के अनुसार/ As per Distribution List

विषय/ Subject: पूर्वी क्षेत्र में पारेषण योजनाओं के विकास के लिए 13वी परामर्श बैठक के कार्यवृत्त (सीएमईटीएस-ईआर) / Minutes of 13th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER)

महोदय/महोदया/ Sir/ Ma'am,

पूर्वी क्षेत्र में पारेषण योजनाओं के विकास के लिए **13वी** परामर्श बैठक **29 नवम्बर, 2022** को वीडियो कॉन्फ्रेंस के माध्यम से आयोजित की गई थी। इस संबंध में बैठक के कार्यवृत्त संलग्न है। यही CTUIL की वेबसाइट (*www.ctuil.in >> ISTS Planning and Coordination >> Consultation Meeting for ISTS >> Eastern Region*) पर भी उपलब्ध है।

The **13th** Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER) was held on **29th November, 2022** through video conferencing. In this regard, please find enclosed minutes of the meeting. The same is available on CTUIL website (*www.ctuil.in >> ISTS Planning and Coordination >> Consultation Meeting for ISTS >> Eastern Region*)

धन्यवाद/ Thanking you,

भवदीय / Yours faithfully,

राजेश कुमार 06/12/2022

(राजेश कुमार) / (Rajesh Kumar)

महाप्रबंधक/ General Manager

A. वितरण सूची / Distribution List:

1.	**Chief Engineer (PSP&A-II)** Central Electricity Authority Sewa Bhawan, R.K.Puram New Delhi-110066	**2.**	**Member Secretary** Eastern Regional Power Committee 14, Golf Club Road, Tollygunge Kolkata-700033
3.	**Director (SO)** Power System Operation Corporation Ltd. (POSOCO) 9th Floor, IFCI Towers, 61, Nehru Place, New Delhi-110016	**4.**	**Executive Director** Eastern Regional Load Despatch Centre 14, Golf Club Road, Jubilee Park, Golf Gardens, Tollygunge, Kolkata, West Bengal - 700095
5.	**CMD** Damodar Valley Corporation DVC Towers, VIP Road Kolkata-700054	**6.**	**CMD** Odisha Power Transmission Corporation Ltd. (OPTCL) Bhoinagar Post Office, Jan path Bhubaneshwar-751022
7.	**CMD** Bihar State Power Transmission Company Ltd. (BSPTCL) Vidyut Bhavan, 4th floor, Bailey Road Patna-800021	**8.**	**CMD** Jharkhand Urja Sancharan Nigam Limited (JUSNL) Engineering Building, HEC, Dhurwa Ranchi -834004
9.	**Principal Chief Engineer cum Secretary** Power Department Government of Sikkim Gangtok, Sikkim	**10.**	**Managing Director** West Bengal State Electricity Transmission Company Ltd. (WBSETCL) Vidyut Bhavan, 8th Floor, A-Block Salt Lake City, Kolkata-700091
11.	**Director (Projects)** Power Grid Corporation of India Ltd. "Saudamini", Plot No. 2, Sec-29, Gurugram Haryana-122001	**12.**	**Managing Director** Haldia Energy Limited (HEL) 2A, Lord Sinha Road, First Floor, Kolkata, West Bengal - 700 071, Email: rabi.chowdhury@rpsg.in; kakali@rpsg.in;
13.	**Chairman** CESC Limited CESC House, Chowringhee Square Kolkata – 700001 Email: kakali@rpsg.in; rabi.chowdhury@rpsg.in		

Minutes of 13th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER)

CGM (CTUIL) welcomed the participants to the meeting. He informed the stakeholders that notification for submission of fresh applications for Connectivity and GNA and their processing and grant has not been received by CTU. Accordingly, receipt of online applications through NSWS portal under extant Connectivity Regulations, 2009 shall be resumed w.e.f. 00 hours of 01-12-2022.

List of the participants is enclosed at **Annexure-I.** Agenda wise deliberations and decisions are given below:

1. Confirmation of minutes of the previous meeting

The minutes of the 12th CMETS-ER held on 28-10-2022 were issued vide letter dated 10-11-2022. As no comments have been received, the minutes were considered to be confirmed as circulated.

A. Application related matters in Eastern Region (ER)

CTU informed that no new open access Application with connectivity/ drawl/ injection in Eastern Region is proposed to be deliberated in the meeting. The applications/requests received under GNA Regulations, 2022 would be discussed in a separate meeting.

