सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

सं. उक्षेविस/ वाणिज्यिक/ 209/ आर पी सी (64वीं)/2023/3933-3980 दिनाँक: 12, April, 2023

सेवा में / To,

उ.क्षे.वि.स. के सभी सदस्य (संलग्न सूचीनुसार)
Members of NRPC (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 64वीं बैठक का कार्यवृत ।
Subject: 64th meeting of Northern Regional Power Committee – MoM

महोदय / Sir,

उत्तर क्षेत्रीय विद्युत समिति की 64वीं बैठक दिनांक 24.03.2023 को धर्मशाला, हिमाचल प्रदेश में आयोजित की गयी थी । बैठक का कार्यवृत संलग्न है। यह उ.क्षे.वि.स. की वेबसाइट (http://164.100.60.165/) पर भी उपलब्ध है।

The 64th meeting of Northern Regional Power Committee (NRPC) was held on 24.03.2023 at Dharamshala, Himanchal Pradesh. MoM of the same is attached herewith. The same is also available on NRPC Sectt. website (http://164.100.60.165/).

भवदीय
Yours faithfully,

Naresh

(नरेश भंडारी) 12/4/23
(Naresh Bhandari)
सदस्य सचिव
Member Secretary

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18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e- mail: ms-nrpc@nic.in Website: www.nrpc.gov.in

NRPC Members for FY 2023-24				
S. No.	**NRPC Member**	**Category**	**Nominated Member**	**E-mail**
1	Member (GO&D), CEA	-	-	member.god.cea@gov.in
2	CTUIL	Central Transmission Utility	Chief Operating Officer	pcgarg@powergrid.in
3	PGCIL	Central Government owned Transmission Company	Director (Operations)	tyagir@powergrid.in
4	NLDC	National Load Despatch Centre	Executive Director	scsaxena@grid-india.in
5	NRLDC	Northern Regional Load Despatch	Executive Director	rk.porwal@grid-india.in
6	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
7	BBMB		Chairman	cman@bbmb.nic.in
8	THDC		ED (PSP&APP)	lpjoshi@thdc.co.in
9	SJVN		CMD	sectt.cmd@sjvn.nic.in
10	NHPC		Director (Technical)	ykchaubey@nhpc.nic.in
11	NPCIL		Director (Finance)	df@npcil.co.in
12	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
13	Haryana SLDC		Chief Engineer (SO&C)	cesocomm@hvpn.org.in
14	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
15	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
16	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
17	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
18	Himachal Pradesh SLDC		Managing Director	mdhpsldc@gmail.com
19	DTL	State Transmission Utility	CMD	cmd@dtl.gov.in
20	HVPNL		Managing Director	md@hvpn.org.in
21	RRVPNL		CMD	cmd.rvpn@rvpn.co.in
22	UPPTCL		Managing Director	md@upptcl.org
23	PTCUL		Managing Director	md@ptcul.org
24	PSTCL		CMD	cmd@pstcl.org
25	HPPTCL		Managing Director	md.tcl@hpmail.in
26	IPGCL	State Generating Company	Managing Director	md.ipgpp@nic.in
27	HPGCL		Managing Director	md@hpgcl.org.in
28	RRVUNL		CMD	cmd@rrvun.com
29	UPRVUNL		Managing Director	md@uprvunl.org
30	UJVNL		Managing Director	md@ujvnl.com
31	HPPCL		Managing Director	md@hppcl.in
32	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
33	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Director (Projects)	directorprojects@dhbvn.org.in
34	Jaipur Vidyut Vitran Nigam Ltd.		Managing Director	md@jvvnl.org
35	Madhyanchal Vidyut Vitaran Nigam Ltd.		Managing Director	mdmvvnl@gmail.com
36	UPCL		Managing Director	md@upcl.org
37	HPSEB		Managing Director	md@hpseb.in
38	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head (Commercial & Regulatory)	sanjay.bhargava@tatapower.com
39	Aravali Power Company Pvt. Ltd		CEO	SRBODANKI@NTPC.CO.IN
40	CLP Jhajjar Power Ltd.,		CEO	rajneesh.setia@apraava.com
41	Talwandi Sabo Power Ltd.		COO	Vibhav.Agarwal@vedanta.co.in
42	Nabha Power Limited		CEO	sk.narang@larsentoubro.com
43	Lanco Anpara Power Ltd		President	sudheer.kothapalli@lancogroup.com
44	Rosa Power Supply Company Ltd		Station Director	Hirday.tomar@relianceada.com
45	Lalitpur Power Generation Company Ltd		Managing Director	vksbankoti@bajajenergy.com
46	MEJA Urja Nigam Ltd.		CEO	hopmeja@ntpc.co.in
47	Adani Power Rajasthan Limited		COO, Thermal, O&M	jayadeb.nanda@adani.com
48	JSW Energy Ltd. (KWHEP)		Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
49	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	CEO	sumant@renew.com
50	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	Chief Engineer, JKPTCL	sojpdd@gmail.com
51	UT of Ladakh		Chief Engineer, LPDD	cepdladakh@gmail.com
52	UT of Chandigarh		Executive Engineer, EWEDC	elop2-chd@nic.in
53	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	CEO	Amarjeet.Sheoran@relianceada.com
54	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)	Vice-President	nihar.raj@adani.com
55	Adani Enterprises	Electricity Trader (nominated by central govt.)	Head (Trading)	anshul.garg@adani.com

Contents

उत्तरी क्षेत्रीय विद्युत समिति की 64वीं बैठक

64th MEETING OF NORTHERN REGIONAL POWER COMMITTEE

Date of NRPC meeting: 24th March 2023

Venue: Dharamshala, Himachal Pradesh

Minutes of Meeting

ED, POWERGRID, NR-2 welcomed all the delegates to 64th NRPC meeting and stated that it was their privilege to host this meeting which is also 1st physical meeting after hard times of COVID-19 pandemic.

Member Secretary, NRPC welcomed all the esteemed delegates of Northern region to this 64th Meeting of NRPC and thanked POWERGRID in taking initiative for hosting the meeting and making a nice comfortable stay arrangement for delegates. He appreciated efforts of power engineers and highlighted during this winter season there was no significant event affecting grid security. He stated that upcoming summer season will be very difficult and availability of hydro generation during coming summer season is very crucial. He stated that reliability of communication and healthiness of protection systems need to be ensured by the utilities. He stressed that issues being faced during integration of RE generators need to be resolved expeditiously. He also informed the forum that a National Portal for surplus power has been inaugurated by Hon'ble Minister of Power and New & Renewable Energy and table agenda regarding features of portal will be taken by NRPC in this meeting. He highlighted that the portal will be a good avenue for stakeholders to tap the available resource and surplus power Pan-India. A key feature of the portal is that the power availability will be at a regulated (tariff determined by commission) price and the stakeholders will not experience any price fluctuations like market portals. This will help in managing deficit of power in a particular region by surplus power in another region.

Chairperson, NRPC and CMD, DTL also welcomed all the delegates to 64th NRPC Meeting. He stated that as already highlighted this is 1st Physical meeting after pressing times of lockdown and COVID-19 pandemic which had been very challenging time for all of us. He congratulated and appreciated all concerned whose collective efforts have made sure that such difficult times go without any major incidence. He highlighted that period for 01st April to 15th May is very critical and MoP has directed all the Thermal Plants to be ready for generation by the end of this months and requested all the concerned utilities to take necessary action for smooth functioning of the grid with reliability and optimum economy.

He thanked POWERGRID and their officers for the efforts put by them in hosting this meeting and for excellent arrangements for the comfortable stay of the participants.

The list of participants enclosed as **Annexure – A.0**

A.1 Approval of MoM of 63rd NRPC meeting

A.1.1 EE (P&SS), NRPC apprised the forum that minutes of 63rd NRPC meeting (held on 24.02.2023) had been issued vide letter dtd.14.03.2023 and no comments have been received till the date.

A.1.2 Forum approved the minutes.

A.2 Procedure for Shifting of Transmission Lines involving work by other Infrastructure Developers (Agenda by NRPC Sectt.)

A.2.1 EE (P&SS), NRPC informed members that Central Electricity Authority (CEA) vide letter dtd. 10.03.2023 has intimated approved “Procedure for Shifting of Transmission Lines involving work by other Infrastructure Developers” for compliance of all stakeholders which is enclosed as **Annexure-A.I** He briefed members regarding salient points of procedure.

A.2.2 NRLDC suggested that advance intimation to RLDC/RPCs is desirable for planning of shutdown of lines.

A.2.3 PSTCL stated that procedure may be adopted by states also for uniformity in respect of ISTS lines. However, states may be free to decide supervision charges for intra-state lines.

A.2.4 POWERGRID highlighted that 10-month timeline for completion of works can be assured only if shutdown planning has been done accurately. It was stated that deemed availability to transmission licensee has been given if transmission customers are not affected, however compensation due to loss of generation in case of shutdown of generators has not been mentioned in the procedure.

A.2.5 MS, NRPC stated that shutdown is planned in such a way that generation loss does not happen during planned shutdown for diversion works. NRLDC also agreed that generation optimization is being done to avoid any loss while approving the shutdown.

A.2.6 Forum took a note of the procedure.

A.3 Database of protection settings (Agenda by NRPC Sectt.)

A.3.1 EE (P&SS), NRPC stated that protection setting for Transmission lines, ICTs and Reactors had been collected by NRPC (in excel formats) in line with recommendation of ‘Task Force on Power System Analysis under Contingencies’.

A.3.2 In the 44th Protection Sub-Committee (PSC) meeting (held on 12.04.2021), it was decided that the process of Web Based Protection setting database may be initiated parallel to collection of protection setting as majority of data for 400 kV and above Transmission lines, ICTs and Reactors had been collected. Accordingly, a committee for preparing comprehensive specifications for relay setting parameters for Web based database was constituted.

A.3.3 The committee has submitted the report, however in 46th PSC meeting (held on 22.12.2022), it was decided that database work may be taken up further only after notification of final IEGC by Hon'ble CERC as scope of tender may vary as per requirement. It was also decided that, meanwhile, implementing agency and funding mode may be decided by NRPC forum.

A.3.4 MS, NRPC suggested that POWERGRID may implement centralized database for NRPC as they already have similar application in their organization.

A.3.5 NRLDC expressed requirement of such application to monitor if protection settings are co-ordinated amongst utilities.

A.3.6 MS, NRPC stated that utilities will be given login credential and they will have to update protection setting regularly, hence latest protection setting database will be available at portal. This database will help in protection setting analysis also.

A.3.7 POWERGRID stated that NRPC may also adopt similar mode as that of ERPC.

A.3.8 MS, NRPC stated that NRPC had also floated tenders in past for database as done by ERPC. But, every time, only one organization tendered bid. Therefore, due to single bid, tenders were cancelled.

A.3.9 MS, NRPC requested that POWERGRID may take initiative in this regards and funding from the NRPC fund may be allowed.

A.3.10 NRLDC stated that POWEGRID may develop the application in-house or may get it done through tendering also.

A.3.11 POWERGRID suggested that modalities for the portal can be decided by an expert committee.

A.3.12 MS, NRPC emphasized that work on this database may be started without waiting further as issuance of final IEGC seems delayed and we cannot wait indefinitely.

