सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड

(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)

(भारत सरकार का उद्यम)

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/00/14th CMETS-ER

दिनांक/Date: 21-12-2022

वितरण सूची के अनुसार/ As per distribution list

विषय/Subject: पूर्वी क्षेत्र में पारेषण योजनाओं के विकास के लिए 14वीं परामर्श बैठक की कार्यावली (सीएमईटीएस-ईआर) / Agenda for 14th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER)

महोदय /महोदया /Sir /Ma'am.

आईएसटीएस योजना और ओपन एक्सेस आवेदन प्रसंस्करण के लिए पूर्वी क्षेत्र में पारेषण योजनाओं के विकास के लिए **14वीं** परामर्श बैठक (सीएमईटीएस-ईआर) **29th दिसंबर, 2022 (गुरुवार)** को वीडियो कॉन्फ्रेंसिंग के माध्यम से नीचे दिए गए विवरण के अनुसार आयोजित होने वाली है:

The **14th** Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER) for ISTS planning and open access applications processing is scheduled to be held on **29th December, 2022 (Thrusday)** through video conferencing as per details below:

विषय/Topic	: 14th CMETS-ER
दिनांक/Date & समय/Time	: 29th December 2022 at 03:00 PM
बैठक लिंक/ Meeting Link	: MS-Teams (in email)

इस संबंध में बैठक की कार्यावली अलग से प्रसारित की जाएगी, जो सीटीयू वेबसाइट (*www.ctuil.in >> ISTS Planning and Coordination >> Consultation Meetings for ISTS >> ER*) पर भी उपलब्ध होगी। कृपया उपरोक्त लिंक के माध्यम से बैठक में शामिल होने और रिटर्न मेल के माध्यम से इस संबंध में भागीदार होने की पुष्टि करें।

In this regard, the agenda of the meeting shall be circulated separately and the same will also be available on CTU website (*www.ctuil.in >> ISTS Planning and Coordination >> Consultation Meetings for ISTS >> ER*). It is requested to join the meeting through the above link and send confirmation of participation in this regard through return mail.

धन्यवाद/Thanking you,

भवदीय / Yours faithfully,

राजेश कुमार

21/12/2022

(राजेश कुमार) / (Rajesh Kumar)
महाप्रबंधक/ General Manager

A. वितरण सूची के अनुसार/ 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

B. विशेष आमंत्रित /Special invitee:

1. Director (Projects) Power Grid Corporation of India Ltd. "Saudamini", Plot No. 2, Sec-29, Gurugram, Haryana-122001	**2. Managing Director** Haldia Energy Limited (HEL) 2A, Lord Sinha Road, First Floor, Kolkata, West Bengal - 700071, Email: rabi.chowdhury@rpsg.in; kakali@rpsg.in;
3. Chairman CESC Limited CESC House, Chowringhee Square Kolkata – 700001 Email: kakali@rpsg.in; rabi.chowdhury@rpsg.in	

C. आवेदन करता /Applicant:

1. Shri Ninad Nigam Manager Regulatory Vedanta Limited, 1st Floor, C wing, Unit 103, Corporate Avenue Atul Projects Chakla, Andheri east Maharashtra-400093 Ph.: 9993000757, 9937293454 Email: ninad.nigam@vedanta.co.in; biswajit.sahoo@vedanta.co.in	**2. Shri Dharmendra Kumar Gupta** DGM Regulatory XL Xergi, DLF Square, Jacaranda Marg, DLF Phase 2 Sector 25 Gurgaon, Haryana Ph.: 8587044337, 9911917083 Email: pe1@o2power.in; ka.vishwanath@o2power.in

Agenda for 14th Consultation Meeting for Evolving Transmission Schemes in Eastern Region (CMETS-ER)

1. Confirmation of minutes of the previous meeting

1.1. The minutes of the 13th CMETS-ER held on 29-11-2022 were issued vide letter dated 06-12-2022.

1.2. WBSETCL vide email dated 07-12-2022 informed that their observations regarding establishment of New Laxmikantpur S/s has not incorporated suitably in the minutes. Accordingly, the following para is proposed to be appended in the minutes of the 13th CMETS-ER at para 2.6.

"*In response to the proposal of ERPC for implementation of proposed New Laxmikantapur S/s under ISTS, WBSETCL stressed that they will construct the proposed New Laxmikatapur 400/132/33kV S/s as it was conceived by WBSETCL mainly for catering the high growth in load demand at 132kV & 33kV voltage level in that region of the South 24 Parganas district with increased reliability of the downstream 132kV network. Regarding RoW issues, it was stated that in spite of severe RoW problem, WBSETCL has been able to successfully complete the construction of a considerably long 400kV Gokarna-New Chanditala D/c line (approx. 380ckm) very recently*."

1.3. With the above addition, the minutes of the 13th CMETS-ER are proposed to be considered as confirmed.

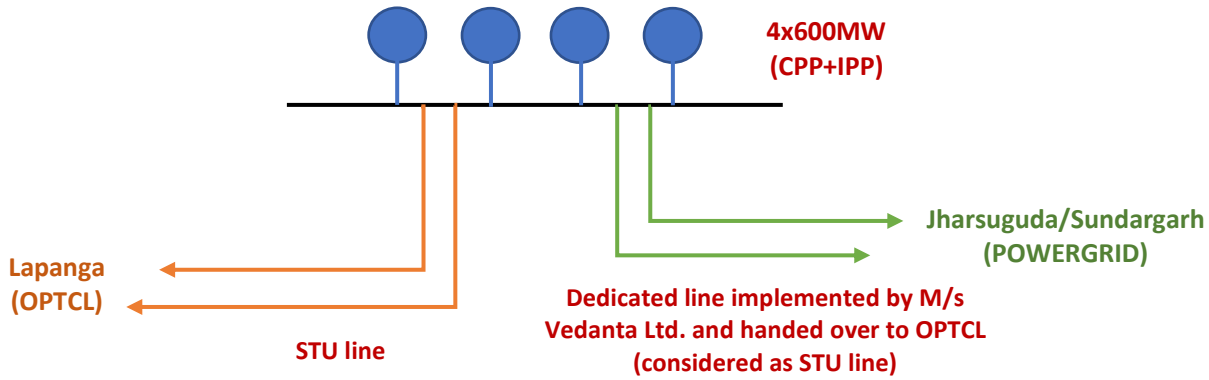
A. Application related matters in Eastern Region (ER)

2. Application for grant of Connectivity to ISTS

2.1. In the month of Nov 2022, following application has been received for Connectivity to ISTS in ER, under CERC Connectivity Regulations, 2009:

Sl. No.	Application ID	Name of Applicant	Nature of applicant	Application date	Region	Project location	Connectivity location (requested)	Quantum of Connectivity (MW)	Connectivity sought from
1	0041900011	Vedanta Limited	Bulk Consumer	12-11-2022	ER	Jharsuguda, Odisha	Sundergarh	180	01-10-2024

2.2. Presently, Vedanta Ltd. is connected as shown below:



2.3. As per the special meeting held at ERPC on 14-10-2016 (copy attached at **Annexure-IVa**),

i) Control area jurisdiction of Vedanta will be shifted from ERLDC to SLDC, Odisha;

ii) Vedanta Ltd. shall be a state embedded entity for all purposes.

iii) All four units of TPP i.e. 4x600 MW shall be operated in single bus mode;

iv) Vedanta-Jharsuguda line will no more be a dedicated transmission line and considered as a tie-line between ISTS network and OPTCL

v) The CTU connectivity of Vedanta may be kept in abeyance.

2.4. In view of points mentioned above at para 2.3 above, Vedanta Ltd. is not considered as connected to ISTS i.e. it's a state embedded entity, as both the 400kV D/c lines emanating from Vedanta Ltd. are considered as STU lines (as per minutes of meeting held at ERPC on 14-10-2016).

2.5. In order to process the instant application and deliberate upon the matter, M/s Vedanta Ltd. vide email dated 14-12-2022 was requested to clarify on the following:

(a) Total generation capacity (CPP & IPP) and demand of Vedanta Ltd.

(b) SLD and Schematic indicating the CPP/IPP/Loads with clear demarcations.

(c) Whether the instant load (bulk consumer) would be feed directly and dedicatedly from ISTS, and not connected to any of the existing facilities?

*(d) If response to (c) is **NO**, following may also be provided:*

(i) Nature of Connectivity to OPTCL, whether as Generation (CPP/IPP) or as Bulk Consumer.

(ii) Quantum of Connectivity with OPTCL along with copy of intimation issued by OPTCL for intra-state connectivity.

(e) *Any other information that may be relevant in the instant case.*

2.6. In regard to above following has been clarified by M/s Vedanta Ltd. vide email dated 22-12-2022 (copy of email is attached at **Annexure-IVb**):

- Total captive generation is 3015MW (2x600MW + 9x135MW)
- Total IPP generation is 600MW
- Total power demand is 2890MW
- Vedanta Ltd. is state embedded entity of Odisha and has signed connection agreement with OPTCL as "thermal power plant", with point of intra-state connectivity as switchyard of Vedanta Ltd.
- Both Vedanta-Sundargarh and Vedanta-Lapanga 400kV D/c lines are OPTCL's line.

- Vedanta Ltd. is allowed to export/import about 1600MW power through OPTCL system beyond Vedanta Ltd.'s switchyard.
- The instant Connectivity has been sought by M/s Vedanta Ltd. to fulfil its RPO obligation for existing load itself, not for new load.

2.7. From above, it is established that Vedanta Ltd. is a state embedded entity of Odisha and purpose of instant Connectivity application is primarily to meet its RPO obligations.

2.8. Matter may be deliberated.

3. LTA Applications with injection in another region and drawl in ER

3.1. The following LTA application has been received in the month of Oct 2022 under CERC Connectivity Regulations, 2022:

Sl. No.	Application No.	Applicant	LTA Application date	Connectivity Injection Point	Connectivity Application	Drawl Point	Quantum of LTA (MW)	Start Date of LTA	End date of LTA
1	0412100007	Xl Xergi Power Private Limited	06-10-2022	Fatehgarh-III PS, Rajasthan	1200002847	GRIDCO (ER)	200 (PPA/PSA without NoC)	18-01-2024#	17-01-2049

#Interim start date of LTA shall be 31/12/24 as per the deliberations below:

3.2. Stage-II Connectivity (1200002847, 400MW) was granted to M/s Xl Xergi Power Private Limited at Fatehgarh-III PS through 220 kV S/c line. 1 no. 220kV line bay at Fatehgarh-III PS is being implemented under ISTS. Now, M/s XL Xergi has applied for LTA of 200MW on firm basis to GRIDCO-ER (200MW).

3.3. The subject transfer of power requires strengthening of ISTS in NR and NR-WR corridor. It may be noted that the LTA has been applied on firm basis, and for further drawl of power by GRDICO, ER through STU network from ISTS, NoC from the concerned STU viz. OPTCL shall be required. Accordingly, applicant is requested to take up the matter of NoC with GRIDCO (ER). It may also be noted that if NoC of concerned STU is not available or the NoC is not effective as on Start Date of LTA, the billing for payment of transmission charges shall be undertaken on the LTA grantee as per CERC Regulations, till such time NoC is made available and becomes effective. The NoC with conditions would be considered effective only upon fulfilment of such conditions.

3.4. Accordingly, it is proposed to grant LTA to M/s Xl Xergi Power Private Limited for 200MW from Fatehgarh-III PS to GRIDCO-ER from 31-12-2024 (Interim) to 17-01-2049, with system expansion in NR and NR-WR corridor.