B. ISTS expansion schemes in Eastern Region

2. Revised connectivity for Laxmikantpur 400/132kV S/s and split bus arrangement at Laxmikantpur S/s

2.1. CTU informed that in the 12th CMETS-ER held on 28-10-2022, following was deliberated:

"It was decided that WBSETCL and HEL would meet and jointly finalise requirement of the additional data and carry out necessary system studies at the earliest. It was also decided that a separate meeting may be convened at ERPC level of all concerned for deliberation and early resolution of the issue. WBSETCL also mentioned that if the matter is not resolved by the next CMETS-ER, they would come up with alternate proposal for establishment of New Laxmikantpur S/s".

2.2. WBSETCL was requested to update on the matter including the decision regarding whether alternate proposal for establishment of New Laxmikantpur S/s is to be taken up.

2.3. WBSETCL mentioned that they had a meeting with HEL / CESC in first half of Nov 2022 and it emerged in the meeting that HEL would require 8-10 weeks for carrying out requisite studies including discussion with their OEM. They proposed that as an additional interconnection for Laxmikantpur S/s, LILO of

one circuit of Jeerat (New) – Subhasgram 400kV D/c (Quad) line may also be considered.

2.4. ERPC informed that the matter regarding establishment of New Laxmikantpur S/s was deliberated in the 47th TCC/ERPC meetings held on 24th-25th Nov 2022. In the meeting it has been decided that a committee may be formed under Director (Operations), WBSETCL to look into the technical and commercial aspects of establishment of New Laxmikantpur S/s through LILO of existing 400kV lines such as HEL – Subhasgram 400kV D/c line or Jeerat (New) – Subhasgram 400kV D/c (Quad) line. The committee is excepted to finalise its findings/observations/decisions within two months.

2.5. POWERGRID and WBSETCL mentioned that there may be RoW constraint in LILO of both circuits of Jeerat (New) – Subhasgram 400kV D/c (Quad) line. It was noted that as the matter is already under examination by the committee, accordingly, such aspects like RoW may also be examined by the committee while finalising the feasible option for establishment of New Laxmikantpur S/s.

2.6. ERPC also mentioned that there is also a possibility of implementation of New Laxmikantpur S/s under ISTS in a fixed time-frame with interconnection to major ISTS substations in the area such as LILO of both circuits of Jeerat (New) – Subhasgram 400kV D/c (Quad) ISTS line. This will help in timely strengthening of EHV transmission system in Kolkata area, which is crucial for reliable supply to capital city. Further, this substation if implemented in ISTS with strong interconnections to ISTS network would reduce the over dependence on Subhasgram S/s for meeting the demand of Kolkata area. CTU agreed with the proposal of ERPC and mentioned that New Laxmikantpur S/s can be taken up under ISTS to meet the demand of Kolkata area, if requested by WBSETCL. It was noted that this aspect may also be examined by the proposed committee for expeditious strengthening of transmission system in Kolkata area.

2.7. WBSETCL requested ERPC for early formation of the proposed committee. ERPC noted the same.

2.8. CTU mentioned that whichever line(s) is considered for LILO at New Laxmikantpur, both circuits of D/c line may preferably be considered for LILO, as LILO of one circuit of a D/c line at times results in unbalanced loading of lines and may lead to reliability issues. The same has been experienced in Farakka-Jeerat corridor and to overcome the same subsequent LILOs had to be carried out.

2.9. After detailed deliberation following was agreed in the meeting:

(a) The committee proposed to be formed by ERPC (as agreed in the 47th TCC/ERPC) may also consider RoW issues while finalising the feasibility of establishment of New Laxmikantpur S/s. The committee may also consider proposal of ERPC regarding establishment of New Laxmikantpur under

ISTS through LILO of both circuits of Jeerat (New) – Subhasgram 400kV D/c (Quad) ISTS line.

(b) WBSETCL would provide the recommendations of the committee to CTU with regard to establishment of New Laxmikantpur S/s.

(c) CTU would parallelly carry out studies with regard to establishment of New Laxmikantpur through LILO of one circuit or both circuits of Jeerat (New) – Subhasgram 400kV D/c (Quad) ISTS line.

3. Replacement of 50MVAr (old), (3x16.67MVAr), 420kV Bus Reactor-I at Durgapur substation under ADDCAP (2019-24) of FSTPS – Agenda by ERPC

3.1. CTU informed that ERPC vide email dated 26-10-2022 has informed that proposal from POWERGRID for replacement of old 50 MVAr, (3x16.67 MVAr) Bus Reactor-I at Durgapur S/s under ADDCAP (2019-24) of FSTPS was discussed in the 195th OCC meeting wherein it was decided that the agenda may be forwarded to CTU for approval.