A.3.13 Members agreed for expenditure from NRPC Fund and POWERGRID was requested to initiate the modalities.

A.4 Regarding declaring 400/220/33KV ICT 2 at Ludhiana Substation as Regional Spare (Agenda by POWERGRID)

A.4.1 POWERGRID apprised that during 4th meeting of Northern Regional Power Committee (Transmission Planning) [NRPC (TP)] held on 05.10.2021 & 12.10.2021, it was agreed

that 1x315MVA 400/220KV ICT at POWERGRID Ludhiana Substation to be augmented with 1x500MVA 400/220kv ICT. Further it was also agreed that the 315MVA ICT spared from Ludhiana Substation may be shifted to Bhinmal Substation for commissioning. The relevant extracts from 4th NRPC (TP) is attached herewith at **Annexure-A.II.**

A.4.2 During the 11th Consultation Meeting for Evolving Transmission Schemes in Northern Region held on 30.03.2022, it was further agreed that 1x315MVA 400/220kv ICT-1 to be replaced with 1x500MVA 400/220kV ICT at POWERGRID Ludhiana and the 315MVA ICT will be used as regional spare. The relevant extracts from 11th CMETS in NR is attached herewith at **Annexure-A.III.**

A.4.3 During 62nd NRPC meeting (held on 31.01.2023), it was decided that POWERGRID shall provide one 315 MVA transformer (earlier to be shifted to Bhinmal) from Ludhiana substation to DTL Mundka on returnable basis in view of request of DTL for preparation of G-20 meeting scheduled in Sept'2023. Copy of the same is attached herewith at **Annexure-A.IV.**

A.4.4 In view of above, is proposed that:

i) 400/220/33KV, 315 MVA ICT at Ludhiana removed in May 2022, which is being diverted to DTL Mundka on returnable basis, may be declared as regional spare in place of being shifted to Bhinmal.

ii) 400/220/33KV, 315MVA ICT, which will be removed from Ludhiana in May 2023 after its augmentation, may be diverted to Bhinmal substation, in place of keeping it as regional spare.

A.4.5 CTU stated that proposal of POWERGRID may be considered, however commissioning of Bhinmal ICT was awarded to POWERGRID for completion by April, 2023. He stated that remaining ICTs are already n-1 non complaint [80% loaded in winter timeframe] and 03rd ICT will be required in early winter season due to Rabi crop season in Rajasthan.

A.4.6 POWERGRID stated that LoA for shifting of ICT from Ludhiana will be issued shortly and thereafter shifting will be done within 01 month. He stated that works for construction of associated transformer bays is being started with timeline of 08 months and they shall make effort to complete the works by Nov'23.

A.4.7 CMD RVPN & MS, NRPC requested POWERGRID to commission Bhinmal ICT at the earliest.

A.4.8 POWERGRID was requested to share updated list of regional spare and their location to NRPC Sectt.

A.4.9 Forum approved proposal of POWEGRID.

A.5 Payment made by BRPL and BYPL under Force Majeure Clause (Agenda by SJVNL)

A.5.1 SJNV stated that BRPL and BYPL vide Notice No. HOD(PMG)/BRPL/2021-22/911 dated 06.05.2021 and Notice No. BYPL/PMG/2021-22/2131 dated 06.05.2021 intimated SJVN that they had invoked Force Majeure under Power Purchase Agreement dated 27.03.2003.

A.5.2 SJVN had already cleared its stand to both BRPL and BYPL, that SJVN had not allowed any Force majeure events to any of its beneficiaries.

A.5.3 Further during COVID outbreak in 2020, Ministry of Power (MoP), GOI had asked every generator to pass on special covid rebate to all its DISCOMS for further passing on to end consumers.

A.5.4 SJVN had passed on special rebate to all of its beneficiaires in the month of June 2020.This Rebate was passed on to BRPL and BYPL as well.

A.5.5 Keeping in view of above, it was informed to BRPL and BYPL that all the payments made by BRPL and BYPL are considered as under normal payments and no relaxation whatsover is allowed as per force majure clause.

A.5.6 SJVN requested forum to advise BRPL and BYPL to make all the payments in future without invoking Force majeure clause.

A.5.7 MS, NRPC desired to know from BRPL why this force majeure condition is claimed by BRPL/BYPL only and not by TP-DDL.

A.5.8 BRPL informed in the meeting that it is a legal issue and there are many Force Majeure conditions other than COVID. He stated that payments are being done regularly and issue is being governed by legal clauses and PPAs, hence it may be deliberated bilaterally with SJVNL. He stated that issue is taken up by their legal team and stated that NRPC forum should not involve itself in bilateral PPA issues.

A.5.9 MS, NRPC stated that if issue is persisting and aggrieved party comes to forum, it means bilateral talks are not fruitful. Therefore, we may not be spectators and we may find out solution as NRPC forum has mandate to find amicable solutions.

A.5.10 BRPL stated that SJVN has never given them any formal communication in this regard.

A.5.11 MS, NRPC stated that SJVN may take up the issue bilaterally and may intimate the status in next NRPC meeting. In case of non- convergence on the issue, the same may be discussed in next NRPC meeting.

A.5.12 Forum agreed for the same.

A.6 Members of NRPC and Chairperson, NRPC for FY 2023-24 (Agenda by NRPC Sectt.)

A.6.1 EE (P&SS), NRPC apprised that as per MoP gazette resolution F. No. 23/21/2021-R&R dtd. 03.12.2021, one representative from following organizations are members of NRPC:

i. Central Generating Companies, CTU, NLDC, NRLDC
ii. State Generating Company, State Transmission Utility (STU), State Load Despatch Centre (SLDC)
iii. One of the State owned distribution companies as nominated by the State Government
iv. One distribution company by alphabetical rotation out of the private distribution companies functioning in the region.
v. A representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.
vi. A representative each of every generating company (other than central generating companies or State Government owned generating companies) having more than 1000 MW installed capacity in the region.
vii. A representative of the generating companies having power plants in the region (not covered in (i) to (vi) above) by alphabetical rotation.
viii. A representative of one private transmission licensee, nominated by Central Government, operating the Inter State Transmission System, by alphabetical rotation out of such Transmission Licensee operating in the region.
ix. One member representing the electricity traders in the region by alphabetical rotation, which have trading volume of more than 500 million units during the previous financial year.
x. A representative each of every Nodal Agency appointed by the Government of India for coordinating cross-border power transactions with the countries having electrical inter-connection with the region

Accordingly, list of members for FY 2023-24 was discussed and final list is attached as **Annexure-A.V.**

A.6.2 He further informed that CMD, DTL has been Chairperson for FY 2022-23, accordingly next chairperson may be from state of Haryana on alphabetical rotational basis.

A.6.3 MS, NRPC stated that a letter will be written by NRPC sect to Principal Secretary (Power), Haryana for Nomination of Chairperson, NRPC for the FY 2023-24.

A.6.4 Members agreed the same.

A.7 OPGW installation on existing 400 kV Kota – Merta line which is LILOed at Sri Cement & Proposed to be LILOed at 765/400 kV Beawar (ISTS) S/s (Agenda by CTUIL)

A.7.1 EE (P & SS), NRPC apprised forum that agenda on OPGW installation on 400 kV Kota – Merta line (256kms.) which is LILOed at Sri Cement & Proposed to be LILOed at 765/400 kV Beawar (ISTS) S/s was discussed in 57th & 63rd NRPC meeting wherein it was deliberated that as per Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, PMU is required at both ends of 400kV line bays. Shri Cement had stated that they will review whether this is mandatory for old Generators also and will revert back.

A.7.2 CTU informed that no inputs have been received from Shri Cement. He highlighted that in the past similar plants such ADHPL, Budhil, Karcham Wangtoo, Sorang HEP etc. were connected through OPGW by Central sector itself. He requested that similarly OPGW on LILO portion of 400 kV Kota – Merta line may also be done under Central sector.

A.7.3 Rajasthan disagreed for OPGW on LILO portion by Central Sector and stated that due procedure needs to be fixed in such cases and mere following precedence may not be adequate.

A.7.4 Delhi stated that it may be implemented under central sector for system improvement.

A.7.5 MS, NRPC highlighted that old decisions highlighted by CTU need to be examined in detail before arriving at any decision. He stated that LILO has been constructed by Sri Cement, hence previous terms and conditions of connectivity may be studied. He suggested that connectivity agreement with Sri Cement needs to be studied by CTU and inputs may be apprised to the forum.

A.7.6 CTU stated that connectivity agreement done in old times, has generally not covered such issues, however they will check it thoroughly.

A.7.7 NRLDC stated that it may also be ensured in future that connectivity agreements shall include provision for bearing cost for future additional requirements as per changing rules and regulations.

A.7.8 MS, NRPC stated that a separate meeting with CTU, Sri Cement, NRLDC and NRPC may be done for studying connection agreement and old decisions.

A.8 Providing redundant communication to 400kV Manesar Substation (Agenda by CTUIL)

A.8.1 CTU apprised forum that presently 400kV Manesar sub-station is connected through ISTS communication network via following two (02) transmission lines:

(i) 400kV D/C Manesar-Neemrana.

(ii) 400kV D/C Manesar- Gurgaon.

400kV D/C Manesar- Gurgaon line is LILOed at Sohna Sub-station and further proposed to be LILOed at Neemrana-II S/s under Rajasthan REZ Ph-IV (Part-B).

A.8.2 Manesar-Neemrana link & Manesar-Sohna/Gurgaon link is regularly being disrupted due to diversion works associated with highways being in close proximity of NH-8, Kundli-Manesar-Palwal Expressway, Delhi-Mumbai Expressway, Sohna elevated corridor, etc.

A.8.3 Manesar S/s is an important wideband node of Northern Region in view of WAMS PDC backup housed at Manesar.

A.8.4 It is proposed that one more backup communication path may be planned to Manesar. Additional link can be created by laying OPGW from the crossing point of Neemrana – Manesar (2nd E/W peak of the line) & Agra-Jhatikara line upto Jhatikara & Manesar, which will be around 35 kms. This agenda was also discussed in the 3rd Meeting of CTUIL for Planning of Communication System for Inter-State Transmission system (ISTS) in Northern Region held on 17.02.2023.