3.5. In this regard, request for NoC to OPTCL from CTU has already been sent on 02-12-2022 (copy enclosed at **Annexure-V**). However, response of OPTCL is awaited. Accordingly, OPTCL may intimate their views regarding the issuance of STU NoC for the subject LTA.

3.6. Matter may be agreed.

B. ISTS expansion schemes in Eastern Region

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

4.1. In the 13th CMETS-ER held on 29-11-2022, following was deliberated:

(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.

4.2. In this regard, studies have been carried out for alternate connectivity of New Laxmikantpur in the rolling plan files prepared by CTU. The assumptions / considerations for the study are given below:

(a) Studies have been carried out for 2027-28 timeframe in the Scenario-5 i.e. June (summer) peak load case.

(b) The peak demand of West Bengal (without DVC) has been considered as 13.7GW.

(c) To simulate the worst case, the despatch from Bakreshwar, Kolaghat and Sagardighi has been considered as zero.

(d) 6th 400/220kV, 1x500MVA ICT at Subhasgram to be implemented by CESC has been taken into service.

(e) The load flow results of the base case scenario (without New Laxmikantpur S/s) and various alternatives to provide connectivity to New Laxmikantpur S/s have been studied. The study results are given at **Annexure-VI.**

4.3. From the study results, following may be observed:

i) Without the New Laxmikantpur S/s in future time-frame (refer Case-0), the Subhasgram 400/220kV ICTs would be critically loaded under N-1 criteria, even after installation of 6th ICT at Subhasgram (by CESC).

ii) Considering the power drawl requirement (about 300-400MW) of New Laxmikantpur 400/132kV, it is observed that the same can be met through LILO of one circuit of either Haldia-Subhasgram twin line or Subhasgram-Jeerat New quad line (refer Case-1 and Case-2).

iii) With the increase in demand at New Laxmikantpur 400/132kV to say about 600-700MW in future, LILO of 2nd circuit of the same line can be considered at a later stage (refer Case-4 and Case-5).

iv) With LILO of one circuit of Haldia-Subhasgram twin and one circuit of Subhasgram-Jeerat New quad line (refer Case-3), uneven loading is observed which would limit the loadability of lines due to parallel operation of twin and quad lines between Subhasgram and New Laxmikantpur.

v) In view of the above, initially / to start with LILO of one circuit of Haldia-Subhasgram 400kV D/c twin line can be carried out at New Laxmikantpur.

4.4. WBSETCL is requested to update on the progress of the works being under taken by the committee formed by ERPC.

4.5. Matter may be deliberated.

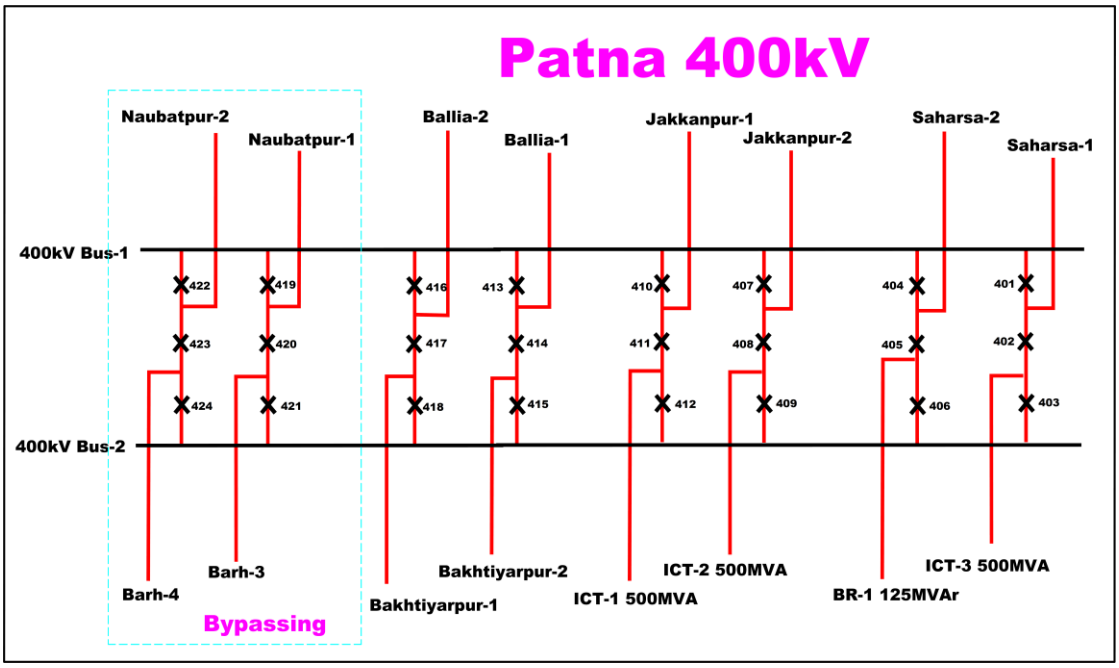
5. Fault level control at Patna (POWERGRID) S/s at 400kV level

5.1. The present fault level of Patna 400kV is about 42kA. With progressive commissioning of new generating units of Barh-1, Buxar, and North Karanpura generation projects and other network expansion schemes around Patna, the three phase fault current at Patna 400kV bus is expected to increase as follows:

Time-frame	New generating units and major 400kV transmission system	Three phase fault current
Dec 2022	Barh-1 U#2 & NKSTPP U#1	43.2kA
Nov 2023	NKSTPP U#2 and Bakhtiyarpur S/s	44.1kA
Dec 2023	Buxar U#1 along with Buxar-Naubatpur line	46.2kA
Mar 2024	Barh-1 U#3 & Buxar U#2	48.2kA
June 2024	NKSTPP U#3 along with NKSTPP-Gaya line	48.4kA

5.2. The issue of controlling the fault level at Patna (POWERGRID) S/s was discussed in the 9th CMETS-ER meeting wherein it was proposed that in order to limit fault current at 400kV side at Patna S/s, it is proposed to bypass Patna – Barh 400kV D/c (Quad) line (ckt-3 & 4) (68.9km) and Patna – Naubatpur 400kV D/c (Quad) line (25.45km) at Patna S/s from within the substation using switching arrangement, so as to form Barh – Naubatpur 400kV D/c (Quad) line. The bypassing is proposed through switching arrangement at substation by

opening the main CBs (419, 421, 422, and 424) and keeping the tie CBs closed (420 and 423) under normal operating condition.



5.3. Based on the deliberation, it was decided in the 9th CMETS-ER that ERLDC would share their observations on the above proposed bypassing arrangements and based on the observations of ERLDC, implementation of the bypassing through switching arrangement at Patna S/s to bypass Patna – Barh 400kV D/c (Quad) line (ckt-3 & 4) and Patna – Naubatpur 400kV D/c (Quad) line at Patna S/s so as to form Barh – Naubatpur 400kV D/c (Quad) line would be taken up.

5.4. With the proposed bypassing arrangement, the fault level of Patna (POWERGRID) substation at 400kV bus is observed to be reduced from 48.4kA to 36.2kA. However, the fault level of 220kV bus is observed to be about 47kA. This high fault current at 220kV side is due to injection of fault current from the 220kV state network of Bihar. Further, the fault current at 220kV bus at Patna/Sipara (BSTPCL) and Khagaul substations is also observed to be about 45kA and 31kA respectively. BSPTCL may examine the fault levels at 220kV level and take necessary actions accordingly. With modification to be worked out by BSPTCL in nearby 220kV network, the fault level at 220kV level could be reduced.

5.5. BSPTCL through email dated 16-09-2022 and various subsequent reminders was requested to provide design short circuit level of various substations around Patna area, however, the input in this regard is still awaited.

5.6. ERLDC may share their observations on the proposal of bypassing of 400kV lines at Patna S/s as agreed in the 9th CMETS-ER.

5.7. Matter may be deliberated.

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

6.1. 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-I**.

6.2. STUs may update the status of downstream system given at **Annexure-I** prior to the meeting for further deliberations in the meeting, if any.

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

7.1. 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 such intra-sate substations as per available information is given at **Annexure-II**.

7.2. STUs may update the status of the transmission system given at **Annexure-II** prior to the meeting for further deliberations in the meeting, if any.

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

8.1. Space at various ISTS substations have been allocated to STUs for creation of line bays for termination of their new intra-state. List of such ISTS substations as per available information is given at **Annexure-III**.

8.2. STUs may update the status of the bays given at **Annexure-III** prior to the meeting for further deliberations in the meeting, if any.

Annexure-I

Status of Downstream Transmission Network in ER

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
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.	Rourkela	Odisha	400/220kV, 4x315MVA	220	-	-	Reconductoring of Rourkela – Tarkera 220kV D/c line with HTLS conductor		
6.	Subashgram	West Bengal	400/220kV, 2x315MVA+ 1x500MVA	220	2	Existing bay	Subashgram (POWERGRID) – Baraipur 220kV D/c line		220kV Baruipur substation charged. 132kV downstream

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
									delayed due to RoW. Expected by Mar 2023.
7.	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.
8.	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
9.	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.
10.	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.
11.	Durgapur	DVC	400/220kV, 3x315MVA	220	-	-	Reconductoring of Durgapur – Parulia (DVC) 220kV D/c line with HTLS conductor.		

Annexure-II

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	-	No firm plan now. To be
a)	Koderma (JUSNL) – Jasidih 400kV D/c (Quad) line	400kV D/c (Quad)	-	

Sl. No.	Substation/Location	Transformation Capacity/ Element	Date of Award	Completion Schedule
b)	Jasidih – Dumka 400kV D/c (Quad) line	400kV D/c (Quad)	-	taken up in future.
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**			
Being 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
Being implemented by CESC – Status may be updated by WBSETCL				
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-III

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

Eastern Regional Power Committee, Kolkata

Minutes of Special Meeting on "Issues related to Vedanta Limited" held on 14th October, 2016 at ERPC, Kolkata

List of participants is at **Annexure-A.** Member Secretary, ERPC welcomed CEA, CTU, Vedanta, OPTCL, GRIDCO, ERLDC and all other participants to the special meeting. He informed that this special meeting was convened on short notice to deliberate the issues related to Vedanta Limited.

He briefed the house that in the 125th OCC meeting held on 20.09.16 the Vedanta related issues were raised and OCC in its capacity deliberated in detail and decided the following:

i) Vedanta has to get a fresh connectivity from CTU for their CPP units #1, 3 & 4 (as these units were converted from IPPs to CPPs) as per the decision of 11th Connectivity and LTA meeting of ER held on 13.06.2016.

ii) Vedanta has to get NOC from SLDC Odisha for scheduling of their units through ERLDC.

iii) Vedanta will be allowed to connect to CTU system only after submission of the above two documents.

iv) ERLDC will start scheduling Vedanta CPP Units #1,3,& 4 only after getting a fresh NOC from SLDC Odissa and with grant of fresh connectivity by CTU.

v) Till then Vedanta would be treated as an embedded customer under the jurisdiction of SLDC Odisha and may remain connected to grid through STU system only (as presently its units are connected to OPTCL system) and do their STOA transaction through SLDC Odisha.

vi) In view of all of above, the NOC granted to Vedanta would stand revoked and fresh NOC could be issued subject to fulfillment of the stated conditions

vii) Vedanta has to complete the dedicated line within the schedule (i.e. November, 2016) otherwise the LILO may be removed as per the decision of 33rd ERPC and the meeting convened by CEA held on 16.09.2016.

Deliberation in the meeting

Vedanta informed that they are actively perusing for the NOC from Odisha for the purpose of getting connectivity from CTU. Rounds of discussions were going on for with GRIDCO/ OPTCL officials on the terms and conditions for the NOC and it will be finalized within 2-3 days.