3.2. Following was informed by POWERGRID with regard to the proposal:

- The subject 420kV, 50MVAr bus reactor-I (make-CGL) was commissioned in 1991 and is in service for more than 30 years. In the recent times, it is observed that this reactor is continuously giving problem like leakages, high moisture content and high temperature gradient when compared with similar capacity units.
- For further assessment of the health with all aspects, matter was referred to CPRI/Bangalore for Residual Life Assessment. After reviewing all parameters, CPRI has opined for replacement of the subject Reactor as deterioration is observed in Solid Insulation of the Reactor also.
- In addition to presence of moisture in solid insulation, CO_2/CO ratio is also high which also indicates cellular insulation deterioration.
- After receipt of report of CPRI, further analysis was done internally by POWERGRID and measures like arresting leakages, oil top-up etc. were done but still the DGA values didn't improve, which indicates permanent defects.

3.3. POWERGRID mentioned that the subject bus reactor has already experienced designed electrical life and started to deteriorate and require replacement as individual component change will not solve the issue. Further spare/supports are very difficult of such ageing population from OEM.

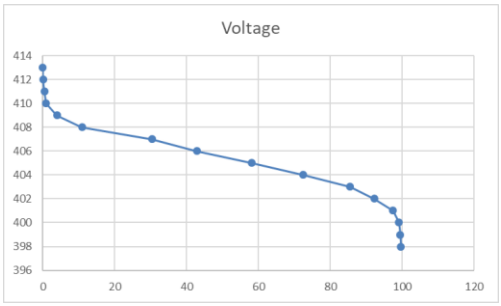
3.4. CTU informed that studies for requirement of Bus reactor at Durgapur S/s has been carried out and following is submitted:

a) Bus split arrangement is present at 400kV level at Durgapur S/s. SLD at **Annexure-V**.

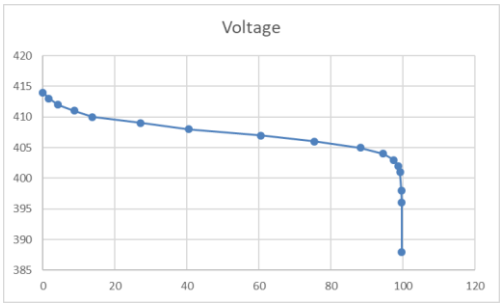
b) In one section (Durgapur-B), 2x125MVAr, 420MVAr bus reactors are in service and in other section (Durgapur-A) 1x125MVAr, 420kV bus reactor in parallel to 1x50MVAr (old), 420kV is in service (which is proposed to be replaced). With the decommissioning of the 50MVAr bus reactor, the Durgapur-A section would have only one bus reactor.

c) The past voltage profile of Durgapur S/s was obtained from POWERGRID and it has been observed that most of the time the voltage is above 400kV on majority of time.

Bus-1



Bus-2



d) Studies have been carried out for 2027-28 timeframe for the two critical scenarios viz. February Solar Max (Sc-7) and February Night off peak (Sc-9). Further, split bus arrangement at 400kV bus of Durgapur S/s alongwith all 3x315MVA, 400/220kV ICTs at Durgapur-B section after shifting of 1x315MVA, 400/220kV ICT from Durgapur-A section have been considered. Studies results are given below:

Bus Name	Voltage (in kV)		
	Without 50 MVAR	With 50 MVAR	With 125 MVAR
Scenario-7			
Durgapur-A	408.0	406.9	405.3
Durgapur-B	403.5	403.4	403.2
Scenario-9			
Durgapur-A	412.1	410.7	408.7
Durgapur-B	408.7	408.5	408.2

3.5. From the above study results, it was observed that with switching of 50MVAr bus reactor, voltage changes by about 1.2kV in both scenarios. However, with 125MVAr bus reactor, the voltage change is observed to be about 2.8kV and 3.5kV in scenario 7 and 9 respectively. Accordingly, it was felt prudent that 125MVAr bus reactor may be installed in the Durgapur-A to control the high voltage condition in Durgapur S/s.

3.6. POWERGRID confirmed that space is available for installation of a new 420kV, 1x125MVAr bus reactor along with associated bay in Durgapur-A 400kV bus section (which is not having ICTs).

3.7. ERLDC agreed with requirement of additional bus reactor at Durgapur-A bus section. With installation of new 125MVAr bus reactor, both sections of Durgapur 400kV bus would have 2x125MVAr bus reactors.