A.8.5 Details of proposed link is given below in the figure:

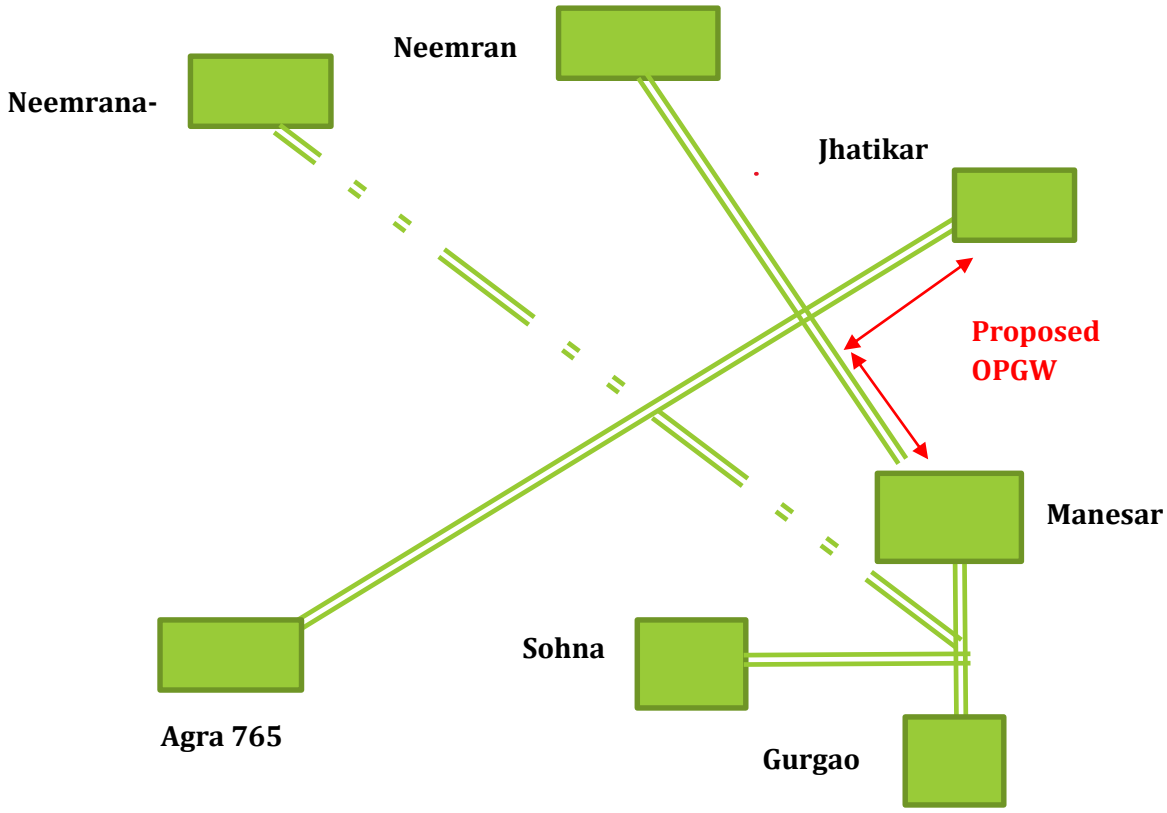


Figure-1

A.8.6 Line length of proposed OPGW installation is 35 kms. with cost estimate of approx. Rs. 1.75 Crs. including terminal equipment. After approval this work shall be awarded to

owner of the asset in RTM mode with completion schedule of 18 months from the date of allocation.

A.8.7 MS, NRPC stated that agenda may be first discussed in TeST meeting of NRPC for having details scrutiny of the proposal and then it may be put up for approval of NRPC forum.

A.8.8 Forum agreed for the same.

A.9 Redundant communication for Narora (NAPP) (NPCIL) (Agenda by CTUIL)

A.9.1 CTU apprised the forum that redundant communication for Narora (NAPP) (NPCIL) was deliberated in the 2nd ISTS planning meeting of NR also in 20th TesT meeting of NRPC.

A.9.2 The agenda was also discussed in the 3rd Meeting of CTUIL for Planning of Communication System for Inter-State Transmission system (ISTS) in Northern Region held on 17.02.2023, wherein UPPTCL informed that they have included NAPP – Atrauli link (38 kms.) in their proposed OPGW package awarded to TCIL. Using NAPP – Atrauli link data of NAPP may be routed through following links upto ISTS node:

"*Narrora (NAPP) – Atrauli – Aligarh (400) – Sikandara Rao – Kasganj- Etah – Mainpuri (UP) – Mainpuri (PG) - NRLDC*"

A.9.3 It is proposed that alternate path may be explored with lesser hops e.g. Narrora – Sibhauli UPPTCL link, where OPGW needs to be installed on Narrora – Sibhauli (UPPTCL) line which is around 88 kms. Sibhauli is already connected with ISTS communication network.

A.9.4 CTU requested UPPTCL to inform status of amendment feasibility in the awarded tender.

A.9.5 UPPTCL informed that shifting of Narora-Atrauli OPGW laying to Narora-Simbhauli may not be possible, however they are trying to include OPGW laying on Narora-Simbhauli as an additional works.

A.9.6 Forum decided that OPGW laying path may be finalized first in TeST sub-committee and then may be put up for approval of NRPC.

A.10 Redundant connectivity between Aulsteng (JKPTCL) and Drass (POWERGRID) (Agenda by UT of Ladakh)

A.10.1 Ladakh representative stated that Ladakh is connected to rest of the Grid through 220kV SLTS Line between Aulsteng (JKPTCL) and Drass (POWERGRID). During peak winter when temperature is below -40 Degree, only source of power supply to Ladakh area is above Transmission Line and outage of above line results in power crisis in UT of Ladakh as the discharges in the Hydel Power Stations are also very low and not able to

meet the load demand which is at annual peak due to heating load. In addition to meeting load requirement of Ladakh area in peak winter, this link also evacuates power generated in Alchi and Chutak Hydro stations of NHPC in Ladakh area to rest of the GRID.

A.10.2 He highlighted that as per CEA manual of transmission planning criteria Jan '2013, "All the equipment in the transmission system shall remain within their normal thermal and voltage ratings after a disturbance involving loss of any one of the elements (called single contingency or 'N-1' condition), but without load shedding / rescheduling of generation".

A.10.3 In view of above, he emphasized that providing redundant connectivity at 220kV level, connecting UT of Ladakh with rest of the GRID may please be reviewed in compliance to CEA manual of transmission planning criteria Jan '2013, so as to provide stable/reliable connectivity to UT of Ladakh. Moreover, there will be no generation loss due to outage of one link.

A.10.4 He also apprised that peak demand in winter is 70 MW, however NHPC generation at times is only 15 MW. Hence, redundant connectivity with ISTS grid is very essential for UT of Ladakh.

A.10.5 A video clip was also shown to forum by Ladakh regarding snow avalanche that covered towers of the above line.

A.10.6 CTU informed that for carbon neutrality, a Solar Park with 2.5 GW capacity was envisaged in the Zangla/Zanskar area of Kargil along with 400kV corridor (400 kV Zangla-Drass - New Alusteng - New Wanpoh & 400 kV New Alusteng - Amargarh D/c line and anchoring at 220 kV Drass and Alusteng). Subsequently, in the meeting held between Hon'ble Minister of Power and NRE and Hon'ble LG of J &K on 15.12.2022, UT of J&K proposed for setting up about 400 MW solar power station along with battery storage in Kargil for addressing power supply position of J&K and suggested for utilization of existing Alusteng - Leh 220 kV S/c line for wheeling the power from proposed solar project to the valley. Hence, considering the land constraints in Kargil and margin available in the existing Alusteng - Leh 220 kV S/c line, NTPC and SECI were directed to survey and identify location(s) of RE projects along with storage.

A.10.7 Further, a meeting was convened by CEA in Feb'23 wherein it was decided that as directed by MoP vide letter dated 23.12.2022, SECI, NTPC with assistance from PDD, Ladakh, would perform the survey and identify suitable location(s) for setting up of RE projects in Ladakh. In case, contiguous land parcel is not available for 400 MW RE project at one location, small parcels of land may be explored for setting up small scale RE projects (say 50-60 MW) at discrete locations with feasibility of connecting to the local distribution sub-stations.

A.10.8 CTU stated that implementation of Transmission System Strengthening for 'Srinagar – Leh Transmission System is being implemented by POWERGRID. In above scheme, to mitigate the problem of avalanche prone zone, additional 15km of 220 kV cable in the section between Minamarg & Zojilla Top is being laid which would increase reliability of power to UT Ladakh.

A.10.9 CTU also stated that there is limitation of ROW in Ladakh, therefore corridor must be planned judiciously considering above aspects, Further JKPTCL has recently done a survey in Zojila pass wherein possibility of additional corridor (400kV) from Kashmir to Kargil through the Zojila pass for evacuation of RE power from Ladakh to J&K side is identified. Earlier POWERGRID had also done preliminary survey and identified one corridor. Hence, he stated that comprehensive plan considering all above approaches of distributed generation (Solar) along with BESS is also being explored and MoM of CEA will be shared with NRPC. Further 20 MW Solar project along with 50 MWh BESS is already under implementation by SECI in Leh.

A.10.10 UT of Ladakh requested that for immediate relief, an additional ISTS corridor from Kashmir to Drass may be planned. CTU stated that in view of above developments (Planning of distributed Solar generation along with BESS), they will deliberate the requirement with CEA and UT of Ladakh in a separate meeting.

A.10.11 MS, NRPC acknowledged the criticality of line and stated that it is really challenging to maintain this line in avalanche. He instructed CTU to take up the matter immediately. He stated that agenda may be regularly deliberated in monthly OCC meeting also.

A.10.12 MD, RVPN also emphasized on finding solution of the concern raised by UT of Ladakh.

A.11 Replacement of two 132 kV transmission lines of PTCUL (Agenda by PTCUL)

A.11.1 PTCUL apprised that there are mainly two sources of power in Kumaon region one is from 400 kV PGCIL Lines connected to 400 kV S/s Kashipur and the other is 220 kV Pantnagar –Bareilly Line which is connected to 220 kV Pantnagar S/s. PGCIL lines cater approximately 60 % load of Kumaon and partial load of Garhwal region also. Due to exponential growth in power demand of Kichha and ELDECO Sitarganj region, the existing Line is unable to cater power demand of above region. It is also to be noted that there is no possibility of erecting new line due to non-availability of ROW (Right of Way).

A.11.2 Therefore, replacement of ACSR Panther conductor in 132KV Sitarganj (PGCIL)-ELDECO Sitarganj single circuit line (22.0 Kms) and 132 KV Sitarganj –Kichha line (31.5Kms) with HTLS conductor is the only possible option to reduce the over loading of existing line and also to improve the reliability of the evacuation of power to cater the increased load demand in Kichha, ELDECO and nearby area through 132 KV Substation,

Kichha and ELDECO. This Line is the only gateway of power from 220kV PGCIL substation Sitarganj thereby it justifies the existence of 220 kV PGCIL S/s and provides stability to the grid by evacuating power from aforementioned PGCIL S/s.

A.11.3 The above proposal is eligible for 100 % funding from PSDF for which load flow analysis report of aforementioned lines is required for submission to central PSDF. PTCUL has the great opportunity of system strengthening. Hence, load flow analysis for replacement of 132KV Sitarganj (PGCIL)-ELDECO Sitarganj single circuit line (22.0 Kms) and 132 KV Sitarganj –Kichha line (31.5Kms) is proposed.

A.11.4 MS, NRPC stated that studies by PTCUL need to be examined by CEA and CTU, hence it may be submitted to them for further scrutiny.

A.11.5 CTU stated that proposal will be examined and comprehensive proposal may be discussed thereafter in NRPC.

A.12 PUShP portal (For Flexibilisation of PPA for Optimal Utilisation of Resources & Reduction in cost of Power for Consumers). (Table Agenda by NRPC sect)

A.12.1 EE (P&SS), NRPC stated that PUShP portal (https://nationalsurpluspower.in/) has been launched on 09th March, 2023 by Hon'ble Minister of Power and NRE. He stated that Portal would be a single window system providing services to diverse domains of all the entities involved and to reallocate and transfer the power in minimum time from one surplus entity to deficit entity.