Further, Vedanta clarified that their present requirement is as follows:

- Getting connectivity for their 3x600 MW CPPs along with smelter load (Maximum of 2000 MW) from CTU, with provision to draw power upto 1000 MW (maximum).
- To meet their 900 MW (approx) smelter load from the CPPs.
- To supply 550 MW power to Odisha through STU network.
- Shifting of units from ISTS to STU system and vice versa are being done as per their convenience for supply of smelter load and power supply to Odisha.

Therefore, to meet their own requirement along with their commitment to supply Odisha as per terms of PPA between them, Vedanta is compelled to connect their three (3) units to STU network, keeping one unit as standby.

GRIDCO informed that several meetings are going on with Vedanta to sort out the issues related to NOC and power supply to Odisha. They were in a process to sign a modified PPA for getting power supply from Vedanta.

Further, OPTCL viewed that all CPP units (unit #1, 3 &4) and IPP unit (#2) of Vedanta Ltd along with SEZ (smelter) load shall be kept at 400 kV bus of Vedanta Ltd Switchyard without bus splitting and shall be connected to STU network through 400 kV Vedanta Ltd-Meramundali D/C line.

CTU clarified that as per connectivity regulations Vedanta can get connectivity either as 3x600 CPP generator provided their net exportable capacity is more than 250 MW or as a Bulk Consumer with load of 1000 MW. But connectivity for both injection of more than 250 MW and drawl of 1000 MW power is not permitted as per present CERC regulation on grant of Connectivity, LTA and MTOA.

Further, it was informed that for the purpose of scheduling Vedanta generation, the control area jurisdiction of Vedanta should be decided following the principle outlined in IEGC, i.e. if a generating station is connected both to ISTS and the State network, scheduling and other functions performed by the system operator of a control area will be done by SLDC, only if state has more than 50% Share of power .The role of concerned RLDC, in such a case, shall be limited to consideration of the schedule for inter state exchange of power on account of this ISGS while determining the net drawal schedules of the respective states. If the State has a Share of 50% or less, the scheduling and other functions shall be performed by RLDC.

During deliberation it emerged that Vedanta as a 4X600 MW plant has obligation to supply power more than 50% of its capacity within the home state of Odisha itself [900 MW (50% of 1800MW) for smelter load and 550 MW to Odisha state i.e. 1450MW total]. As such, it does not qualify to be a regional entity. Therefore even if Vedanta is connected to both CTU and STU system, it should be scheduled by Odisha SLDC. After detailed deliberation the followings were decided:

1. Control area jurisdiction of Vedanta will be shifted from ERLDC to SLDC, Odisha.
2. CPP units (unit #1, 3 &4) and IPP unit (#2) of Vedanta Ltd along with SEZ (smelter) load shall be kept at 400 kV bus of Vedanta Ltd Switchyard without bus splitting and shall be connected to STU network through 400 kV Vedanta Ltd-Meramundali D/C line.

   There will be no need to operate the 400kV buses of Vedanta in split bus mode and they should be coupled by completing all the dias.
3. One unit shall be kept as standby till the completion of 400 kV Sterlite-Jharsuguda D/C line.
4. Vedanta Ltd shall be a State embedded entity for all purposes and requisite STU connection would be obtained by Vedanta Ltd i.r.o above.
5. The CTU connectivity of Vedanta may be kept in abeyance. The same may be closed/ withdrawn from the date of getting the STU connectivity.
6. On change of control area jurisdiction the NOC granted by ERLDC to Vedanta Ltd shall stand revoked.
7. After changeover of control area jurisdiction, the LILO point of 400 kV Rourkela-Raigarh at Vedanta will be interface point of Odisha STU till 30th November, 2016.
8. Subsequently, after the completion of 400 kV Sterlite-Jharsuguda D/C line the interface point of Odisha STU will be shifted to Jharsugada.

9. With the change of control area jurisdiction the status of 400 kV Sterlite-Jharsuguda D/C line will no more be a dedicated line. So, Vedanta agreed to hand over the line to OPTCL which can be treated as an ISTS tie of OPTCL.
10. Vedanta has to strictly adhere to the schedule for completion of 400 kV Sterlite– Jharsuguda D/C line (i.e. 30th November, 2016) as per the decision of 33rd TCC/ERPC and decided in the meetings held in CEA on 16.9.16. In case 400kV Vedanta-Jharsuguda D/C line is not commissioned by that date, the LILO connection to Vedanta shall be withdrawn.
11. Due to change of control area jurisdiction from ERLDC to SLDC Odisha. Vedanta Ltd has to settle the following:

    I) ERLDC fees and charges shall be paid by Vedanta Limited as applicable up to the cutoff date.
    II) Previous dues up to cut off date of the pool accounts such as DSM charges along with interest, RTDA, any others has to be settled by Vedanta.
    III) Henceforth, any deviation of Vedanta Limited will be treated as deviation of OPTCL.
    IV) After changeover of jurisdiction if in future it is found that any amount in pool account had remained unaccounted by mistake against Vedanta Limited, Vedanta Limited will have to pay the amount into the pool account.
    V) For calculation of POC charges and losses Vedanta Limited generation will be considered as generation of Odisha.
    VI) Vedanta Limited has to get registered afresh at each RLDC for Short Term Open Access as embedded entity in OPTCL.
    VII) Reconciliation of accounts is also required to be done up to the cutoff date by Vedanta.
    VIII) OPTCL in coordination with Vedanta has to send weekly SEM data to ERLDC by Tuesday Noon.

Vedanta expressed that presently the 400 kV Vedanta- Meramundali D/C line is not stable and tripping frequently. Vedanta and OPTCL were advised to look into the matter and resolve the issues related to this line expeditiously. Till carrier aided distance protection scheme is implemented, entire length of the line should be covered in Zone-1 from both ends

ERLDC stressed that the SPS for restricting power flow in 400kV Vedanta – Rourkella or Vedanta-Raigarh line within 650 MW, should be kept in service. Vedanta agreed.

After changeover of the jurisdictional authority, it was felt that closed Bus operation would ensure greater reliability. In this regard CTU stated that with such a closed bus operation, the impact of increase of short circuit MVA levels at various buses would not be significant and would remain within limits. Further, it was decided that a system study may be carried out for the above arrangement and placed in the next OCC. It was also decided that the control area jurisdiction may be handed over to SLDC, Odisha w.e.f. 24.10.2016 as under the present circumstances Vedanta is not mandated to inject to the ISTS Grid and their NOC stands revoked w.e.f 24.10.16.

Meeting ended with vote of thanks to the chair.

****

Annexure-A

Participants in the Special meeting on issues related to Vedanta Ltd

Venue: ERPC Conference Hall, Kolkata Time: 15:00 hrs Date: 14.10.2016 (Friday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
1	A.K. Bandyopadhyay	MS ERPC	9433068533	mserpc-powerpc@nic.in	
2	PARDEEP JINDAL	CE, CEA	9818768460	jindal_pardeep@yahoo.in	
3	U.K. Verma	CM, ERLDC	08902496220	ukverma.jsma@gmail.com	
4	P.P. BANDYOPADHYAY	DGM(SO), ERLDC	7044083323	barth_barg@yahoo.co.in	
5	G. MITRA	DGM, ERLDC	9831297392	gopalmitra@posoco.in	
6	SUBIR SEN	COO(CTU-Plg & SG) POWERGRID	9650293185	Subir@powergridindia.com	
7	ASHOK PAL	COO(CTU-Plg) POWERGRID	9910378105	ashok@powergridindia.com	
8	S.S. BARPANDA	AGM, NLDC	9717296928	ssbarpanda@posoco.in	
9	S. BANERJEE	DGM, ERLDC	9433041823	surojitb@gmail.com	
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11	T.R. Mohapatra	Mgr / ERLDC	9433041873	tushar.mohapatra@gmail.com	
12	SUBHENDU MUKHERJEE	DY. MGR. / ERLDC / POSOCO	9433041874	subhendu@posoco.in	
13	Umakanta Saha	GM, SLDC Odisha	9438907403	ukssbsr@yahoo.com	
14	U.N. Mishra	CGM(M), GRIDCO	9438907774	sgm.ff@gridco.co.in	
15	Santosh Kumar Das	Consultant SLDC Odisha	9437000261	S_santosh@rediffmail.com	
16	Anil Singh	COO - Power	9549073337	anilkr.singh@vedanta.co.in	
17	Pankaj Sharma	AVP. Power	9893122357	Pankaj.sharma@vedanta.co.in	
18	Chandan Bharti	A.M. Power	7894440310	Chandan.bharti ya@vedanta.co.in	
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20	A. De	AEE, ERPC	9681932906	alikpantha@gmail.com	
21	P.P. Jena	AEE, ERPC	9776198991	pranayapiyusha@gmail.com	
22	D.K Bauri	EE, ERPC	9883618236	eeop.erpc@gov.in	

Manish Ranjan Keshari {मनीष रंजन केशरी}

From:	Ninad Nigam <Ninad.Nigam@vedanta.co.in>
Sent:	Wednesday, December 21, 2022 21:35
To:	Manish Ranjan Keshari {मनीष रंजन केशरी}
Cc:	Ashok Pal {अशोक पाल}; Jasbir Singh {जसबीर सिंह}; Rajesh Kumar {राजेश कुमार}; Anupam Kumar {अनुपम कुमार}; Shyam Sunder Goyal {श्याम सुंदर गोयल}; Abhilash Thakur {अभिलाष ठाकुर}; AMIT KUMAR {अमित कुमार}; mserpc-power@nic.in; ppjena.erpc@gov.in; amareshmallick@grid-india.in; saurav.sahay@grid-india.in; chandan@grid-india.in; konar_s@grid-india.in; rajibsutradhar@grid-india.in; saugato@grid-india.in; manasdas@grid-india.in; ankitjain@grid-india.in; sbiswas@grid-india.in; erldcomml@grid-india.in; finalschder@grid-india.in; sgm.cp@optcl.co.in; ele.akbanerjee@optcl.co.in; Biswajit Sahoo
Subject:	Re: ISTS Connectivity application by M/s Vedanta Ltd. as Bulk Consumer
Attachments:	CGP Connectivity Agreement Annexure-2.pdf; OPTCL System Study report Annexure-3.pdf; SLD VL_Jharsuguda Smelter Complex_Annexure-1.pdf; VL Response -CTUIL queries.pdf

Dear Sir,

Please find attached herewith the response to the queries raised in below e -mail.