3.8. In view of the above, following scope of works was agreed for implementation under the ISTS scheme namely Eastern Region Expansion Scheme-XXXII (ERES-XXXII) with implementation time-frame of 18 months from date of allocation:

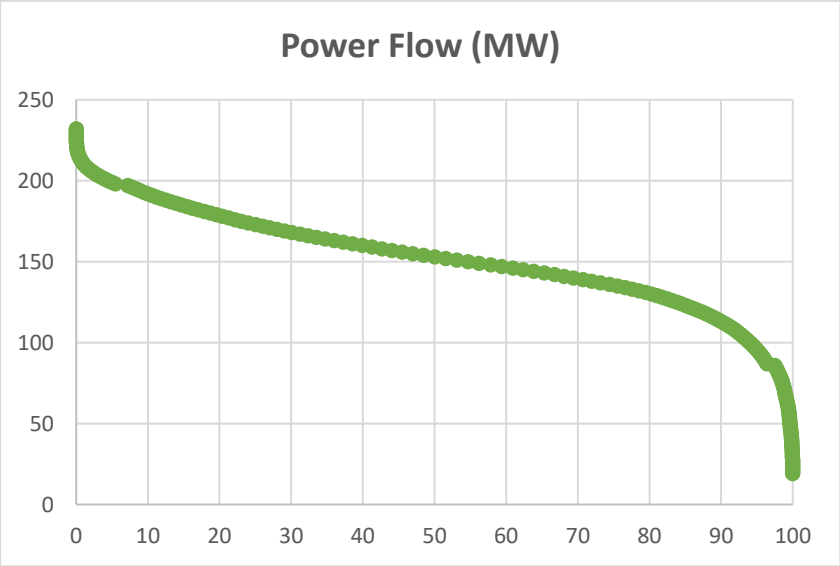
a) Installation of new 420kV, 1x125MVAr bus reactor along with associated bay at Durgapur (POWERGRID) S/s in split bus section-A (which is not having ICTs)

Note: *The existing 50MVAr (3x16.67MVAr) bus reactor at Durgapur S/s in bus section-A may be decommissioned prior to installation of new 420kV, 1x125MVAr bus reactor as indicated above.*

4. Augmentation of transformation capacity at Ara (POWERGRID) 220/132kV S/s – Agenda by ERPC

4.1. CTU informed that ERPC vide email dated 26-10-2022 has requested for augmentation of transformation capacity at existing Ara (POWERGRID) 220/132kV S/s. Following details have been provided along with proposal:

- Presently, 220/132kV Ara S/s is having the transformation capacity of 360MVA (2 x 100MVA + 1 x 160MVA).
- The load duration curve of Ara ICTs from April to Sep 2022 is shown below:



4.2. The N-1 capacity at Ara (POWERGRID) S/s can be considered as 200MVA (considering outage of largest ICT). From the above drawl pattern at Ara S/s, it

could be observed that the power flow through all the transformers exceeds 200MW during peak hours for about 5% of time. Further, this power demand might increase further in future. Thus, the reliability criteria of N-1 is not being fulfilled at Ara S/s.

4.3. It was mentioned that Buxar TPS (2x660MW) is under implementation and would be supply power to Bihar grid in Buxar, Dumraon, and Ara areas among others. Keeping in view the same and reliability aspects, BSPTCL was requested to provide their view on augmentation of transformation capacity at Ara S/s.

4.4. CTU mentioned that as a proactive step, inputs have been obtained from POWERGRID regarding feasibility of augmentation of transformation capacity at Ara S/s, and POWERGRID vide email dated 10-11-2022 has informed that there is adequate space for installation of 4th 220/132kV, 1x200MVA ICT at Ara.

4.5. BSPTCL mentioned that present power requirement at Ara is about 170MW and additional drawl is due to power supply to other adjoining areas. With commissioning of Buxar TPS and its connection to Buxar, Dumraon, and Ara areas could relieve the Ara substation and they need to analyse the same. They mentioned that they would confirm within 1-2 weeks about requirement of augmentation of transformation capacity at Ara S/s.

4.6. In view of the above, it was decided to review the requirement of augmentation of transformation capacity at Ara S/s after receipt of inputs from BSPTCL.

5. Status of downstream 220kV or 132kV network by STUs from the various commissioned and under-construction ISTS substations in ER

5.1. CTU informed that numbers of ISTS sub-stations have been commissioned and some are under construction for which the downstream system is being implemented by the STUs. Based on the information provided by the states, updated information on planned/under-construction downstream system is given at **Annexure-II.**

6. Status of 400kV substations being implemented by STUs/entities in ER to be connected through ISTS

6.1. CTU informed that various 400kV substations have been approved in the intra-state strengthening schemes in ER having interconnection with ISTS grid involving LILO of ISTS lines or direct connection to ISTS substations. Status of intra-state substations and associated lines as updated by STUs in the meeting is given at **Annexure-III**.