A.12.2 He stated that during some months it has been observed that there is crisis in some states while other states have surplus power capacity and States which have surplus power continue to bear the fixed charge burden without using it which leads to high cost of power to the consumers. He stated that portal will provide a platform for optimal utilization of generating capacity and will resolve the above issues. He further informed that scheme will not disturb the existing arrangements rather an additional avenue shall be provided to stakeholders for optimal use of generating capacity. This scheme envisages paperless working for temporary allocation/transfer of power from surplus (Seller) entity to deficit (buyer) entity. He highlighted benefits of the portal that includes Flexibilisation of Power Purchase Agreement, Availability of power to DISCOMs, reduction in power cuts, reduction in fixed charge burden on the states having surplus power, Allocation /Transfer of Power at regulated tariff in a minimum time.

A.12.3 He further briefed about Key Benefits of the schemes which are as below-

i. None of the existing arrangements shall be disturbed, rather an additional avenue has been provided.

ii. The portal envisages temporary allocation/transfer of power; subjected to willingness of seller and Buyer, confirmation of transmission corridor by concerned agencies and confirmation of payment security on portal by the new Buyer/Gencos before scheduling of such power.
iii. Flexibilisation of Power Purchase Agreement
iv. Optimal Utilisation of Power due to Regional diversity and their increased availability.
v. Availability of power to DISCOMs will reduce power cuts.
vi. Meet the power demand of the country especially during the crisis situation in the month of April, May, September and October.
vii. Reduction in fixed charge burden on the states having surplus power.
viii. Allocation /Transfer of Power at regulated tariff.
ix. Reallocation of power in minimum time with automated process.
x. The scheme envisages a paperless working.

A.12.4 MS, NRPC stated that portal has been developed by NTPC after due approval of the scheme by MoP and login credentials have been shared with nodal officers. He requested utilities to explore the use of portal, study terms & conditions of the scheme and use the portal for more economical power. He stated that in case of any difficulties in the portal, NPC division of CEA may be contacted.

A.12.5 Members noted the information regarding portal.

A.13 Difference in drawl of Uttar Pradesh, SEM vs SCADA. (Table Agenda by UPSLDC)

A.13.1 EE (P&SS), NRPC apprised forum that UPSLDC has intimated (letter dtd. 22.03.2023 attached as **Annexure – A.VI**) regarding significant discrepancy in SEM and SCADA drawl from 27.02.2023 to 05.03.2023 which needs to be checked on urgent basis.

A.13.2 UPSLDC has intimated that LILO of 400KV Bareilly (PG) – Moradabad (UPPTCL) circuit – II at 400 KV Rampur (PRSTL) was done on 27.02.2023 and requested to check the data of actual drawl points and resolve the issue at the earliest.

A.13.3 NRLDC stated that some discrepancy was observed in meter data of 400 kV Varanasi – Jaunpur for that week and revised data has been shared with NRPC. It was also informed that NRPC has already issued revised accounts. UPSLDC was requested to check with the revised accounts.

A.13.4 It was decided that a meeting with UPSLDC, NRLDC and NRPC may be done to resolve the issue.

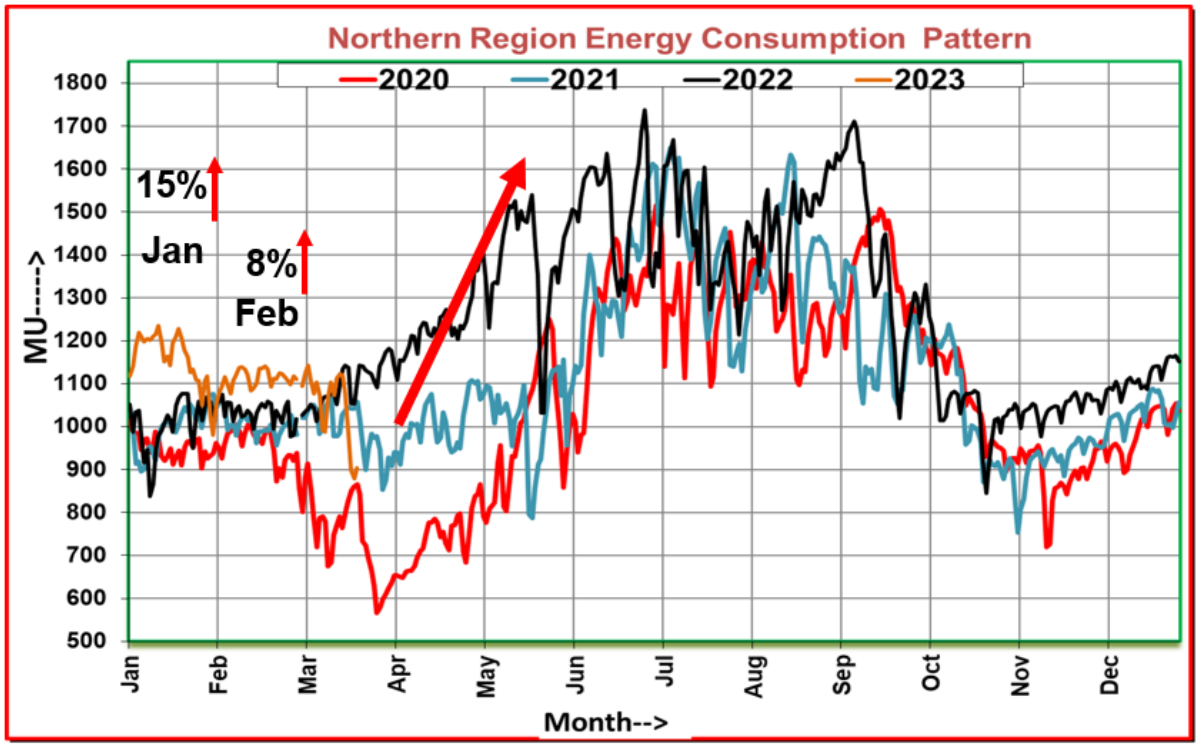
A.14 Actions for improvement in grid operation (state-wise) (Agenda by NRLDC)

A.14.1 NRLDC representative stated that maximum demand of most of the Northern Region states and of Northern Region occurs in the month of June and July.

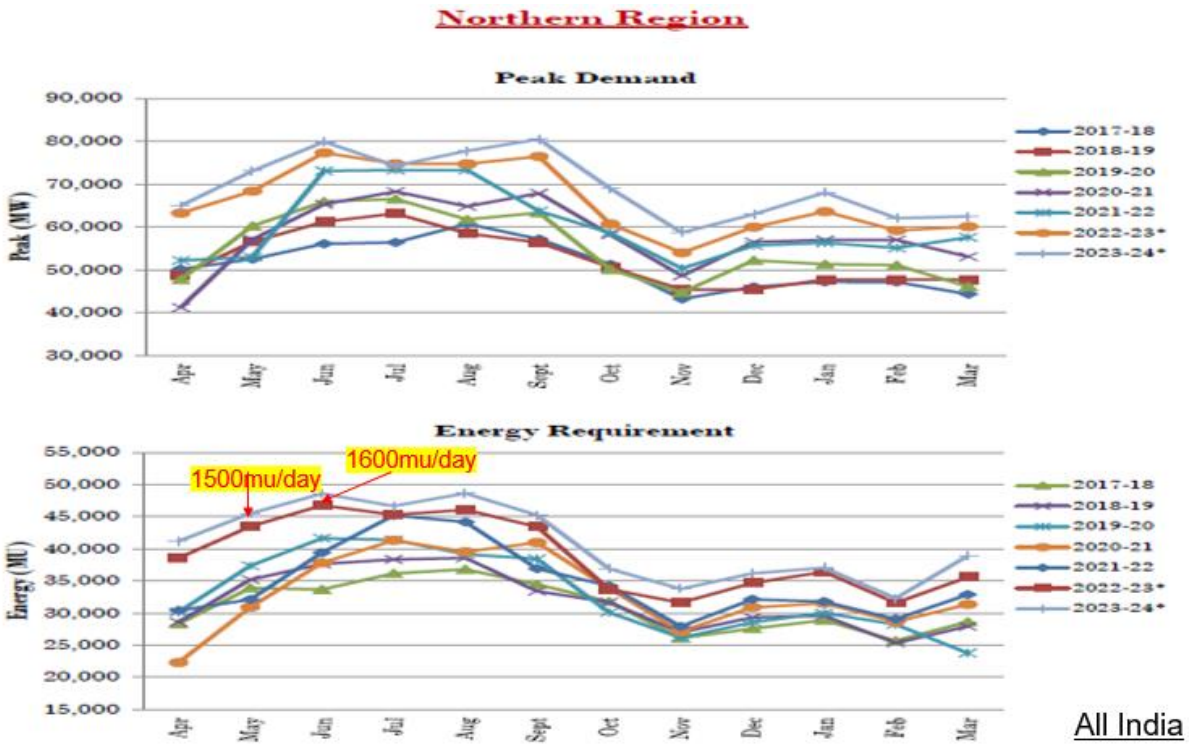
State	Maximum demand (in MW)	Date/ Time	Maximum energy consumption (MU)	Date
Punjab	14295	22.08.22 at 14:45	334.45	29.06.22
Haryana	12768	28.06.22 at 11:56	266.15	07.07.21
Rajasthan	17206	18.01.23 at 14:30	328.86	09.09.22
Delhi	7695	29.06.22 at 15:10	153.52	28.06.22
Uttar Pradesh	26589	09.09.22 at 21:39	547.360	19.08.22
Uttarakhand	2594	14.06.22 at 21:00	54.27	15.06.22
Himachal Pradesh	2071	06.01.23 at 09:45	37.0	06.01.23
J&K and Ladakh (UT)	3044	02.02.23 at 20:00	64.6	20.01.23
Chandigarh	426	08.07.21 at 15:00	8.41	08.07.21
Northern region	77006	28.06.22 at 11:50	1737.09	28.06.22

A.14.2 NRLDC representative further added that earlier maximum demand of Rajasthan occurred during winter, but now due to change in pattern of consumer behaviour (use of Air conditioner etc.) summer demand is also catching up. He also pointed out the peculiar demand pattern of Uttarakhand amongst hilly states due to increased industrial activity during summer season.

A.14.3 NRLDC representative pointed out that during previous year Norther Region witnessed peak demand during June and September months and stated that the demand for electricity in NR has grown by 15% and 8% Year-Over-Year (YOY) in January and February 2023, respectively. However, due to a western disturbance, the demand in March was lower than the previous year. It is important to note that demand usually surges sharply during April and May. The Indian Meteorological Department (IMD) has predicted normal maximum temperatures in April, and if the 5% YOY growth is considered, the demand for electricity in NR may surpass the previous year's demand in the 4th week of April. However, as per latest IMD forecast, there may be scattered to fairly widespread rainfall accompanied with thunderstorm/hailstorm/lightning likely over Western Himalayan Region & adjoining plains of north India, and isolated to scattered rainfall accompanied with thunderstorm/hailstorm/lightning over parts of Central India and eastern India, during many days of the week. Therefore, demand is likely to increase after 5th April 2023.



A.14.4 Based on the CEA LGBR report of 2023-24, the maximum demand for electricity in NR is expected to be 80000 MW during the month of June, with an approximate energy requirement of 1600 million units (MU) per day.