Regards
Ninad Nigam

From: Manish Ranjan Keshari {मनीष रंजन केशरी} <manish.keshari@powergrid.in>
Sent: 14 December 2022 16:20
To: Ninad Nigam <Ninad.Nigam@vedanta.co.in>; Biswajit Sahoo <Biswajit.Sahoo@vedanta.co.in>
Cc: Ashok Pal {अशोक पाल} <ashok@powergrid.in>; Jasbir Singh {जसबीर सिंह} <jasbir@powergrid.in>; Rajesh Kumar {राजेश कुमार} <rajeshkumar@powergrid.in>; Anupam Kumar {अनुपम कुमार} <i.anupamk@powergrid.in>; Shyam Sunder Goyal {श्याम सुंदर गोयल} <shyam.goyal@powergrid.in>; Abhilash Thakur {अभिलाष ठाकुर} <abhilash.28@powergrid.in>; AMIT KUMAR {अमित कुमार} <emailamit0014@powergrid.in>; mserpc-power@nic.in <mserpc-power@nic.in>; ppjena.erpc@gov.in <ppjena.erpc@gov.in>; amareshmallick@grid-india.in <amareshmallick@grid-india.in>; saurav.sahay@grid-india.in <saurav.sahay@grid-india.in>; chandan@grid-india.in <chandan@grid-india.in>; konar_s@grid-india.in <konar_s@grid-india.in>; rajibsutradhar@grid-india.in <rajibsutradhar@grid-india.in>; saugato@grid-india.in <saugato@grid-india.in>; manasdas@grid-india.in <manasdas@grid-india.in>; ankitjain@grid-india.in <ankitjain@grid-india.in>; sbiswas@grid-india.in <sbiswas@grid-india.in>; erldcomml@grid-india.in <erldcomml@grid-india.in>; finalschder@grid-india.in <finalschder@grid-india.in>; sgm.cp@optcl.co.in <sgm.cp@optcl.co.in>; ele.akbanerjee@optcl.co.in <ele.akbanerjee@optcl.co.in>
Subject: ISTS Connectivity application by M/s Vedanta Ltd. as Bulk Consumer

Dear Sir,

This is with reference to the application of M/s Vedanta Ltd. for Connectivity of 180MW as Bulk Consumer. As you are aware, in the meeting held under EPRC on 14-10-2016 (copy of minutes is attached herewith) following was decided:

i. *Control area jurisdiction of Vedanta will be shifted from ERLDC to SLDC, Odisha;*
ii. *Vedanta Ltd. shall be a state embedded entity for all purposes.*
iii. *All four units of TPP i.e. 4x600MW shall be operated in single bus mode;*
iv. *Vedanta-Jharsuguda line will no more be a dedicated transmission line (as the same was agreed by Vedanta Ltd. to be handed over to OPTCL) and considered as a tie-line between ISTS network and OPTCL*

v. *The CTU connectivity of Vedanta may be kept in abeyance*

In view of the above, Vedanta Ltd. is considered as state embedded entity of Odisha and Vedanta – Jharsuguda line is considered as a STU line of OPTCL. Thus, it is requested to provide the following details in respect of instant Connectivity application to ISTS as Bulk Consumer:

a. Total generation capacity (CPP & IPP) and demand of Vedanta Ltd.
b. SLD and Schematic indicating the CPP/IPP/Loads with clear demarcations.
c. Whether the instant load (bulk consumer) would be feed directly and dedicatedly from ISTS, and not connected to any of the existing facilities?
d. If response to (c) is **NO**, following may also be provided:
   (i) Nature of Connectivity to OPTCL, whether as Generation (CPP/IPP) or as Bulk Consumer.
   (ii) Quantum of Connectivity with OPTCL along with copy of intimation issued by OPTCL for intra-state connectivity.
e. Any other information that may be relevant in the instant case.

सादर,

मनीष रंजन केशरी
प्रबंधक
सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ़ इंडिया लिमिटेड
(पावर ग्रिड कारपोरेशन ऑफ इंडिया लिमिटेड)
केन्द्रीय कार्यालय, गुरुग्राम, हरियाणा-122001
मोबाईल: +91-8826094864

VL-Response to CTUIL Queries

a. **Total generation capacity (CPP & IPP) and demand of Vedanta Ltd**.
Response:

Vedanta Limited ("VL") owns and operates the following plants within single premises –

- ✓ 2400 MW (4 x 600 MW) coal fired power plant at Jharsuguda, Odisha ("Vedanta-TPP") out of 4 units one unit of 600 MW i.e., Unit#2 is designated as IPP which caters long term PPA to GRIDCO. Three units i.e. Unit #1 ,3 & 4 are captive units catering power demand of one smelter (i.e., SEZ smelter)

- ✓ Additionally, Vedanta also has a 1215 MW (9 x 135 MW) captive power plant to cater to the power demand of another smelter (Smleter-1).

In Summary –

- ✓ Total Captive power plant generation capacity is 3015 MW (4x600+ 9x135).

- ✓ Total IPP generation capacity is 600 MW.

- ✓ Total power demand of Vedanta is 2890 MW.

b. **SLD and Schematic indicating the CPP/IPP/Loads with clear demarcations.**

Response: SLD is attached with email as **Annexure-1.**

c. **Whether the instant load (bulk consumer) would be feed directly and dedicatedly from ISTS, and not connected to any of the existing facilities?**

Response:

Vedanta is currently connected at Sundergarh ISTS substation at one end & on OPTCL's Lapanga substation at the other end. The plant is currently under a single bus arrangement.

d. **If response to (c) is NO, following may also be provided:**

(i) Nature of Connectivity to OPTCL, whether as Generation (CPP/IPP) or as Bulk Consumer.

Response:

As per ERPC meeting dated 14.10.2016 it was decided that CPP units #1,3& 4 and IPP unit #2 of Vedanta ltd along with SEZ Smelter load shall be kept at 400 kV bus of Vedanta switchyard without bus splitting and shall be connected to STU network through 400 KV Vedanta Ltd -Meramundali D/C line. It is noteworthy that the connectivity arrangement as deliberated in said ERPC meeting has been implemented from 24.10.2016.Vedanta has signed a connection agreement with OPTCL for the purpose of 400 KV D/C connectivity for export/import of power to /from Vedanta Ltd. w.e.f. 24.10.2016. The copy of connectivity agreement is attached along-with the email for reference as **Annexure-2.**

(ii) Quantum of Connectivity with OPTCL along with copy of intimation issued by OPTCL for intra-state connectivity.

Response:

Vedanta has signed connectivity agreement on 24.10.2016. VL-Sundergarh 400KV D/C line was commissioned on 06.11.2017. Subsequently Vedanta-Lapanga line 400 KV D/C line was commissioned on 05.11. 2018. It may be noted that till the commissioning of both lines VL was connected through CTU Raigarh-Rourkela LILO line. VL was also connected through IB-Meramundali 400 KV transmission line through LILO arrangement with State grid.

Vedanta is allowed to export/import of 1600 MW of power through the 400 KV D/C Vedanta -Sundergarh (CTU grid) and Vedanta -Lapanga line (STU grid) as per system study report issued by OPTCL on 31.10.2022. Copy of system study is enclosed with the email as **Annexure-3.**

e. Any other information that may be relevant in the instant case.

Response: In accordance with ERPC meeting dated 14.10.2016 VL has become a state embedded customer. It is to note that the said meeting had deliberated that "*even if Vedanta is connected to both CTU and STU system the scheduling shall be done by Odisha SLDC".* Thus, Vedanta has been physically connected to both CTU & STU transmission system. Vedanta also allowed to operate in single bus mode under which all three CGP units #1,3 & 4 and one IPP Unit#2 are connected in single bus.

Vedanta has been availing supply through 200 MVA contract demand from TPWODL,the concerned DISCOM. VL also has a long term PPA for supply of power to Gridco from unit#1. Thus, Vedanta is connected to STU grid through 400 KV D/C line to Lapanga Grid of STU to meet the aforesaid committments.

It is to note that Vedanta Jharsuguda is having largest aluminium smelting facility of 1.75 MTPA in single location. As per manual on transmission planning criteria 2013 issued by CEA, smelter is considered as highly critical load. The relevant clause of CEA manual on transmission planning criteria 2013 are as follows;

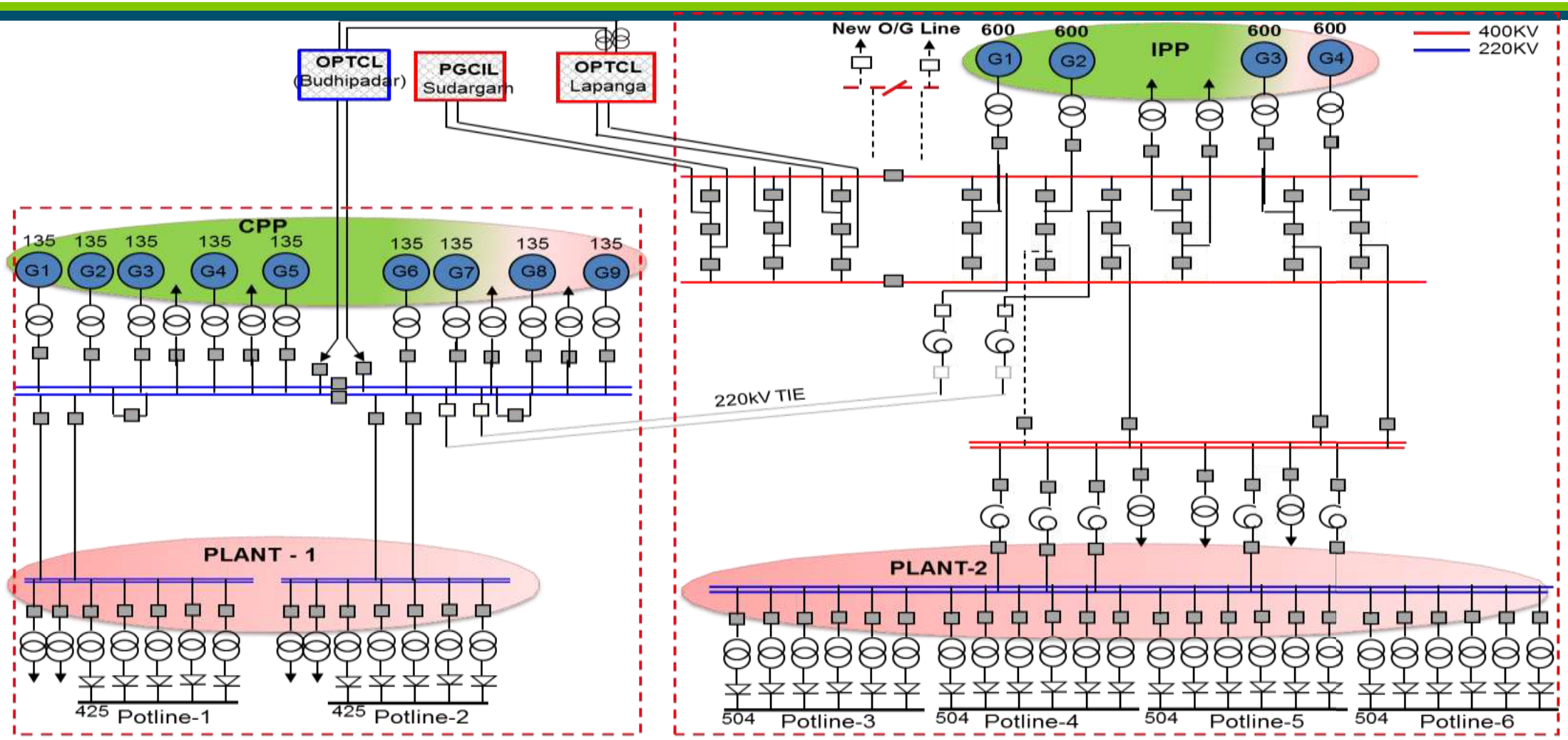
"*3.12 Critical loads such as - railways, metro rail, airports, refineries, underground mines, steel plants, smelter plants, etc. shall plan their interconnection with the grid, with 100% redundancy and as far as possible from two different sources of supply, in coordination with the concerned STU"*