6.2. OPTCL mentioned that they would confirm in the next meeting whether to drop the transmission scheme associated with establishment of Begunia S/s. Regarding Joda 400kV substation, OPTCL mentioned that they are discussing the matter internally for mode of implementation of the project.

7. Status of space allocated at various ISTS substations to STUs for implementation of line bays under intra state system) for their intra state lines

7.1. CTU informed that space at various ISTS substations have been allocated to STUs for creation of line bays for termination of their new intra-state lines. List of such ISTS substations as per available information is given at **Annexure-IV**. Status of the bays allocated at ISTS S/s as updated by STUs in the meeting is given at **Annexure-IV**.

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Annexure-I

List of participants of 13th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER)

Sl. No.	Name	Designation	Organization	Email id
1.	Sh. Jasbir Singh	CGM	CTU	jasbir@powergrid.in
2.	Sh. Rajesh Kumar	GM	CTU	rajeshkumar@powergrid.in
3.	Sh. Kaushal Suman	Manager	CTU	k.suman@powergrid.in
4.	Sh. Manish Ranjan Keshari	Manager	CTU	manish.keshari@powergrid.in
5.	Sh. Shyam Sunder Goyal	Manager	CTU	shyam.goyal@powergrid.in
6.	Sh. Abhilash Thakur	Engineer	CTU	abhilash.28@powergrid.in
7.	Sh. Sudeep Kumar	Chief Manager	POWERGRID	sudeepkumar@powergrid.in
8.	Sh. N S Mondal	Member Secretary	ERPC	mserpc-power@nic.in
9.	Sh. Alikpantha De	EE	ERPC	eeop.erpc@gov.in; alik.erpc@gov.in;
10.	Sh. P P Jena	EE	ERPC	erpc-protection@gov.in;
11.	Sh. Saurav Kr Sahay	Chief Manager	ERLDC, GRID-INDIA	saurav.sahay@posoco.in
12.	Sh. Chandan Kumar	Manager	ERLDC, GRID-INDIA	chandan@posoco.in
13.	Sh. Saibal Ghosh	Manager	GRID-INDIA	saibal@posoco.in
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19.	Sh. Amiyaranjan Swain	Executive Engineer	DVC	amiyaranjan.swain@dvc.gov.in
20.	Sh. C. R. Mishra	CGM (Corporate Planning)	OPTCL	
21.	Sh. A. K. Banerjee	DGM	OPTCL	ele.akbanerjee@optcl.co.in
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Annexure-II

Status of Downstream Transmission Network in ER

Sl. No.	ISTS S/s	State	Voltage ratio, Trans. Cap	Downstream Voltage level (kV)	Unutilised bays	Status of ISTS bay	STU lines for unutilised bays	Status of Lines	
								Date of Award	Completion schedule
1.	Chaibasa	Jharkhand	400/220kV, 2x315MVA	220	2	Existing bay	Chaibasa (POWERGRID) – Jadugoda (JUSNL) 220kV D/c		Will be taken up in future. No firm plan as of now.
2.	Daltonganj	Jharkhand	400/220/132kV, 2x315MVA+ 2x160MVA	132	2	Existing bay	Daltonganj (POWERGRID) – Chatarpur 132kV D/c	22-10-2019	Expected by Dec 2023.
3.	Dhanbad	Jharkhand	400/220kV	220	4	Existing bay	LILO of 1st circuit of 220kV Dumka – Govindpur D/c line at Dhanbad (23km)	Bid evaluation is in progress. Price bid opened. Additional funds are required, proposal sent to state govt. for approval.	Expected by June 2024.
							LILO of 2nd circuit of 220kV Dumka – Govindpur D/c line at Dhanbad	Preparation of DPR under process.	
4.	Keonjhar	Odisha	400/220kV, 2x315MVA	220	2	Existing bay	Keonjhar (POWERGRID) – Turumunga (OPTCL) 220kV D/c		Expected by Mar 2023.
5.	Subashgram	West Bengal	400/220kV, 2x315MVA+ 1x500MVA	220	2	Existing bay	Subashgram (POWERGRID) – Baraipur 220kV D/c line		220kV Baruipur substation charged. 132kV downstream delayed due to RoW. Expected by Mar 2023.