A.14.5 NRLDC representative emphasized the impact of thunderstorms in the NR region during April, May & June, including the incidence of tower collapse. He stressed the critical importance of strengthening the towers to prevent such incidents from occurring in the future.

A.14.6 Given the above considerations, all constituents of the Northern region have been requested to take the following actions:

1. SLDCs should ensure that the loading of Inter-State Transmission Corridors (ICTs) and lines is kept below their N-1 contingency limits.
2. States should limit their scheduled and actual drawl of power within the ATC (Available Transfer Capability) limits assessed by SLDC and NRLDC in real-time.
3. Loading of 220kV and below voltage level intrastate lines must remain within safe limits, which will be managed by SLDCs.

Punjab

A.14.7 During the meeting, the NRLDC representative raised concerns about the capacity augmentation of the Nakodar 400/220kV ICTs, which was originally planned to increase from 2*315MVA to 2*500MVA by May 2023. NRLDC representative also informed the forum about the recent damage to the 315 MVA ICT at Nakodar and plan to replace it with a 500 MVA ICT from Panchkula.

A.14.8 Punjab representative stated that while the capacity augmentation at Nakodar is still under consideration (purchase order of both new ICTs done), it may not be completed this season. The Punjab representative also shared that the commissioning of the Dhanansu Substation will help to alleviate loading at Nakodar.

A.14.9 NRLDC representative asked about the status of the commissioning of Dhanansu, to which the Punjab representative replied that it is expected to be commissioned by the end of July 2023.

A.14.10 Punjab stated that the LILO work on the 400kV Kurukshetra-Jalandhar line at Dhanansu is almost finished. However, they are currently waiting for the 400/220kV ICT at Dhanansu to be charged before proceeding further. Once the ICT is charged, the 220kV side of the Dhanansu Substation will be charged within 1-2 days. NRLDC representative emphasized the need for PMU facilities at all upcoming stations.

A.14.11 Punjab representative expressed concern about the lack of inclusion of PMU installation in the tender awarded for the construction of the 400/220kV Dhanansu Substation. As a result, they anticipated that additional time may be required for PMU installation. They also requested assistance in obtaining technical specifications for PMUs.

A.14.12 HP stated that they had procured PMUs separately. NRLDC representative emphasised the need of PMU at all upcoming substations and suggested that Punjab reach out to HP for guidance on technical specifications as soon as possible to ensure that PMU installation at Dhanansu is completed in conjunction with the commissioning of the substation.

A.14.13 NRLDC inquired about the capacity augmentation of the 315 MVA ICT to a 500 MVA ICT at the 400/220kV Ludhiana and the 250 MVA ICT to a 500 MVA ICT at Moga. Both of these augmentations are expected to be completed by May 2023. Punjab confirmed the timeline for both projects.

A.14.14 NRLDC representative raised serious concern about the frequent outages at the Talwandi Saboo thermal power plant, which experienced 453 hours of generator outage between June and September 2022 i.e. in paddy season of Punjab. Comparing it to the Rajpura plant in Punjab, the performance of Talwandi Saboo was found to be poor.

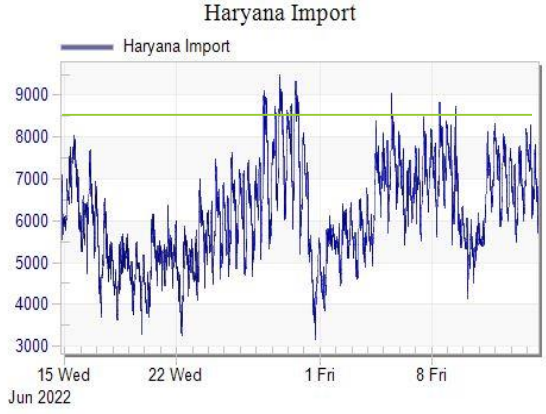
A.14.15 Talwandi Saboo representative explained that the poor quality coal supplied by MCL, which had a high ash content of around 45%, was the main reason for the frequent outages. However, they were blending it with good quality coal from CCL and ECL to minimize the frequency of the outages. The plant was also trying to minimize generator outages caused by boiler tube leakage.

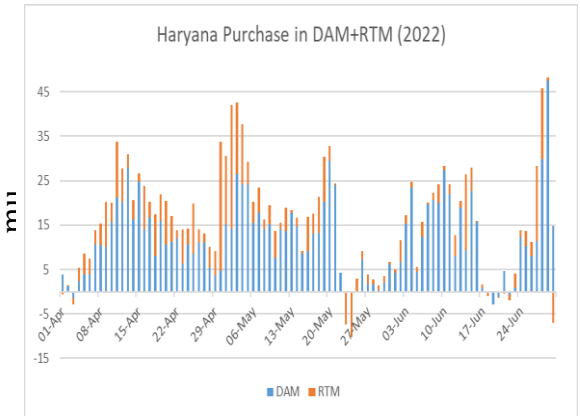
A.14.16 MS NRPC questioned whether poor quality coal was the only reason for the frequent outages. Talwandi Saboo representative pointed out that they were also dealing with around 30 revisions per day, which was difficult to manage. NRLDC representative acknowledged that this was the reality of the present time and that such revisions would only increase in the future.

A.14.17 MS, NRPC added that the CEA has published a report on the “Flexible Operation Of Thermal Power Plant For Integration Of Renewable Generation”, which stipulates backing down of thermal plants up to 40% by some retrofitting works. To accommodate the increase in renewable energy power, thermal plants have to be flexible with their generation and remain connected to the grid.

Haryana

A.14.18 NRLDC representative informed the forum that there was no new generation capacity added in Haryana during the last year, and the state is heavily dependent on power imports from the grid. Last year, Haryana's power import from the grid exceeded the ATC limit in June 2022, and the state is also heavily reliant on the market for purchasing power.





A.14.19 NRLDC representative also inquired about the commissioning status of the 220kV Panchkula (PG) – Sec 32 Panchkula lines and LILO of 220kV Samlakha-Mohana at Sonepat (PG), but Haryana could not provide any timeline. In regards to the commissioning of the 500MVA ICT-3 at Kurukshetra, Powergrid stated that it would be commissioned by June 2023.

A.14.20 NRLDC representative informed the forum that the re-conductoring of 220kV Hissar (PG)-Hissar (IA) has been approved, but Haryana is currently reviewing whether tower strengthening is required. CTU added that this re-conductoring involves an onward link that is also heavily loaded (Hissar IA to Hissar (BBMB), so they need to assess its impact. Further feasibility by Powergrid will also be required.

A.14.21 NRLDC representative asked about the status of the 400/220kV Bhiwani ICT, which is expected to be commissioned by April 2023. Haryana representative replied that the work order has been placed, and it will be charged by May 2023.

A.14.22 NRLDC representative also inquired about the status of the Faridabad gas power plant. NTPC representative replied that they have tied up with GAIL for LT-RLNG gas, and the running cost of the plant will come out around Rs 12/unit. They suggested that Haryana give them permission to sell this costly power in HP-DAM so that their internal generation will increase and reduce Haryana's drawl from the grid. Moreover, Haryana will still have the option to recall their power as and when required.

A.14.23 MS NRPC raised serious concern about Haryana's lack of preparation on the transmission and power purchase fronts for upcoming summer months. Haryana has not applied for any STOA application to NRLDC for power purchase until now. The Haryana representative assured the forum that they are taking this up with HERC and will take necessary actions shortly

Rajasthan

A.14.24 NRLDC representative highlighted several issues related to the power system in Rajasthan. One of the major issues is the heavy MVAR drawl during peak solar hours, resulting in a low power factor at various drawl points. Additionally, there is persistent low voltage at the 400kV Hindaun and Alwar stations. To address these issues, the NRLDC representative suggested that Rajasthan should plan capacitor banks at these locations with provision for daily switching as per system requirements.

A.14.25 Rajasthan stated that they have applied for PSDF funding to add 500 MVAR capacitor banks at the STU level and 4500 MVAR capacitor banks at the distribution level.

Furthermore, the NRLDC representative highlighted non-compliance with n-1 norms for ICTs at several locations in Rajasthan, including Ajmer, Merta, Chittorgarh, Jodhpur, Bikaner, Hindaun, and Bhilwara. Rajasthan representative replied that they will install the repaired ICT at Chittorgarh by November 2023.

A.14.26 NRLDC representative also noted that Rajasthan has the highest outage rate of Thermal Power plants, with an average of three machine outages in two days between January 2022 and March 2023. Rajasthan representative responded that during the COVID period, many machines were under Reserve Shutdown and there was a lack of maintenance. However, they are taking corrective action to mitigate such occurrences.

A.14.27 NRLDC representative asked Rajasthan to explore the possibility of using the Giral generating station as synchronous condenser, to which Rajasthan replied that they have approached the Rajasthan government for the same. Additionally, the NRLDC representative asked Rajasthan to provide an updated list of radial feeders in the state. Rajasthan replied that nearly all 220 kV lines from emanating from Powergrid stations are in a ring, and in case of need of immediate load relief, Rajasthan would do so immediately after receiving operational code from NRLDC. NRLDC representative asked Rajasthan to share the list of feeders that will be used for load management. Rajasthan representative agreed to provide the same.

A.14.28 NRLDC further informed that RRVPN has proposed STATCOM to CEA for Dynamic Reactive Compensation at following substations:

- ±300MVAR, 400 kV STATCOM at 765 kV GSS Jaisalmer (Proposed substation)
- ±300MVAR, 400 kV STATCOM at 400 kV GSS Bhadla (Existing substation)
- ±100MVAR, 220 kV STATCOM at 220 kV GSS Phalodi (Existing substation)
- ±100MVAR, 220 kV STATCOM at 220 kV GSS Tinwari (Existing substation)

UTTAR PRADESH

A.14.29 NRLDC representative suggested exploring the option of shifting more load onto the recently commissioned 400/220kV Jaunpur Substation to relieve loading on other ICTs in eastern UP that are currently n-1 non-compliant such as Azamgarh, Obra, Sarnath, Nehtaur, and Gorakhpur.

A.14.30 UP representative reported that the FTC documents of charging for the 765kV Anpara D-Obra-Unna line had been submitted and informed the forum that the line would be charged by the first week of April.

A.14.31 NRLDC representative then inquired about the status of synchronization for Anpara Unit 3 and Unit 4, as well as the reason for the multiple revisions to the expected revival date for Anpara Unit 4.

A.14.32 UP representative explained that Anpara Unit 4 had undergone capital overhauling after continuous operation for 13 years, during which time it was discovered that the LP turbine blade was damaged and required major repair, causing a delay. The turbine, which was of Toshiba make, was sent to Toshiba Chennai facility for repair and has since been delivered to the UP site. UP representative assured the forum that Anpara Unit 4 would be synchronized by April 15th and that Anpara Unit 3 would also be synchronized by the same date, as its rotor had been dispatched from Haridwar on March 24th 2023 after repair.

A.14.33 MS NRPC inquired about the revival status of Obra Unit 10, to which the UP representative replied that it was currently under inspection and an exact time for its revival was yet to be confirmed. NRLDC representative raised concerns about the critical coal position at Anpara C thermal power plant, which was around 2.9 days.