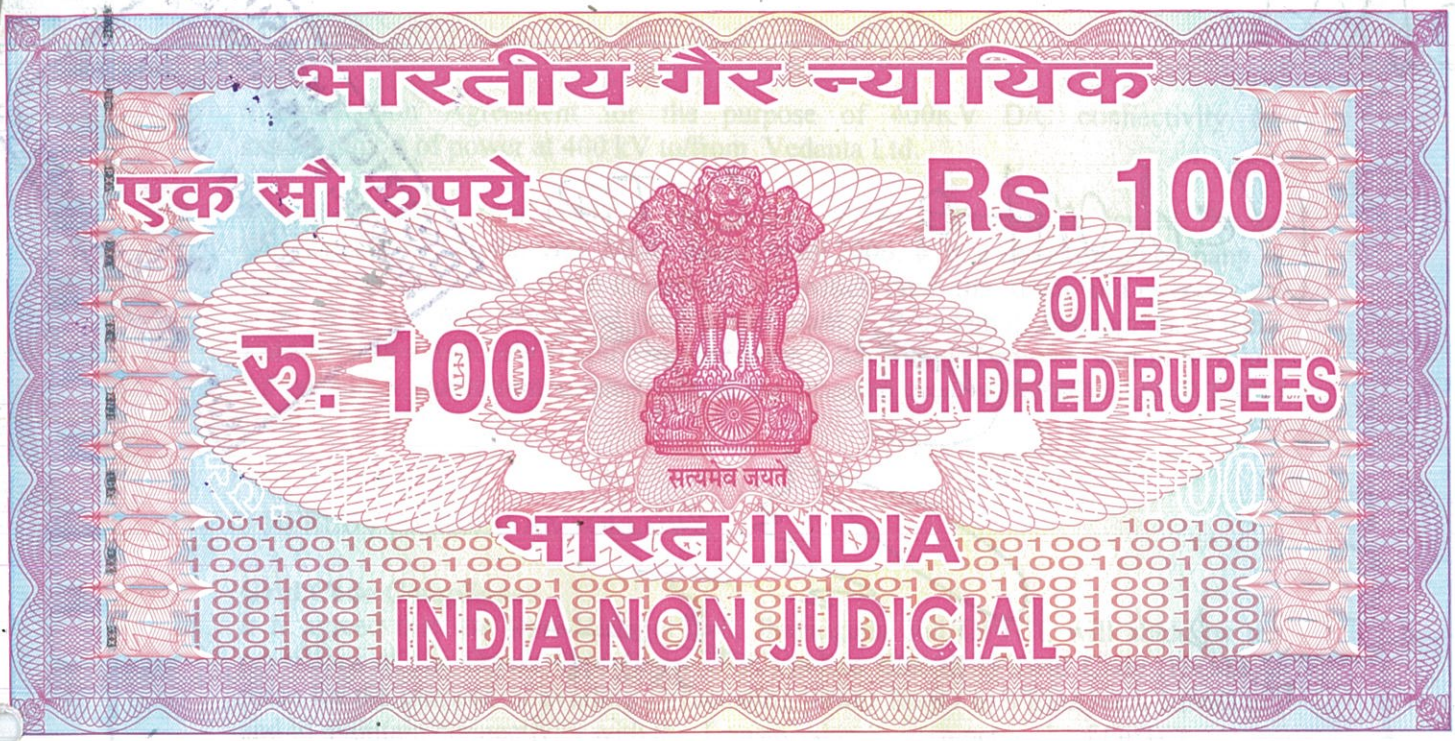
Aluminium smelting is highly power intensive operation wherein specific power consumption is 13500~14500 KWH/MT of aluminium. Thus, a robust connectivity arrangement is vital for a reliable and sustainable operation of Aluminium Smelter.

In view of the above Vedanta is seeking direct connectivity with CTU pool as a "*Bulk Consumer*" through existing 400 KV D/C line connected to Sundergarh Substation of PGCIL. Vedanta also remains to be connected with STU system through existing 400 KV D/C line to lapanga substation as per current connectivity arrangement i.e single bus mode.

Moreover due to GoIs ever-increasing RPO trajectory and Vedanta's own NetZero Carbon commitment on or before 2050 of which atleast 30% migration to RE is planned on or before 2030 entailing peak RE load of more than 1500 MW. This capacity has to be certainly planned outside of Odisha as state has very little scope of feasible RE resources. Hence ISTS connectivity is a must to survive for a massive load like Vedanta's Aluminium operation during this energy transition.

SLD OF JHARSUGUDA COMPLEX





ଓଡ଼ିଶା ओड़िशा ODISHA

F 879981

CONNECTION AGREEMENT

THIS AGREEMENT for connection Unit#**1**, **2**, **3**, **4** (600 MW each) of 4X600MW Thermal Power Plant ("TPP") of M/S VEDANTA LIMITED with the Transmission System connecting 400KV Raigarh-Vedanta-Rourkela and 400KV D/C OPTCL Meramundali interfaced at 400KV switchyard of Vedanta Limited and use of Transmission System of ODISHA POWER TRANSMISSION CORPORATION LIMITED ("OPTCL") is made this 24th day of October month of 2016 year.

BETWEEN

[1] ODISHA POWER TRANSMISSION CORPORATION LIMITED ("OPTCL"), whose registered office is at Janpath, Bhubaneswar – 751 022, Orissa, India herein referred as "OPTCL"

AND

[2] VEDANTA LIMITED, whose registered office is at Sesa Ghor, 20 EDC Complex, Patto, Panaji (Goa)-403001, & Works at- Bhurkhamunda, PO: Kalimandir, Dist: Jharsuguda (Odisha)-768202 therein after called "User"

WHEREAS

[A] Odisha Power Transmission Corporation Ltd, Janpath, Bhubaneswar,-751022 (herein after known as OPTCL) is a Transmission Licensee granted by the OERC as per the provision of the Electricity Act, 2003 (here after called as the 'Act') agreed to execute

21885

25.11.16

Vedanta LTD

Nimal

25.11.16

DISTRICT TREASURY
KHURDA, BHUBANESWAR
03 NOV 2016
ADDL. TREASURY OFFICER

P.C. MOHANTY
STAMP VENDER
BHUBANESWAR COURT

a Connection Agreement for the purpose of 400KV D/C connectivity for export/import of power at 400 kV to/from Vedanta Ltd.

[B] Vedanta Limited (the User) is the holder of the authorization issued by the Government of Odisha vide MOU dated 26.09.2006. It is a generating company in terms of Section 2(28) of the Electricity Act which inter alia, owns and operates the 2400 MW (4 x 600 MW) coal fired power plant at Brundamal, Jharsuguda, Odisha, 1215 MW (9 x 135 MW) captive power plant, 1.25 MMTPA smelter unit in SEZ and 0.5 MMTPA aluminium smelter unit in the licensed area of WESCO Ltd./WESCO Utility.

NOW IS HEREBY AGREED AS FOLLOWS

(i) Grid Code Compliance

It is agreed that the User Vedanta Ltd., Jharsuguda and OPTCL will abide by the provisions of the Orissa Grid Code (OGC)/Indian Electricity Grid Code (IEGC) in force for the purpose of availing / evacuating power from / to VEDANTA LIMITED and to maintain connectivity with the Transmission System network of OPTCL.

(ii) Terms of agreement

(a) This agreement shall be deemed to have commenced from 24.10.2016 and shall continue until it is terminated. In case of any differences or disagreements between the Transmission Licensee and the User in regard to any changes required from time to time to the terms of this agreement the same shall be resolved amicably failing which the matters shall be referred to the Appropriate Commission and the Commission's decision shall be final and binding.

(b) The term of this Agreement shall stand modified or terminated automatically as per the Regulations which OERC may issue from time to time in accordance with the functions and powers of the Commission under the Act. As soon as practicable following any Regulation of the Commission which has the effect of modifying the terms of this Agreement, the Transmission Licensee shall prepare a revised version of this agreement, incorporating the modified term and following Agreement between the Transmission Licensee and User that the revised version accurately reflects the relevant Regulation, the User shall execute the revised version.

(c) No User shall assign the Agreement or transfer or part with the benefits under the Agreement in favour of any other person/User without the express consent or approval of the Transmission Licensee.

(d) Any connection, which has been unauthorised transferred or parted with, shall be liable for disconnection after expiry of a seven days' notice calling for explanation and considering the explanation submitted by him.

(e) The User agrees to bear the cost of stamp duty and all cost incidental to the execution of this agreement in full.

iii. **Details of Connection**

a	System of supply voltage:	400 KV
b	Total contract demand:	Not Applicable
c	Phasing of the contract demand	Not Applicable
d	Connection details	GRIDCO interface point with CTU (Connecting 400KV Raigarh- Vedanta, 400KV Vedanta-Rourkela & 400KV D/C Vedanta-Meramundali transmission lines) in 400KV switchyard of Vedanta and that with user at GT 400KV bus.
e	Details of reactive power compensation arrangement	Not Applicable
f	Details of the scheme of the switching station / bay (i) Bus-bar arrangement: (ii) Provision for future expansion	Single Line Diagram is attached . (i) Two bus system with One and Half Breaker Arrangement at 400KV switchyard of Vedanta Limited (ii) Not Applicable Now
g	Thermal Power Plant (i) Rated capacity (ii) Rated voltage level of generation (iii) Quantum of surplus power to be evacuated (iv) Details of the connectivity with OPTCL network (v) Mode of communication connectivity with the nearest SCADA Interface Point of the Transmission Licensee	 (i) 4x600 MW (Unit-**1**, Unit-**2**, Unit-**3**, Unit-**4**) (ii) 22 KV (iii) (As per system study) (iv) From '400 KV Switchyard of VEDANTA LIMITED' to 400 KV S/S of OPTCL at Meramundali. 400KV S/S at Raigarh 400KV S/S at Rourkela (v) Through OPGW system
i	Communication Arrangement (The User shall be required to provide voice and other communication facility as decided by SLDC)	Telemetry
j	Metering Arrangement: The User shall provide meters for accounting and audit purposes as per the standard specified by CEA	0.2 accuracy class Energy meters in all 400KV interconnected lines at GRIDCO interface point in 400KV switchyard of Vedanta Ltd as per the standard specified.

j	Other charges (i) The operation and maintenance charges of the Transmission line as governed by the provisions contained in Chapter -12. (ii) Entry Charges and Exit Charges as prescribed by OPTCL & approved by OERC are to be paid where appropriate. (iii) Capital related payment arising from necessary reinforcement or extension of the System is to be paid.	(i) Agreed if applicable (ii) if applicable as per agreement (iii) Not applicable
k	The site responsibility schedule, as per the State Electricity Grid Code (SEGC), Appendix to Chapter-5	Attached as Annexure-VII
l	Protection scheme: Protection scheme shall be provided in the User's System to protect the grid from the faults originating in their System and so also for safeguarding their System from the fault originating from the Transmission system. The protection scheme of the User's system shall have the approval of OPTCL. (i) Transmission line protection scheme: (Please indicate the general philosophy of the scheme) (ii) 400 kV feeder bay protection scheme: (iii) General protection scheme adopted for the switching station: (Please indicate the general philosophy of the scheme). (iv) Any other protection scheme provided:	Attached as Annexure –IV (i) Transmission line protection scheme: Main-I & Main II Numerical Distance protection relay with OC and EF protections features at both end and provision of carrier inter-tripping. (ii) Both end one and half breaker arrangement with Bus bar and LBB protection. (iii) All the Generators at Vedanta Limited are having numerical Generator & Generator-Transformer Relays with all required protections including Generator transformer differential protection. (iv) Not Applicable

m	Documents forming part of this agreement: a) Annexure-I: Permission letter no ----- date ---- and as per the decision taken by ERPC in the special meeting held on 14.10.2016 at Kolkata. b) Annexure-II: PPA executed between VL and GRIDCO dated c) Annexure-III: Single line Diagram of 400KV switchyard of Vedanta Limited with protection and metering arrangement. d) Annexure-IV: Protection Scheme drawing of VL generator. e) Annexure-V: Dynamic Characteristic of generator and Capability Curve. f) Annexure-VI: Undertakings submitted by VL, in respect of protection system, Telemetry & Communication, energy Metering and Statuary clearance. g) Annexure-VII: Site Responsibility Schedule. h) Annexure-VIII: Detail of procedure necessary for Site Access, Site Operational Activities and maintenance Standards for equipments of the STU / Transmission Licensee at STU/Transmission Licensee premises and vice versa. i) Annexure-IX : Planning data of generator. j) Annexure-X: Data to be provided as per Chapter-12 of the OGC

AS WITNESS the hands of the Parties hereto or their duly authorized representative on this 24th day of October month of 2016 Year.