Sl. No.	ISTS S/s	State	Voltage ratio, Trans. Cap	Downstream Voltage level (kV)	Unuti-lised bays	Status of ISTS bay	STU lines for unutilised bays	Status of Lines	
								Date of Award	Completion schedule
6.	Rajarhat	West Bengal	400/220kV, 2x500MVA	220	2	Existing bay	Rajarhat (POWERGRID) – New Town AA2C 220kV D/c		Line charged on 26-09-2022 from Rajarhat S/s. Substation is expected by Mar 2023.
7.	Sitamarhi (New)	Bihar	400/220/132kV, 2x500MVA + 2x200MVA	132	2	Existing bay	LILO of Benipatti - Pupri 132kV S/c at Sitamarhi (New)		Expected by Mar 2023
8.	Saharsa (New)	Bihar	400/220/132kV, 2x500MVA + 2x200MVA	132	2-ISTS (addln.4 by state)	Existing bay	Saharsa (New) - Saharsa 132kV D/c line formed by LILO of Saharsa - Banmankhi and Saharsa - Uda Kishanganj 132kV S/c line		04 nos. of bays are under construction by BSPTCL at Saharsa (New). These bays are expected in Dec 2022.
9.	Banka	Bihar	400/220/132kV, 2x500MVA + 2x200 & 1x315MVA	220	2	Oct 2024	Banka (POWERGRID) – Goradih (Sabour New) 220kV D/c line (around 45km)	Being re-awarded. Expected in Jan 2023	18 months from date of award.

Annexure-III

Status of 400kV & 220kV substations being implemented by STUs/entities in ER to be connected to ISTS

Sl. No.	Substation/Location	Transformation Capacity/ Element	Date of Award	Completion Schedule
A	**Bihar (to be implemented by BSPTCL)**			
I	**Bakhtiyarpur GIS**	400/220/132kV, 2x500MVA + 2x160MVA	26.11.2019	Progressively from Mar 2023 onwards.
a)	LILO of both circuits of Barh – Patna (PG) 400kV D/c (Quad) line-1 at Bakhtiyarpur 400 kV 2xD/c line	400kV 2xD/c	26.11.2019	Line ready to be charged matching with Bakhtiyarpur S/s.
II	**Chappra (New)**	400/220/132kV, 2x500MVA + 2x200MVA	Cabinet approval under process	24 months from date of award
a)	LILO of 400 kV Barh (NTPC) - Motihari (DMTCL) D/C (Quad) transmission line at Chappra	400kV 2xD/c	Cabinet approval under process	24 months from date of award.
B	**Odisha (to be implemented by OPTCL)**			
I	**Digapahandi**	400/220kV, 2x500MVA	Tendering activity to be taken up shortly along with Pandiabili-Digapahandi 400kV D/c line	2025-26
a)	Digapahandi – Therubali – Jeypore 400kV D/c line	400kV D/c	To be taken after tendering of Digapahandi S/s	2025-26
II	**Therubali**	400kV switching station along with 420kV, 1x125MVAr bus reactor	Survey completed. Land schedule is under preparation	2026-27
III	**Bhadrak**	400/220kV, 2x500MVA	Tendering is on hold due to funding issue.	2025-26
a)	LILO of Baripada – Duburi and Baripada – Pandiabili 400kV line sections at Bhadrak	400kV D/c	Tendering is on hold due to funding issue.	2025-26
IV	**Paradeep***	400/220kV, 2x500MVA		24 months

Sl. No.	Substation/Location	Transformation Capacity/ Element	Date of Award	Completion Schedule
a)	Paradeep – Duburi 400kV D/c line	400kV D/c	Line work started	24 months
V	**Paradeep***	765/400kV, 2x1500MVA	Survey completed. Land schedule is under preparation	2026-27
a)	Angul (POWERGRID) – Paradeep (OPTCL) 765kV D/c line	765kV D/c	Survey completed. Land schedule is under preparation	2026-27
VI	**Joda New**	400/220kV, 3x500MVA	Under discussion with management for further action.	
a)	LILO of Rourkela (POWERGRID) – Talcher (NTPC) 400kV D/c line at Joda New	400kV D/c	Under discussion with management for further action.	
C	**Jharkhand (to be implemented by JUSNL)**			
I	**Chandil (New)**	400/220kV, 2x500MVA	Bid price very high. It will send to Jharkhand cabinet for approval	24 months
a)	PVUNL – Chandil 400kV D/c (Quad) line	400kV D/c (Quad)		
b)	Chandil – Chaibasa (POWERGRID) 400kV D/c (Quad) line	400kV D/c (Quad)		
c)	Chandil – Dhanbad 400kV D/c (Quad) line	400kV D/c (Quad)		
II	**Koderma**	400/220/132/33kV, 2x500MVA + 2x200MVA + 2x80MVA		
a)	PVUNL – Koderma 400kV D/c (Quad) line	400kV D/c (Quad)		
III	**Latehar**			
a)	Patratu – Latehar 400kV D/c line	400kV D/c	Forest Stage-I clearance is awaited.	Apr 2023
b)	Latehar – Chandwa (POWERGRID) 400kV D/c line	400kV D/c	All clearances have been obtained. Works for 20km is pending due to theft of line.	Apr 2023
IV	**Jasidih**	400/220kV, 2x500MVA	-	