A.14.34 UP representative informed the forum that they typically maintain a 3-day coal supply at Anpara A, B, and C plants and that the coal is sourced from NCL, with both trucks and merry go round trains used for transportation.

Delhi

A.14.35 NRLDC representative reported that the 400kV Bawana bus was split due to high fault level, rendering the 2 ICT section n-1 non-compliant.

A.14.36 DTL representative provided an update that they would be implementing an SPS *at* Bawana within a week as agreed upon during the 205th OCC meeting. Additionally, the SPS at Mundka had already been implemented, but only two 315MVA ICTs were currently operational, making it still n-1 non-compliant. To address this issue, DTL had received board approval for purchasing 7 no's of 500 MVA ICTs, with two being procured urgently and the remaining five on a regular basis. They have also planned for re-conductoring of 220kV lines from Bamnauli and Mundka to HTLS conductor by the summer of 2024, which would enable more load that can be shifted on Bamnauli and Mundka Stations.

A.14.37 NRLDC representative inquired about the operation of ADMS in their state and why some manual intervention was needed. DTL representative explained that in the case where Delhi as a whole was underdrawing and one DISCOM was overdrawing, a fully automatic ADMS would shed the load of that DISCOM, leading Delhi as a whole to underdraw more from the grid. Due to this, ADMS of respective DISCOMS is operated only after confirmation from Delhi SLDC.

A.14.38 However, MS NRPC stressed that ADMS should be fully automatic, and the NRLDC representative suggested adding a logic to the ADMS that could sense the overall drawl of Delhi before its operation to ensure certainty of action.

A.14.39 TPDDL representative reported that ADMS was fully implemented at their end but faced challenges due to poor communication infrastructure during outages. They were unable to revive 100% of the load shed through ADMS when system conditions improved, leading to manual intervention, commercial losses, and marking the outage as under breakdown. NRLDC representative and MS NRPC urged them to find a solution to improve ADMS and make it automatic.

Uttarakhand

A.14.40 NRLDC representative brought up the issue of no bidders for a new 400/220kV ICT at Kashipur. Uttrakhand representative stated that they were not finding any new bidders due to multiple factors, such as ABB's waiting time of over three years, inspection by a third-party clause etc.

A.14.41 CTU informed the group that they and other TSPs were able to award transformers without such hindrances and urged Uttrakhand to explore the possibility of merging the single Kashipur ICT requirement with the Landhora substation package to make it more appealing to bidders.

A.14.42 NRLDC representative also highlighted the heavy loading of 220kV CB Ganj-Pantnagar and 220kV Roorkee-Roorkee lines, which were regularly loaded above 200 MW. They also inquired about the status of the upcoming 400/220kV substation Landhora from Uttrakhand.

A.14.43 Uttrakhand representative stated that a new 400kV substation (Khurpia Farm) was currently in the planning stage with connectivity through LILO of 400kV Kashipur-Bareilly D/C. They also noted that the 220kV CB Ganj-Pantnagar would be LILOed at this substation to relieve its loading. Furthermore, a new 132kV D/C from Sitargangj(UK) to Khurpia Farm was also proposed. Regarding the Landhora substation, Uttrakhand apprised the forum that a tender was about to be floated and that 400kV Kashipur-Roorkee one circuit would be LILOed at Landhora.Uttrakhand representative informed the group that they had obtained UERC approval for running Sharavanti and Gamma gas plants with a price of 9 Rs/unit from 1.4.23 to 30.06.23.

Himachal Pradesh

A.14.44 NRLDC representative provided an update on the high loading of the 400/220kV Nallagarh ICTs, which have been drawing around 900MW power during peak demand. CTU informed the forum that a new transformer is planned to be installed at Nallagarh.

A.14.45 Punjab representative informed that a 400kV Ropar Substation is planned that will help to relieve the load on Nallagarh ICTs by shifting some load to Ropar. Additionally, the

commissioning of new 220kV Panchkula lines would also relieve loading at Nallagarh ICTs.

A.14.46 HP representative then added that they are planning to install a 220/66kV ICT at Gumma, along with an underlying 66kV network, which would have an impact on drawl from Kunihar and Nallagarh. Therefore, the need for adding another ICT at Nallagarh may need to be looked into, as the above actions would themselves relieve the loading of Nallagarh ICTs.

A.14.47 NRLDC representative shed light on the fact that in the future, the load of both states would increase, and hence, planning accordingly is crucial.

A.14.48 MS NRPC suggested that the CTU should reassess the need for adding another ICT at Nallagarh after conducting a detailed study in coordination with Punjab and HP. CTU representative agreed to share the basecase file with Punjab and HP SLDC for review.

A.14.49 NRLDC representative informed the forum that HP is planning to change the CT ratio of the 220kV Nallagarh-Uppernangal D/C lines from 800 A to 1600 A. HP representative confirmed the plan and stated that it would be done during the next line shutdown in April. However, some load shedding would be required to facilitate the change.

JK & Ladakh (UT)

A.14.50 NRLDC representative informed that during the 16th CMETS meeting held on 28.02.2023, a new 400/220kV ICT at Amargarh Substation has been approved. CTU representative confirmed that same and updated it would be implemented within the next 21 months. NRLDC representative highlighted the urgent need to expedite the commissioning of new 220kV and below lines to manage drawl from Amargarh. However, the representatives from JK & Ladakh (UT) stated that it would take 1-2 years to implement. They were requested to expedite the commissioning process since their state experiences bottleneck for drawl from Amargarh during the peak winter months.

A.14.51 NRLDC representative also informed the forum about the persistent low voltage in the control area of JK & Ladakh (UT). They stated that the SVC at New Wanpoh was fully utilized to contain voltage drop, leaving no margin for dynamic support. NRLDC representative sought an update from JK & Ladakh (UT) regarding the revival of the 220kV Kishenpur-Mirbazar line which had been out of operation since 19.02.2022.

A.14.52 The representatives from JK & Ladakh (UT) replied that it would be charged within the next 1-1.5 months. NRLDC representative informed that they had trained officials from JK & Ladakh (UT) in the use of PSSE software. The representatives from JK & Ladakh (UT) appreciated the NRLDC's efforts in guiding their officials. MS NRPC congratulated JK & Ladakh(UT) for their effort. JK & Ladakh(UT) representative promised that they would soon be carrying out regular ATC assessment study of their control area on PSSE.

A.14.53 NRLDC representative summarized other measures required during high demand months as follows and urged the states and generators:

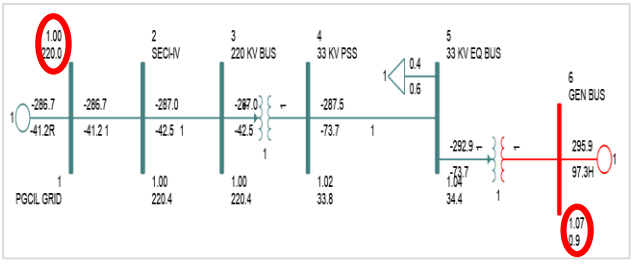
- To make advance arrangements for power supply and reduce dependence on power exchange.
- Regular monitoring of weather websites can help anticipate any potential issues and take preventive measures.
- Thermal power plants should follow the latest regulations issued by CEA regarding flexible operation and back down generation when required.
- Internal generation should be optimized to avoid transmission constraints and low voltage.
- Large connection/disconnection of loads should be avoided
- Advance intimation should be provided in case of critical coal stock.
- Tower repairing work should be completed before April 2023, and emergency restoration services (ERS) should be available before summer 2023.
- To ensure the stability of the power supply system, the UFR, SPS, and defense mechanism should be checked regularly.
- Telemetry of all analog and digital points to control centers should be ensured, and quick actions should be taken in case of deviations.
- The implementation of ADMS should be expedited
- Intrastate and interstate generators should be ready to provide primary response as needed.
- The radial feeder list should be available, and quick action should be taken after instructions from NRLDC control room.

A.15 RE related issues in Northern region (Agenda by NRLDC)

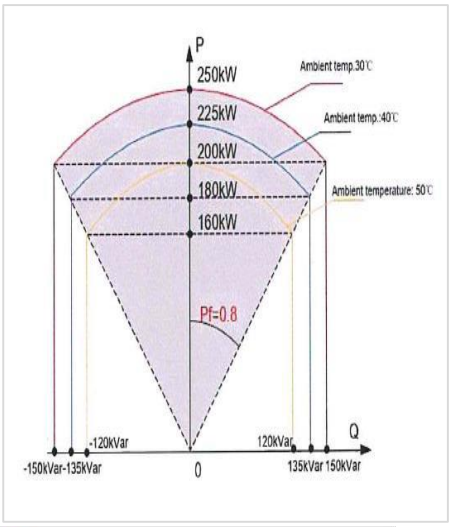
A.15.1 NRLDC representative highlighted below points:

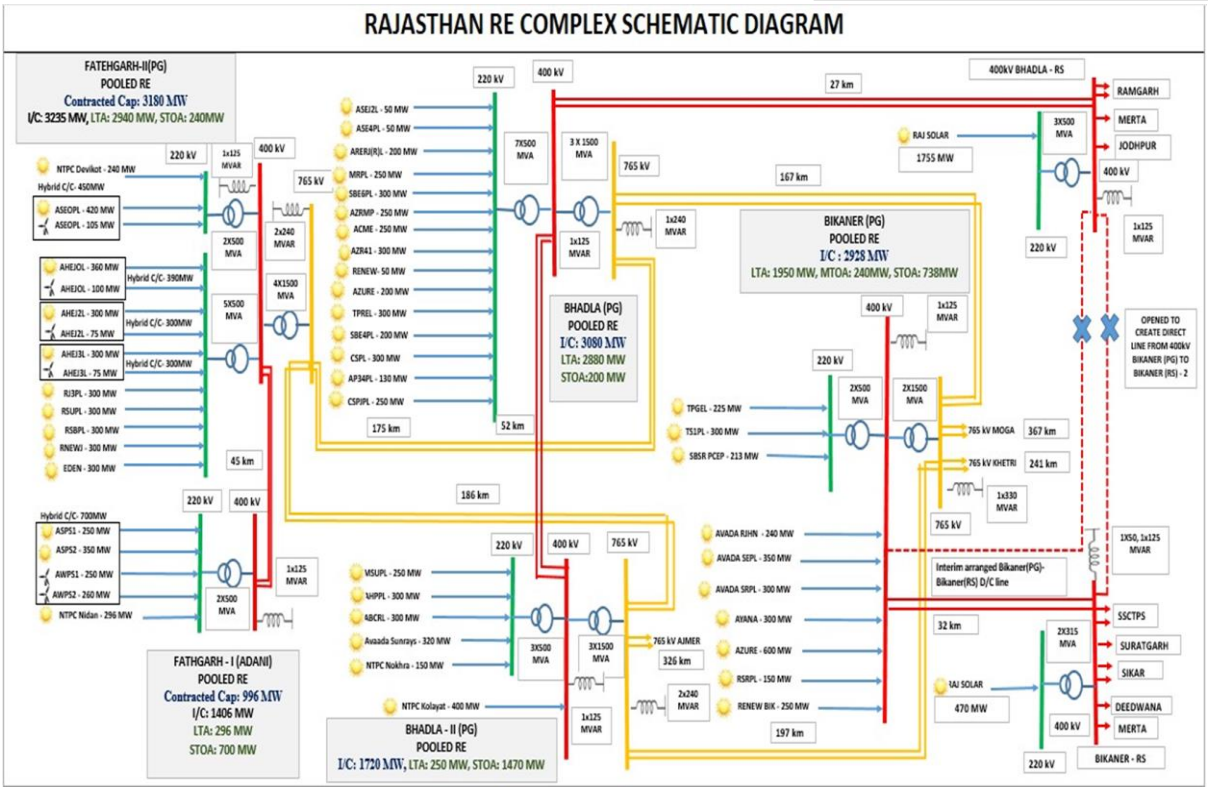
- Overvoltage during switching operations: There have been a total of 10 events of overvoltage during switching operations since January 2022, with the most recent occurrence on February 9th, 2023.
- Fault in the vicinity of RE complex: A total of 14 events of faults in the vicinity of the RE complex have been reported since January 2022, with the most recent occurrence on February 28th, 2023.
- Low frequency oscillations in NR RE complex: During periods of high solar generation, there have been reports of low frequency oscillations in the NR RE complex.