SIGNED BY

For & on behalf of User Transmission

Jayaprakash Mohanty

VEDANTA LIMITED

WITNESSES: 1) Manoj Kumar Panda

2) Sumita Kumar Sahoo

SIGNED BY

For & on behalf of the Licensee Swarup Kumar Adhikari 24.10.16

Dy. General Manager (El.)
EHT (O & M) Division
OPTCL, Meramundali

1) Umakanta Mishra

2) Bhabagrahi Garnaik 24.10.16

24.10.16

Bhubaneswar
Date: The 24th Day of October Month of 2016 Year.

OPTCL
Lifeline of Orissa

OFFICE OF THE CHIEF GENERAL MANAGER(CORPORATE PLANNING)

ODISHA POWER TRANSMISSION CORPORATION LIMITED.
JANAPATH, BHUBANESWAR-751022.
Phone - 0674-2542732

No.CP/SS/Industries/63/2022 - 487 Dated..31.10.2022

To,
M/s Vedanta Ltd.,
Vill-Bhurkhamunda,
P.O.- Kalimandir,
Dist:Jharsuguda.

Sub: System study for enhancement of power drawl from 1400 MW to 1600 MW by M/s Vedanta Ltd, Jharsuguda through the existing 400 kV D/C connectivity from Vedanta to Lapanga Grid and from Vedanta to Jharsuguda(PG) Grid .

Dear Sir,

The System study (Planning) comprising of Power flow study under steady state, for enhancement of power drawl from 1400 MW to 1600 MW by M/s Vedanta Ltd through the existing 400 kV D/C connectivity from Vedanta to Lapanga Grid and from Vedanta to Jharsuguda (PG) Grid , has been conducted under Low Hydro generation & Peak Load, for the system condition of Orissa grid in the year 2022-23.

The network is adequate for enhancement of power drawl from 1400 MW to 1600 MW by M/s Vedanta Ltd through the existing 400kV Vedanta-Lapanga D/c line and 400 kV Vedanta-Jharsuguda(PG) D/c line. .

The copy of the said study in duplicate is enclosed herewith. Please acknowledge receipt of the same.

Encl: As above

Yours faithfully,

Sanigrahi 31.10.2022

Chief General Manager (C.P)

Memo No.488(27) **Dated.**31.10.2022

C.G. M. (P.P.),Gridco, Bhubaneswar / Executive Director, Western Zone, Burla, OPTCL. A photocopy of the report (05 pages) of the study is enclosed herewith, for further action at your end.

Encl: As above

Sanigrahi 31.10.2022

Chief General Manager (C.P)

1. INTRODUCTION

M/S VEDANTA LTD intends to enhance their power drawl from 1400 MW to 1600 MW through existing 400 kV D/C connectivity between Lapanga and Vedanta and 400 kV D/c connectivity between Vedanta and Jharsuguda.

To ascertain the technical feasibility of the said supply of power, the study has been conducted on the network of OPTCL, **for system condition of Orissa Grid**, in the year 2022-23.The system study has been done in accordance with the Notification No.1236 dated 01.09.2021 of OPTCL on Prepaid System Study.

2. Codal Guidelines for System Study

In designing the network, the following criteria indicated in the **"Manual on Transmission Planning Criteria"** issued by the Government of India, Ministry of Power, Central Electricity Authority dated June 1994, and the **"Transmission Planning & Security Standards"** dated 05.03.1998 issued by the Orissa Electricity Regulatory Commission (OERC) has been adopted.

3. Scope of the Study

3.1.1 To conduct steady state **Power flow study under Low Hydro generation & Peak load** of the Orissa Grid system condition in **the year 2022-23**.

3.1.2 To conduct **Short circuit study** and compute the fault level (MVA) for 3 phase to ground fault and Single Line to Ground fault, at different buses in the grid.

4. METHODOLOGY

(I) **MODELING:**

The database for use in MiPower software has been modeled as under:

- The MVA base for all the transmission elements except transmission lines has been chosen as 100. The values of the parameters for the transmission lines are at actuals.
- Subtransient model has been used for all the generators within the State. Infinite model has been used for the slack and inter State generators for the purpose of transient stability study.
- The steady state voltage limits for all the buses has been set from "0.95" p.u to "1.05" p.u.
- Reactive power limits for generator buses:
  Qmax= As per Generator capability curve.
  Qmin= Zero for themal generators and as per Generator capability curve for Hydro generators.
- All the Auto transformers (ATs) have been selected as On Load Taps. The Generators transformers (GTs) have been selected as Off Load Taps. The taps of the ATs have been varied as required in the study.

Sagarchi 31.10.2022

- The shunt capacitors have been provided at 132 kV buses (indicated in the study results) with a view to meet the reactive power requirement of load close to the load points.

- The shunt reactors have been provided at 400 kV buses (indicated in the study results) for controlling voltages within the limits specified.

- The grid substation bus names have been abbreviated with a suffix to indicate the voltage level.

  The voltage level is denoted by the last character in the bus name using the following convention:

Character	**Voltage Level.**
4	400kV
2	220 kV
1	132 kV

  The generator bus names have been abbreviated with a suffix G.

- The number of generators, transformers, capacitors, reactors and transmission lines has been represented individually to facilitate transient stability studies.

(II) ASSUMPTIONS:

The system study has been conducted with the assumptions enumerated below:

- The Western Region has been synchronised with Eastern Region on 02.03.2003 at 11.28 hours.

- Import of power of about 100 MW is made from Korba through Budhipadar-Korba 220 kV link.

- Export of power of about 490 MW from Eastern region is made to Southern Region from 400 kV PGCIL S/S at Jeypore through a 400 kV D/c line to Gazuwaka HVDC back to back S/S, by displacement method, partly utilizing the Gridco EHT network.

- No export of power is made to Western Region from 400 kV PGCIL S/S at Bisra through a 400 kV D/C (bipolar) line to Raipur. The said line synchronizes WR with ER. As per software consideration, the generation from the slack has been limited within 1000 MW by the said export.

- Export of power of about 1820 MW from Eastern region to the Karnataka State from 400 kV S/S at STTPS through 400 kV HVDC line to Kolar.

- All loads of the Distcos have been modeled at 220 & 132 kV buses.

- Transformation loss of 1% has been assumed on the loads of the Distcos, as the loads on which forecast has been made is on 33 kV.

- The peak loads for the Year 2022-23 has been taken from the Demand forecast approved by the Hon'ble commission OERC.

Panigrahi 31.10.2022

- Load power factor has been taken as 0.95 lag for Peak load condition in order to achieve convergence since the thermal generators have been modeled not to absorb VAR.
- The MVAR for the load of Gajuwaka and Kolar has been taken as 50.
- The proposed industries for which system study has already been conducted by OPTCL **at the time of this study** have been considered.
- Operational maneuvers have not been considered i.e. all the transmission elements are connected.
- Following interconnections with ER system have been considered:

RENGALIPG-KOLAGHAT	400kV
BISRAPG-JAMPG	400kV
JODA-JMSDDVC	220kV
JODA-RMCPUR (JSEB)	220kV

These inter connection points have been represented by appropriate equivalent with fault MVA as follows:

Name	Fault Contribution(MVA)	Inertia Constant (MJ/MVA)
Raipur4	8000	20
Korba2E	2500	20
DVCJMS2	2500	20
RMCPUR2	2000	20
JMSPGD4	8000	20
KOLGHAT4	8000	20

- JMSD4 has been considered as the Slack generator.
- The inter connection points at Korba and Raipur have been represented as generator with negative load for transient stability study purpose.
- The circuit length (kms) and the connectivity of the **existing** transmission elements have been represented in accordance with the existing single line diagram of EHT for the year 2021-22. The connectivity for the Year 2022-23 has been done as per the data received from Sr.G.M. (TP & C).
- The circuit length (Orissa Portion) of the lines owned by PGCIL is indicated below for analysis as the study covers the total length:

Name of line	Circuit Length (Kms) Orissa Portion	Circuit Length (Kms) Total
DVC – Joda	32.0	135
Joda - RMCpur	15.5	126
Korba - Budhipadar	60.0	181
Goelkera – Rourkela	04.0	67.92
Bisra – JMSD		174
Rengali – Kolaghat		376
Jayanagar – Gajuaka		270
Meramundali – Jayanagar		456
Bisra – Raipur		412

Spanigrahi
31.10.2022

- All generators have been kept in service for determining the fault level. Flat start and sub-transient reactance criteria has been adopted.
- Reactors at Gajuaka and Raipur buses have been kept in service.
- The generation (MW) of the slack includes the proportionate allocated EREB share for Gridco of 90 MW from Bisra.
- The generation of STTPS has been balanced with the load of Kolar after deducting its proportionate allocated EREB share for Gridco.

5. SYSTEM STUDY

(A)Power Flow Study (Ref page 1-10)

For power evacuation, the **future** network of Orissa Grid **in 2022-23** has been considered.

SYSTEM			
Generation (MW)	Load (MW)	% Loss	
38933	37715	3.129	

(B)Short Circuit Study

The fault level **(phase)** of 400 kV bus at Vedanta, for the aforesaid types of fault is tabulated below:

Type of Fault: **3 phase to ground**		Type of Fault: **Single line to ground**	
Fault MVA **(Phase)**	Fault Current (KA)	Fault MVA **(Phase)**	Fault Current (KA)
27114.926	39.137	27506.543	39.702

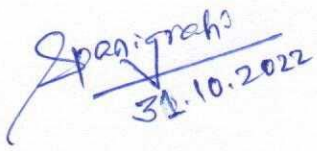
(C)C O N C L U S I O N:

The network is adequate for enhancement of power **drawl from 1400 MW to 1600 MW by M/s Vedanta Ltd ,Jharsuguda through the existing 400kV Vedanta-Lapanga D/c line and 400 kV Vedanta-Jharsuguda (PG) line.**

- ❖ The voltage at different grid Substations are within permissible limits..
- ❖ The above study is valid for one year.

Sparsh 31.10.2022

- In case of alteration of power, system study needs to be conducted afresh on the changed scenario, on payment of requisite fee by the firm.



Annexure-V

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड

(पावर ग्रिड कारपोरेशन ऑफ इण्डिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)

CENTRAL TRANSMISSION UTILITY OF INDIA LTD.

(A wholly Owned Subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref No.: CTU/LTA/NOC/2022/ 0412100007 Date: 02.12.2022

To

The Chief Engineer
Odisha Power Transmission Corporation Ltd.
Bhoinagar Post Office, Janpath
Bhubaneshwar-751022

Sub: No Objection Certificate (NOC) for Long Term Open Access (LTA) from Odisha Power Transmission Corporation Ltd.

Sir,

The LTA application as per following details has been received by CTU:

Name of applicant	XL Xergi Power Private Limited
Application no	0412100007
Date of execution of PSA	18.04.2022
PSA executed between	NTPC Ltd & GRIDCO Ltd
Quantum of power NoC required for (MW)	200
Start date of NoC	18.01.2024
End date of NoC	17.01.2049

As per the clause 23.9 of CERC "Detailed Procedure for making application for Grant of Long-term Access to ISTS" concurrence/ No Objection Certificate from STU(s) is required.

Accordingly, it is requested to provide NoC for above application. This application is scheduled to be discussed in forthcoming "Consultation Meeting for Evolving Transmission Schemes" (CMETS) which is generally held in last week of every month wherein your concurrence shall be required.