Sl. No.	Substation/Location	Transformation Capacity/ Element	Date of Award	Completion Schedule
a)	Koderma (JUSNL) – Jasidih 400kV D/c (Quad) line	400kV D/c (Quad)	-	No firm plan now. To be taken up in future.
b)	Jasidih – Dumka 400kV D/c (Quad) line	400kV D/c (Quad)	-	
V	**Mander**	400/220kV, 2x500MVA	-	
a)	LILO of Patratu – Ranchi (New) 400kV D/c line at Mander	400kV 2xD/c	-	
VI	**Dumka (New)**	400/220kV, 2x500MVA	-	
a)	Dumka (New) – Dhanbad (ISTS) 400kV D/c (Quad) line	400kV D/c (Quad)	-	
D	**West Bengal**			
(to be implemented by WBSETCL)				
I	**Laxmikantpur GIS#**	400/132kV, 2x315MVA	Land identified. In process of acquisition.	
a)	LILO of Haldia – Subhasgram 400kV D/c line at Laxmikantpur	400kV D/c	-	-
II	**Falakata**	220/132kV, 2x160MVA	Initial civil works have been started.	Mar 2024
a)	LILO of Birpara – Alipurduar 220kV D/c line at Falakata substation (LILO portion length around 9km)	220kV 2xD/c		Mar 2024
(to be implemented by CESC)				
III	**Subhasgram (POWERGRID)**	400/220kV, 1x500MVA (6th ICT)		
	Installation of new 400/220kV, 500MVA (6th) ICT at Subhasgram (POWERGRID) S/s along with associated ICT bays and OLTC by CESC at its own cost	400/220kV, 1x500MVA (6th ICT)		

* ***As per inputs from OPTCL:*** *Paradeep 765/400kV S/s shall be established at a different location from the already under-construction Paradeep 400/220kV S/s, accordingly, 400kV 2xD/c line shall be established between two substations.*

The 400kV infeed to New Laxmikantpur 400/132kV S/s is under discussion. Based on the deliberations, the lines would be updated, if required.