- Low system strength – One of major reasons for



RE Generation Loss events due to transient over-voltage during switching operations





A.15.2 NRLDC representative further highlighted the reasons attributed to above as:

- Non-compliance of RE Plants to specified CEA Standards (1/3):
  - As per CEA connectivity standards, RE plant shall have the capability to inject/absorb MVAR (reactive power) up to 33% of MW (active power generation)
  - In order to inject/absorb 33% reactive power (MVAR) along with delivering rated active power (MW), the MVA capacity of the RE plant shall be higher than the rated MW capacity of the plant i.e. MVA Capacity > MW Capacity
  - With rise in ambient temperature beyond a certain point, there is degradation in Inverter/WTG's rated MVA Capacity
  - RE Developers are designing their plants for low ambient temperature operation i.e. the plants have the margin to deliver/absorb reactive power

at low ambient temperatures (<40°C) but become non-compliant at higher ambient temperatures (>50°C) as no margin is left

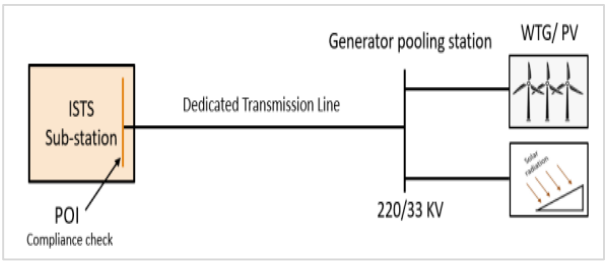
- Most of the plants are unable to provide specified reactive power at POI during steady state operation.

- Non-compliance of RE Plants to specified CEA Standards (2/3):
  - Low Voltage Ride Through - Non - Compliance
    - <u>Reactive Power</u>

      - Sharp dip in active power (MW) once inverters enter in LVRT mode without commensurate reactive power injection during fault
    - <u>Active Power</u>

      - Delayed Active Power Recovery observed in most of the cases leading to high voltage and subsequent tripping due to the same
  - High Voltage Ride Through - Non - Compliance
    - Tripping of inverters / WTGs observed even when the POI voltage was below HVRT threshold
    - No Reactive Power support during HVRT mode of operation

- Non-compliance of RE Plants to specified CEA Standards (3/3)
  - Compliance of CEA Connectivity Standards is required at Point of Interconnection (POI)



  - The voltage at POI differs with that of inverter/WTG terminal voltage due to drop in intermediate transmission elements
  - Therefore, implementation of coordinated settings at inverter/WTG terminals is required for proper compliance

- Margin to be kept in inverter/WTG level settings has already been taken up by Grid-India with RE Developers. Revised settings implemented in 32 plants in NR out of 44.

Description	Earlier (Default)		Revised		Remarks
	Voltage (in pu)	Time (in sec)	Voltage (in pu)	Time (in sec)	
HVRT Triggering threshold	1.1		1.15		Out of 44 RE plants in NR, 32 Plants implemented the revised OV settings
OV Stage-1 Voltage (in pu)	1.1	2	1.15	10	
OV Stage-2 Voltage (in pu)	1.2	0.2	1.2	2	
OV Stage-3 Voltage (in pu)	1.3	0	1.3	0.1	

Description	Earlier (Default)		Revised		Remarks
	Voltage (in pu)	Time (in sec)	Voltage (in pu)	Time (in sec)	
LVRT Triggering threshold	0.9		0.85		Out of 44 RE plants only changes have been done in 2 plants to observe the impact of far end fault
UV Stage-1 Voltage (in pu)	0.9	10	0.85	10	
UV Stage-2 Voltage (in pu)	0.85	3	0.8	3	
UV Stage-3 Voltage (in pu)	0.15	0.3	0.15	0.3	

- This aspect also needs to be taken care of during the design stage itself so that the equipment is designed with the desired withstand capability
- Currently, design and testing of Inverters/WTG is being carried out for the withstand voltage defined for POI

A.15.3 NRLDC representative identified major issues associated with above as:

- Tests of sample inverter/WTG are carried out in a factory/lab environment
- Single unit simulation model is prepared which is then used to develop complete plant model
- Both unit level and plant simulation models submitted by the RE developers suggest LVRT/HVRT compliance of plants. However, the compliance is not being observed in real-time operation.
- Deviation of plant behavior from simulation results.
- Performance during grid event is presently the only way to check LVRT/HVRT compliance at Point of Interconnection (PoI).
- NRLDC representative also mentioned that a committee consisting of representatives from CTU/CEA and GRID-INDIA had visited renewable energy (RE) plants and found that the data storage facility for voltage and current waveforms (in millisecond timeframe) during fault-ride through is available in the inverters. NRLDC representative emphasized that plant owners share this data with concerned agencies for proper event analysis and other related purposes.
- CEA Regulations define the LVRT/HVRT setting philosophy at PoI. However, inverter terminal voltage decides the LVRT/HVRT mode of inverters.

- After the fault gets cleared and inverter senses normal voltage at terminal, it will respond as per its previous set point (Set point is the command given by PPC) till the inverters do not get the next command from PPC.
- Overall execution time for PPC ~1 second
- After 1 second of fault clearance the plant should get controlled by PPC.
- From PMU plots it has been observed that despite sustained high voltage for 2 to 4 seconds, RE plants are not absorbing MVAR. This voltage rise in RE complex leads to tripping of EHV lines on overvoltage, loss of evacuation path
- As per discussions taken by NRLDC with RE developers, it emerged that there is lack of Coordination between multiple agencies involved i.e. RE Developer and Inverter /WTG /PPC OEMs at most of the RE plants
- Lack of awareness observed among RE Developers about implemented protection and control settings at respective RE plants
- Over-dependency on OEMs
- Restricted access provided to RE Developers to download/modify the implemented inverter/WTG level settings

A.15.4 Representative from NRLDC reported that Powergrid has proposed an extension of the trip time delay for 765kV lines to 10 seconds in the event of overvoltage. This proposed delay would be beneficial in reducing line tripping occurrences during transient overvoltage situations that are related to renewable energy plants. Powergrid representative confirmed the same.

A.15.5 CTU informed that an Interim arrangement was carried out for mitigating RE curtailment in Rajasthan due to non-availability of Phase-ll Part F/F-1 scheme, being implemented by POWERGRID. The above scheme was agreed in 202nd NR OCC meeting held on 16.12.2022. In the meeting, it was also decided that Interim solution will be restored after availability of Ph-II Part-F/F1 [Bikaner-II onwards] scheme (expected by Mar'23 end). However, it has been learnt by POWERGRID that Ph-II Part-F scheme (Bikaner-II) is further delayed and now expected by May'23 (end).

A.15.6 CTU highlighted that in view of delay in Ph-II Part-F scheme, there would be need of extension of interim arrangement.

A.15.7 RVPN stated they their wind generation is expected to start from May'23 beginning and with interim arrangement they may face challenges in wind evacuation. Therefore, POWERGRID should implement the requisite Ph-II Part F scheme by 1st week of May'23.

A.15.8 MS NRPC requested Powergrid to expedite the commissioning of the Bikaner-2 substation. Powergrid representative submitted that despite their best efforts, they would not be able to commission the Bikaner-2 substation before the end of May 2023.

A.15.9 Accordingly, POWERGRID was requested to complete the scheme by 1st week of May'23, till then interim arrangement may be continued.

A.16 Integration of PMU installed under Smart Transmission Network & Asset Management System (STNAMS) (Agenda by NRLDC)

A.16.1 NRLDC representative stated that in reference to the discussion in 62nd NRPC Meeting held on 31.01.2023 & 63rd NRPC held on 24.02.2023, where representative of RRVPNL informed that around 8 PMU out of total 25 PMUs under STNAMS project has been commissioned and data of same is updating at RRVPNL STNAMS control centre. Further, STNAMS PDC will be integrated with Rajasthan SLDC PDC upon completion of Cyber Security compliances at STNAMS system. It was also informed that there is a provision to integrate new Phasor data concentrator (PDC) with existing PDC installed at Rajasthan SLDC.

A.16.2 During the meetings RRVPNL representative was requested to expedite the PMU data for better visibility of Rajasthan area as it is very important from grid operation point of view considering recent events in Renewable pocket. In this regard NRLDC has also requested RRVPNL and SLDC to expedite the integration process vide letter NRLDC/SCADA/2023 dated 14.02.2023.

A.16.3 In view of the above it was requested that RRVPNL shall advise the concerned to take necessary actions so that integration of PMU data reporting at STNAMS control centre with Rajasthan SLDC PDC for onward transmission of data to NRLDC.

A.16.4 RRVPNL representative stated that PMUs has started reporting at their control centres. However, prior to integration with Rajasthan PDC cybersecurity audit was to be completed. He further informed that Cyber security audit has been completed and they are in the process of closure of Cyber Security points. On closure of Cyber Security points they will start the process of integration of PDC. He confirmed that integration work would be completed by 30th April 2023.

A.16.5 Forum noted the same.

A.17 Inaccurate/non-availability of Voltage data from Critical 400/765kV Sub-stations from Rajasthan (Agenda by NRLDC)

A.17.1 NRLDC representative stated that Voltage telemetry from critical 400/765 kV Sub-stations from Rajasthan area is not-available or inaccurate. RVPN is requested to please take up for resolution of voltage telemetry from stations mentioned below at the earliest.

S.No	Station	Remark
1.	Anta	400 Bus1 and 765KV Bus 2 Telemetry not available
2.	Babai	400 Bus1 Telemetry not available
3.	Bikaner	400 Bus1 Telemetry not available
4.	Heerapura	Telemetry not available
5.	Kankani	400 Bus2 Telemetry not available
6.	Suratgarh	Around 15 kV difference in Bus-1 & Bus-2 Voltage
7.	Alwar	400 Bus1 & Bus2 telemetry not available

A.17.2 He informed that Issue was also discussed in 63rd NRPC meeting on 24.02.2023 in which NRLDC informed that they have raised telemetry issues with Rajasthan SLDC vide letter dated 21.11.2022 but still there is negligible improvement in this regard.

A.17.3 RVPN was advised to take measures to ensure accurate telemetry of all transmission elements under their control area. It was also stated that it is big challenge to issue outage codes in case of non-availability of data.