Thanking you,

Yours faithfully

02/12/22

(Puneet Tyagi)
Chief General Manager

Encl.:

1. PPA & PSA
2. Format of NoC

FORMAT-LTA-3

/ "No Objection Certificate of --<<Name of State Transmission Utility>>"

<<Format in which NOC is to be given by STU to intra-state Entity for submission to CTU>>

NOC No._____ Dated._____

1. Name of the STU issuing NOC :
2. Region : *(North / West / South / East / North-East)*
3. Name of the Entity :
4. Status of Entity (e.g.; State Utility/CPP/IPP/Discom etc.) :
5. Point(s) of Connection :
6. Max. MW ceiling allowed for Injection* :
7. Max. MW ceiling allowed for Drawal* :

(STUs may specify different MW ceilings for different time blocks, if required.)*

8. Validity Period : From : << Date >> To: <<Date >>

9.Transmission losses (besides Regional Transmission losses)

	Whether Applicable or not (Yes/No)	(%) loss
State Transmission losses		
Distribution Licensees losses		
Any other losses		

10.Transmission charges (besides Regional Transmission charges)

	Whether Applicable or not (Yes/No)	Rate (Rs./MWh)
State Transmission losses		
Distribution Licensees losses		
Any other charges		

Declaration:

It is hereby certified that:
a) We have "No Objection" to seeking and availing Open Access by <<Name of Entity>>, through ISTS upto the MW ceiling as specified above, in accordance with applicable regulations of CERC/<<State>> ERC.

b) We have the required infrastructure for energy metering and time block wise accounting in place. The State/ Distribution licensee network has the required transfer capability for transfer of power as per specified ceiling.

c) The Transmission Charges for the use of State/Distribution Licensee network and Operating Charges for the State Load Despatch Centers shall be directly settled by Power Exchange with us.

d) The State Utility designated for the purpose of collection/disbursement of UI charges shall be responsible for timely payment of State's composite dues into the Regional Pool Account.

e) Any mismatch between the Scheduled and Actual drawal/injection for the intra-State Entity shall be determined by us and will be covered in the intra-State UI accounting scheme, or as applicable.

f) The Reactive Energy Charges shall be governed by the Regulations applicable within the State.

g) We shall disburse the Transmission Charges for use of the State/Distribution Licensee Network to the State Transmission Utility /Distribution Licensee directly.

h) We shall inform the total import and export capability of the State as a whole to all concerned. Attempt shall be made to declare this in advance through our website.

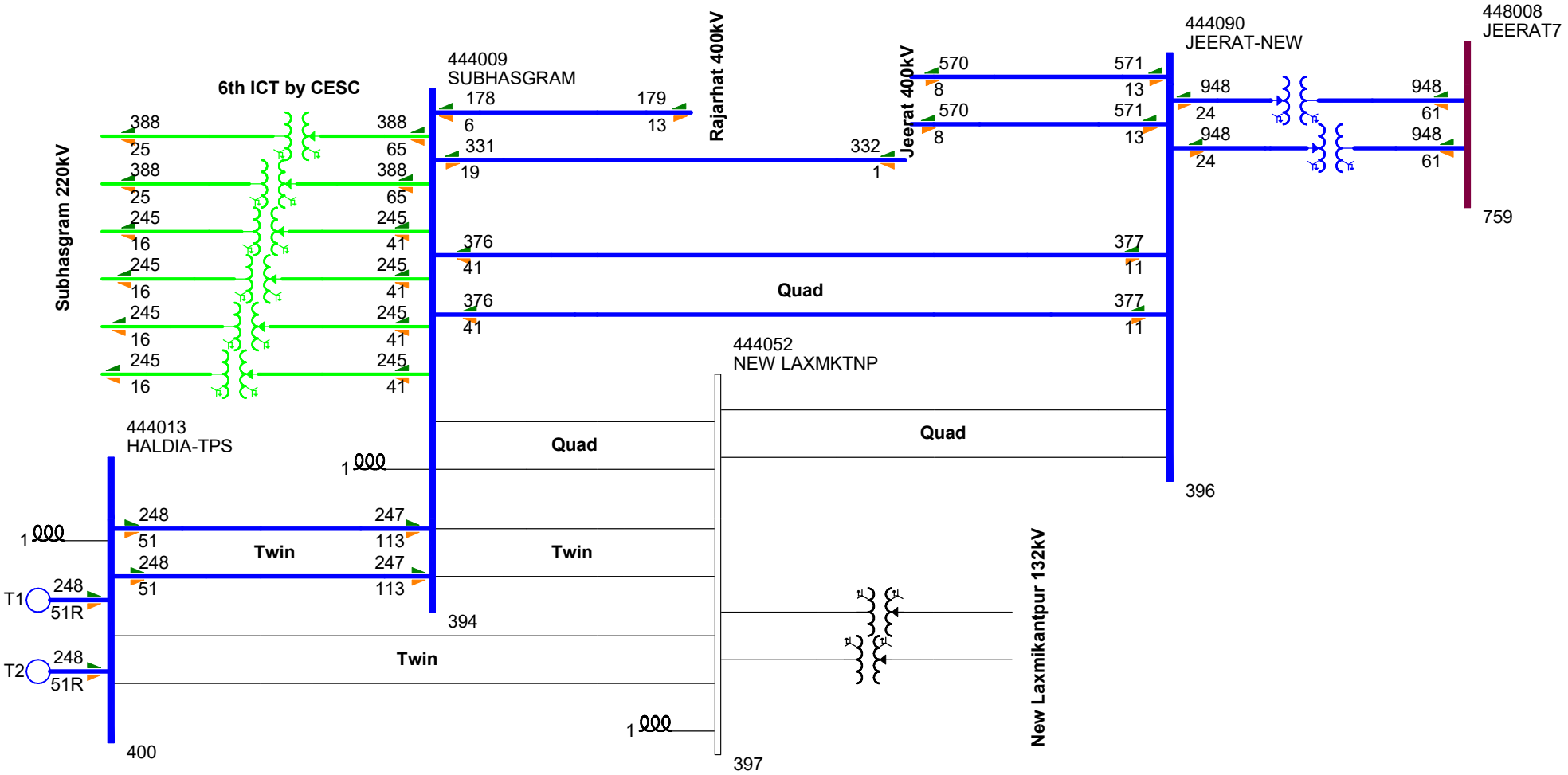
i) Any change in the contents of the NOC shall be conveyed to the party to whom NOC was given, atleast 180 days prior to the day of transaction. In such cases, the RLDC(s)/NLDC shall also be informed simultaneously.

Signature
Name
Designation
(Authorized Signatory of STU)
Place:
Phone No.:
Date:

Establishment of 400/132kV New Laxmikantpur S/s by WBSETCL

Case 0 - Base case

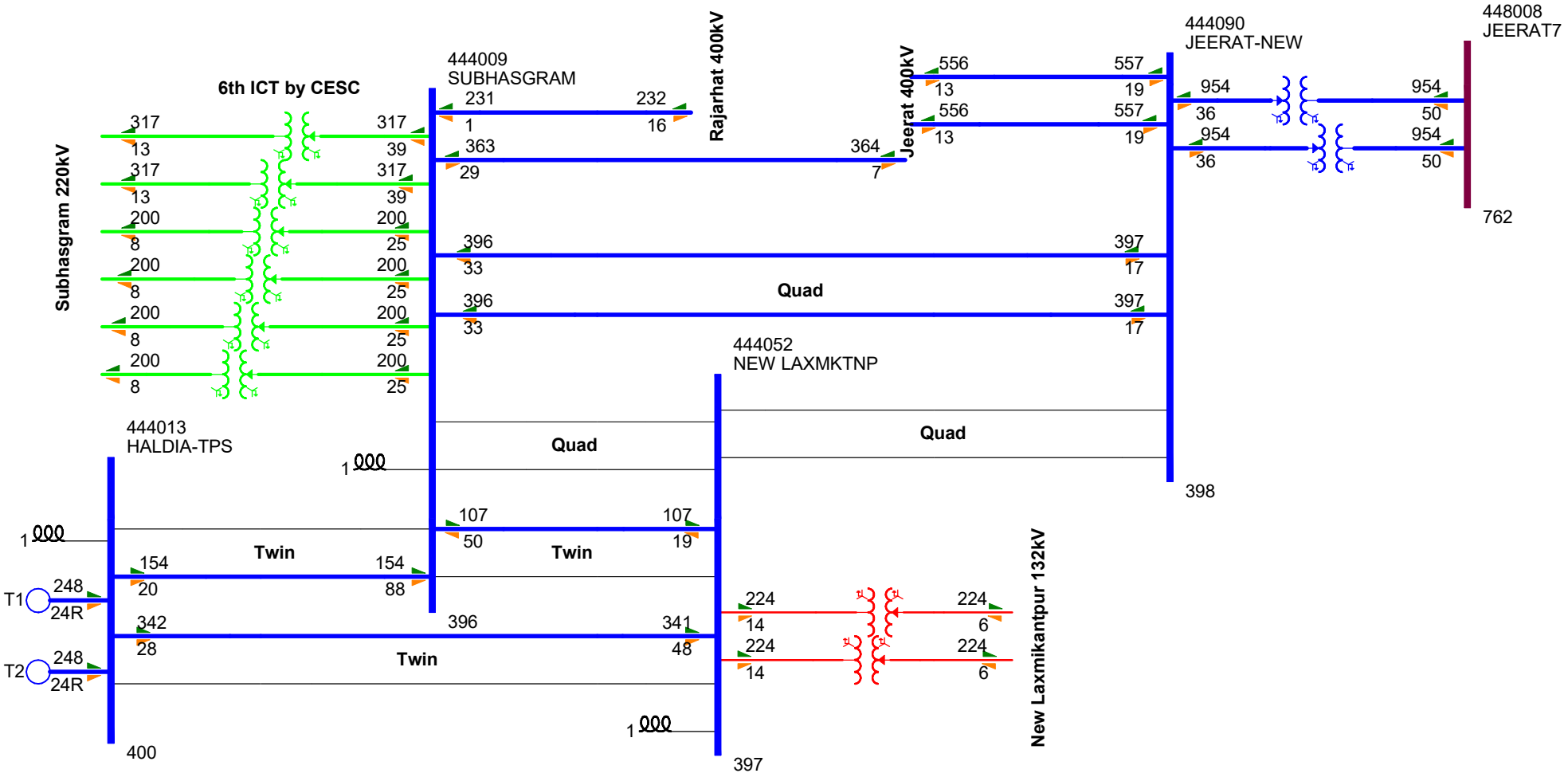
Timeframe: 2027-28 Scenario-5 June Peak load