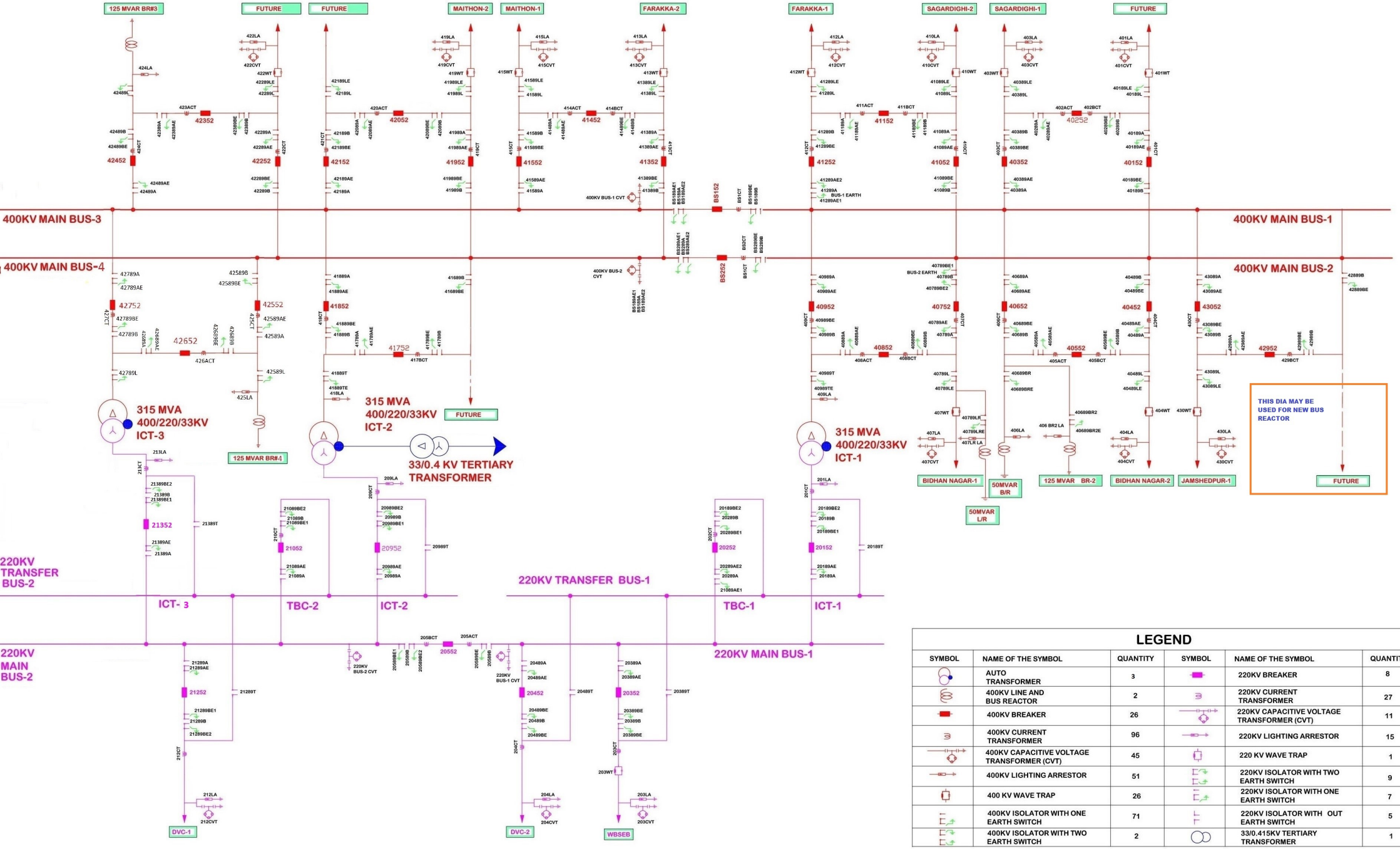
Annexure-IV

Space allocated at various ISTS substations to STUs for implementation of line bays under intra state system for their intra state lines

Sl. No.	Substation/ Location	Space for	Date of award of line and bays	Completion Schedule	Agreed in CMETS-ER
1.	Angul (POWERGRID)	2 nos. 765kV lines bays for termination of Angul (POWERGRID) – Paradeep 765kV D/c line (including suitable switchable line reactors)		Survey is going on. Expected by 2025-26	1st
2.	Rourkela (POWERGRID)	2 No. 220kV lines bays for termination of Rourkela (POWERGRID) – Tarkera 220kV D/c (HTLS) line		Would be taken up after reconductoring of 1st D/c line. Award of reconductoring of 1st D/c line is expected by Jan 2023 with completion in next 6 months thereafter.	1st & 7th
3.	Keonjhar (POWERGRID)	2 No. 220kV lines bays for termination of Keonjhar (POWERGRID) – Tikarpada 220kV D/c line	NIT yet to be taken up	Expected by 2024-25	1st
4.	Maithon (POWERGRID)	2 No. 220kV lines bays for implementation of Maithon (POWERGRID) – Asansol 220kV D/c line	Tender expected to be floated by Dec 2022 and award expected by Mar 2023. Line bays being implemented by POWERGRID under deposit works	18 months from LoA.	7th

SLD of Durgapur (POWERGRID) S/s

Annexure-V



LEGEND

SYMBOL	NAME OF THE SYMBOL	QUANTITY	SYMBOL	NAME OF THE SYMBOL	QUANTITY
	AUTO TRANSFORMER	3		220KV BREAKER	8
	400KV LINE AND BUS REACTOR	2		220KV CURRENT TRANSFORMER	27
	400KV BREAKER	26		220KV CAPACITIVE VOLTAGE TRANSFORMER (CVT)	11
	400KV CURRENT TRANSFORMER	96		220KV LIGHTING ARRESTOR	15
	400KV CAPACITIVE VOLTAGE TRANSFORMER (CVT)	45		220 KV WAVE TRAP	1
	400KV LIGHTING ARRESTOR	51		220KV ISOLATOR WITH TWO EARTH SWITCH	9
	400 KV WAVE TRAP	26		220KV ISOLATOR WITH ONE EARTH SWITCH	7
	400KV ISOLATOR WITH ONE EARTH SWITCH	71		220KV ISOLATOR WITH OUT EARTH SWITCH	5
	400KV ISOLATOR WITH TWO EARTH SWITCH	2		33/0.415KV TERTIARY TRANSFORMER	1