Establishment of 400/132kV New Laxmikantpur S/s by WBSETCL

Case 1 - 1 ckt LILO of Twin Line

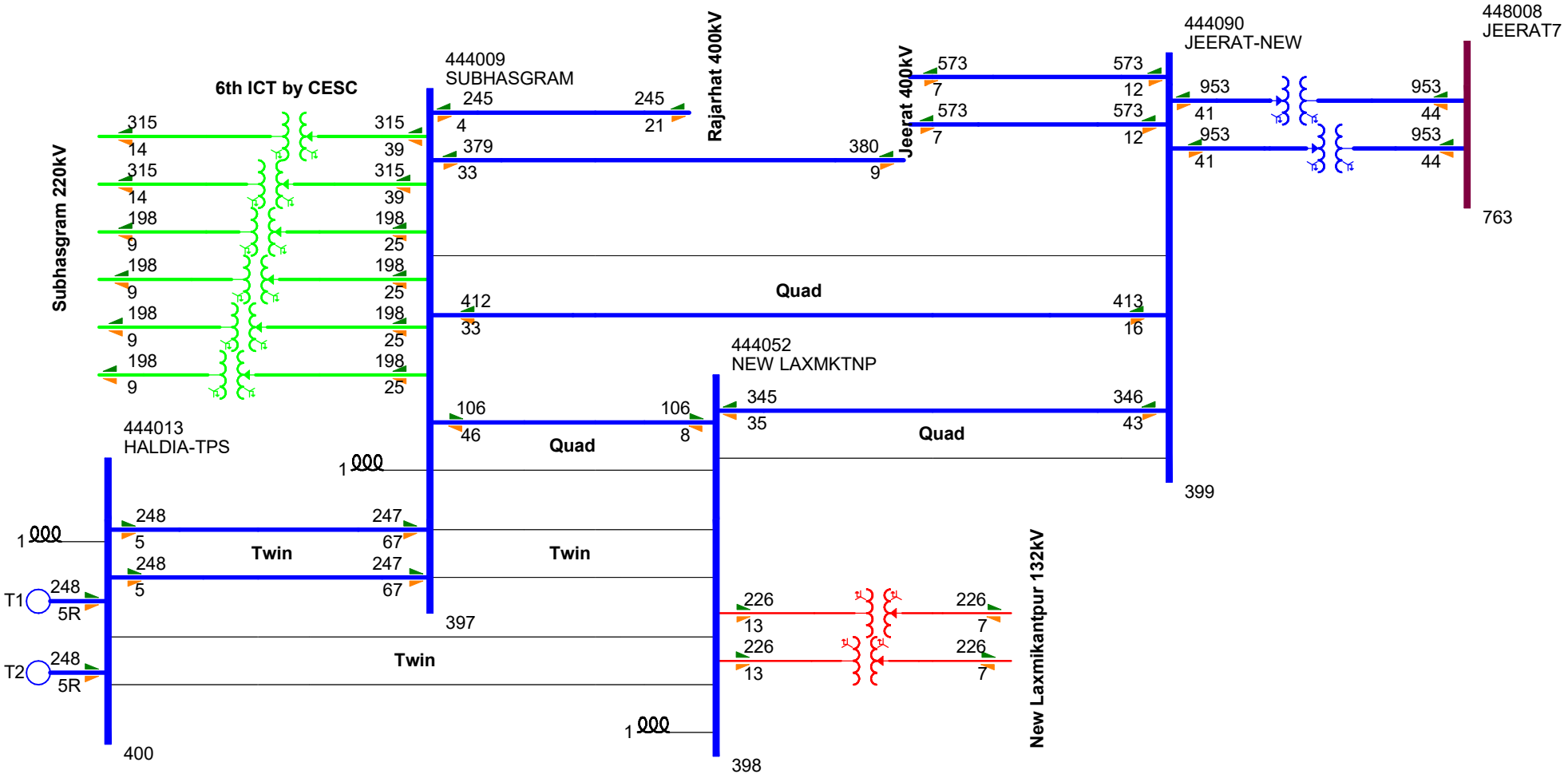
Timeframe: 2027-28 Scenario-5 June Peak load



Establishment of 400/132kV New Laxmikantpur S/s by WBSETCL

Case 2 - 1 ckt LILO of Quad Line

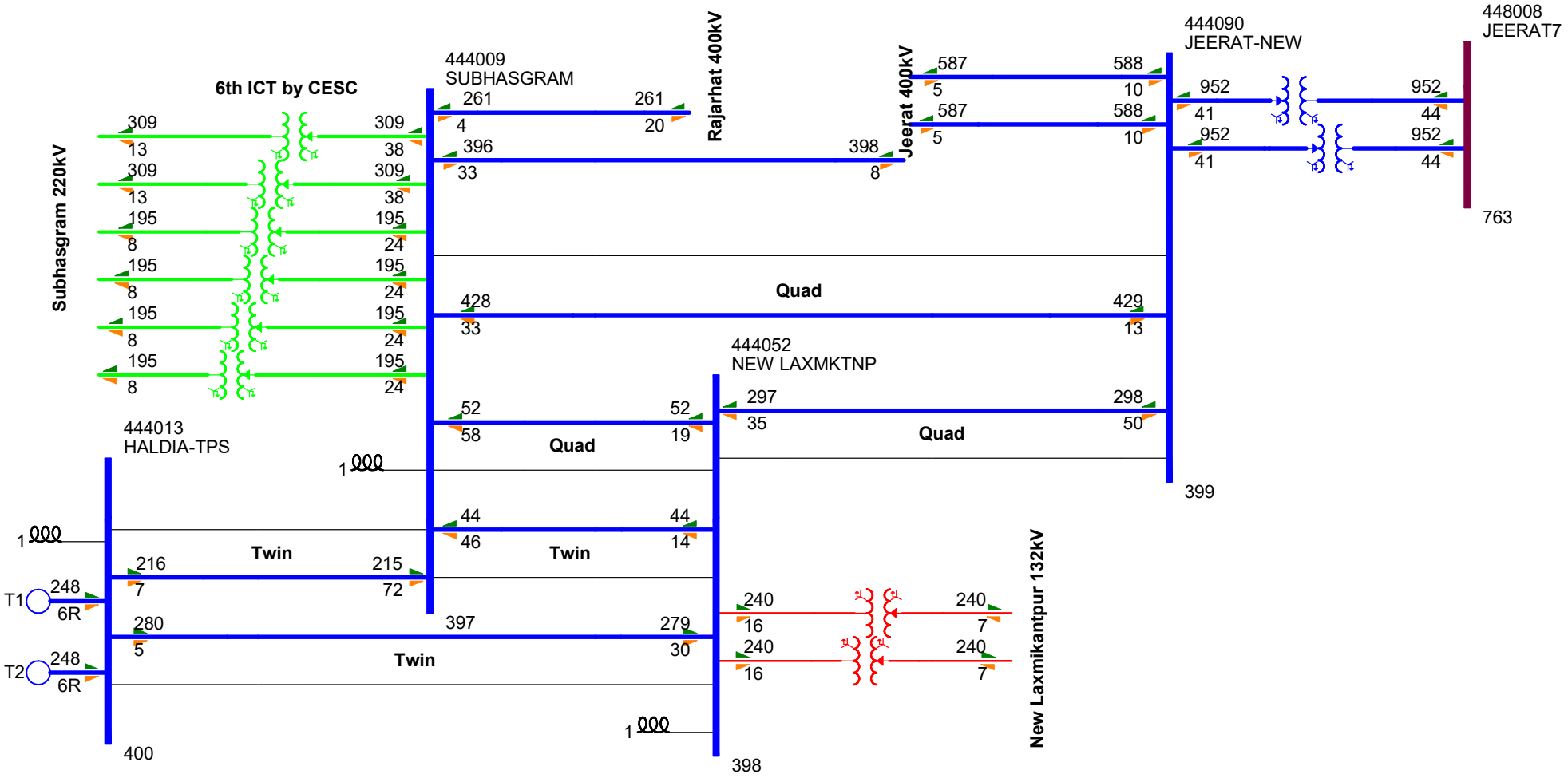
Timeframe: 2027-28 Scenario-5 June Peak load



Establishment of 400/132kV New Laxmikantpur S/s by WBSETCL

Case 3 - 1 ckt LILO of Twin Line and 1 ckt LILO of Quad Line

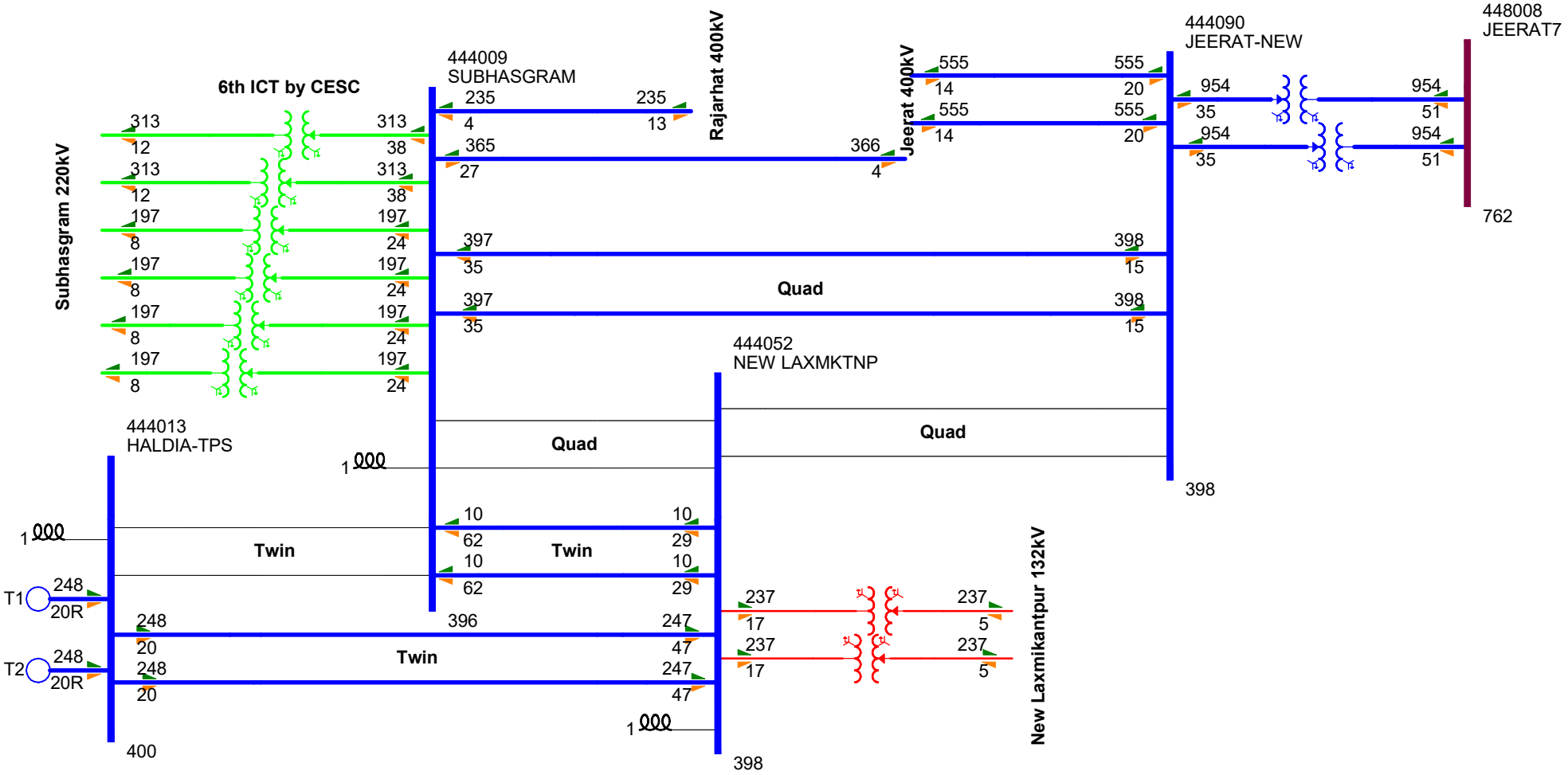
Timeframe: 2027-28 Scenario-5 June Peak load



Establishment of 400/132kV New Laxmikantpur S/s by WBSETCL

Case 4 - 2 ckt LILO of Twin Line

Timeframe: 2027-28 Scenario-5 June Peak load



Establishment of 400/132kV New Laxmikantpur S/s by WBSETCL

Case 5 - 2 ckt LILO of Quad Line

Timeframe: 2027-28 Scenario-5 June Peak load