A.17.4 Rajasthan SLDC representative stated that AMC is pending at these substations and the same is being taken up with concerned team of RVPN. They are regularly following up with concerned for AMC of SAS.

A.17.5 However, as an interim measure they are in the process of integration of RTUs installed under STNAMS with SLDC SCADA for immediate resolution of Telemetry Issues. They further informed that integration of RTUs would be completed within 2 months.

A.17.6 Forum noted the same.

A.18 PTCUL Telemetry Issues (Agenda by NRLDC)

a) Non-availability of Real-Time data from PTCUL

A.18.1 NRLDC representative informed that as per details submitted by PTCUL out of 58 Sub-Station/Generating Stations data from only 26 Sub-stations are integrated at SLDC. Also, many feeders are not integrated even at the locations where RTUs are installed. The

same issue was also informed to PTCUL vide letter (Ref: - NRLDC/SL-II/2019-20) dated 05.03.2020.

A.18.2 Issue was discussed in Special Meeting with PTCUL held in July 2020 and December 2020. Subsequently issue was discussed in 17th, 18th, 19th, 20th & 21st Test Meeting and 45th TCC-48th NRPC and 47th TCC-49th NRPC.

- During 47th TCC -49th NRPC held on 27.12.2021, representative from PTCUL informed that they are in the process of tendering of RTU and OPGW Installation work and informed that they would expedite the installation works, and is expected to be completed in 6 months. Further, representative from PTCUL informed that faulty CMRs/Transducers replacement work is in progress and same would be completed within 3 months. Matter was discussed in various NRPC and TeST Meetings.
- During 21st TesT Meeting held on 13.12.2022 Representative from PTCUL informed that they are in process of tendering and RTU procurement and OPGW installation will take at least 1 year. Further, PTCUL informed that they have started replacement of faulty MFTs/CMRs and process will be completed in 1-2 months.

A.18.3 MS NRPC also expressed concern on the same and stated that PTCUL should take immediate action as grid management is not possible without availability of real-time data.

A.18.4 Representative from PTCUL informed that tender of RTU and OPGW got cancelled due to high difference between estimate and bid values received. They have again started the process of tendering and funding would be done through PSDF.

A.18.5 Further, PTCUL representative informed that they are in the process of replacement of faulty transducers and CMRs and informed that the same would be completed at the earliest.

b) Non-availability of Reliable / Redundant Communication System for PTCUL, SLDC

A.18.6 NRLDC representative stated SLDC Uttarakhand is connected to NRLDC through radial network from Roorkee- Dehradun and all services like ICCP, PMU/PDC and VOIP are working on this. Any issue in link leads to outage of Voice and Data communication between SLDC Uttarakhand and NRLDC.

- Matter of reliable communication to NRLDC was also discussed in Special Meeting with PTCUL on 07th July 2020 conducted by NRPC, 45th TCC/48th NRPC

Meeting dated 02.12.2020 where PTCUL/POWERGRID assured that reliable communication link would be available in 6 months.

- Issue was also discussed in 47th TCC/49th NRPC Meeting held on 27.12.2021, where PTCUL representative informed that they are in the process of tendering of RTU and OPGW Installation work and it is expected to be completed in 6 months.
- During 52nd NRPC dated 31.03.2022, PTCUL informed that they are on the verge of finalizing the OPGW project and order will be placed in one-month duration. He proposed that lease line may be used to connect NRLDC. Since Kashipur SLDC is already connected with Dehradun SLDC. Therefore, lease line from Dehradun to Kashipur SLDC may be used.
- During 20th TeST Meeting dated 09.09.2022, PTCUL informed that they are in process of integrating redundant link and it shall be commissioned within one month.
- During 21st TesT Meeting held on 13.12.2022, Representative from PTCUL informed that interim arrangement for providing redundancy will be done within 1-2 months

A.18.7 MS NRPC expressed concerned regarding radial connection and requested PTCUL to take urgent action for providing redundant links.

A.18.8 Representative from PTCUL informed that they are in the process of finalizing Leased line with BSNL and redundant links would be available from Uttarakhand SLDC to NRLDC within one months' time.

A.19 J&K Telemetry Issues (Agenda by NRLDC)

A.19.1 NRLDC representative stated that reliability and accuracy of SCADA data and its associated communication system is essential for monitoring and coordinating operations of a large electricity grid. It helps in visualization and management of the critical grid element failure/grid incident in real time and minimizes the possibility of any untoward incidences/disturbances. Network applications in Energy management system (EMS) such as State Estimator (SE), Real Time Contingency Analysis (RTCA) also necessitate reliable and accurate real time analog and digital data. Data communication has to be made through redundant and alternate path communication channel. Real-Time data availability from Jammu and Kashmir is very poor. There is zero visibility of data in J&K stations. With poor monitoring of data, it is very difficult to monitor grid in efficient manner. The matter has been discussed in various TCC and TeST Meetings but there is no improvement of the same.

A.19.2 Brief details are as follows:

- Under SCADA upgrade project 66 RTUs were installed by M/s Siemens at all 400KV / 220 KV and 132 KV sub-stations/generating Stations of J&K PDD.
- RTUs were not integrated with Control centre due to non-availability of communication network. RTUs were tested locally and commissioned without data availability at Control Centre.
- Due to Non availability of data, JK PDD is not able to monitor its drawal from grid and its generation. It is dependent of Central sector data for monitoring of drawal.
- Matter was also discussed in Special Meeting with J&K on 28.07.2020 where in Representative of J&K informed that they have given consultancy work to POWERGRID for installation of OPGW in J&K. However, due to funding issue OPGW work has been stalled by POWERGRID. According to J&K almost 95% of the work is complete and once funding issue is resolved Non-availability of telemetry issue will be resolved.
- Matter was also discussed in 47th TCC-49th NRPC Meeting dated 27.12.2021, J&K confirmed that they will resolve the issues mutually with POWERGRID so that data starts reporting to SLDC/ NRLDC.
- During 19th TeST Meeting dated 07.03.2022 J & K representative informed that by 31st December 2022 all 70 RTUs will be integrated with SLDC.
- During 20th TeST Meeting dated 09.09.2022, it was discussed that J&K informed that they are in process of rectification of RTU issues and joint visit is planned with M/s Siemens.
- NRLDC has also written to Principal Secretary (PDD), vide letter NRLDC/SCADA/Telemetry/2022 dated 03.10.2022 regarding reliable telemetry from J &K Sub-stations. Issue was also discussed in 21st TeST Meeting held on 13.12.2022

A.19.3 Representative from Jammu & Kashmir informed that 47 OPGW links out of 73 links have been commissioned by POWERGRID and remaining links are expected to be completed by June 2023. He further informed that 68 crores funds for OPGW installation has already been given to POWERGRID and they are in process of approval of additional 21 crores fund.

A.19.4 NRLDC representative informed that although OPGW links are getting commissioned but RTU data integration is still pending and requested J&K and POWERGRID to expedite integration of RTU data so that visibility of J&K area can be improved.

A.19.5 Representative from POWERGRID informed that RTU were commissioned in 2015 by M/s Siemens without communication link. Now when the links are available there are issues in RTU reporting which needs to be addressed. Also at some of the location during

Sub-station, retrofitting CT& PT cables were disconnected and new cabling needs to be done.

A.19.6 MS NRPC expressed serious concern and requested that a joint meeting may be conducted including members from POWERGRID, NRLDC, J&K and M/s Siemens to finalise the work needed to integrate the RTUs and for further action by J&K.

A.19.7 Forum concurred on views of MS, NRPC.

A.20 PMU installation on all new Sub-stations (Agenda by NRLDC)

A.20.1 NRLDC representative stated that Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 was notified on 23rd December 2022.

As per the standard "*Synchrophasor measurement using Phasor Measurement Units along with fibre optic connectivity, Global Positioning System Receiver and communication equipment shall be provided for monitoring the entire interconnected grid on real time basis at substations of 400 kV and above voltage level, switchyard of generating stations at 220 kV and above voltage level, Alternating Current side of converter bays of High Voltage Direct Current stations and pooling point of renewable energy generating stations of fifty megawatt and more and Battery Energy Storage System of fifty megawatt and more".*

A.20.2 In this regard all concerned are requested to please consider installation of Phasor Measurement Units during first time charging of the Sub-stations/Generating Stations.

A.20.3 Forum noted the same.

A.21 Undertaking by the Utility in respect of Compliance to Cyber Security requirement (Agenda by NRLDC)

A.21.1 NRLDC representative informed that many cyber vulnerabilities and non-compliance of Cyber Security measures have been observed in many utilities. With a view to improve the Cyber Security posture, it is advised in the highest forums that the requirement shall be checked at the time of first time charging itself. In view of above undertaking has been prepared by CERT-GO. Undertaking is attached in **Annexure-A.VII.**

A.21.2 All utilities are requested to please submit this undertaking along with their FTC documents.

A.21.3 Forum noted the same.

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List of Participants of 64th Meeting of NRPC on 24.03.2023 at Dharamshala, Himachal Pradesh

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List of Participants of 64th Meeting of NRPC on 24.03.2023 at Dharamshala, Himachal Pradesh

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List of Participants of 64th Meeting of NRPC on 24.03.2023 at Dharamshala, Himachal Pradesh

S. No.	Name of Officer	Designation	Organisation	Ph. No.	Mob. No.	Fax No.	E-mail	Signature
17.	NLDC							
18.	APCPL							
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19.	JHAJJAR POWER (CLP)							
	~~Sanjay~~							
20.	Adani Power Raj. Ltd.							
21.	Nabha Power							
22.	Talwandi Sabo Pvt.Ltd.							

List of Participants of 64th Meeting of NRPC on 24.03.2023 at Dharamshala, Himachal Pradesh

S. No.	Name of Officer	Designation	Organisation	Ph. No.	Mob. No.	Fax No.	E-mail	Signature
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24.	UT of J&K							
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	JASBIR SINGH	CGM	CTUIL	9650899405	–		jasbir@powergrid.in	
27.	Lanco Anpara Power Ltd							

List of Participants of 64th Meeting of NRPC on 24.03.2023 at Dharamshala, Himachal Pradesh

S. No.	Name of Officer	Designation	Organisation	Ph. No.	Mob. No.	Fax No.	E-mail	Signature
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29.	Lalitpur Power Generation Company Ltd	President	Lalitpur power Generation Company	7081007909	7081007909		rnbedi.ltp@lpgcl.com @lpgcl.com	24/03/23
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30.	MEJA Urja Nigam Ltd							
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List of Participants of 64th Meeting of NRPC on 24.03.2023 at Dharamshala, Himachal Pradesh

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	JYOTIPRAKASH PANDA	VP, Power Sales	JSW Energy	9449849739			jyotiprakash.panda@jsw.in	
	Vikrant Tyagi	Deputy Manager	Mahindra Susten	7982718220			tyagi.Vikrant@mahindra.com	
	Vineet Kumar	Sr. Manager	Mahindra Susten	9899669830			kumar.vineet3@mahindra.com	

File No.CEA-PS-14-77/4/2022-PSETD Division /113-91

I/26656/2023

सत्यमेव जयते

भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
विद्युत प्रणाली अभियांत्रिकी एवं प्रौद्योगिकी विकास प्रभाग
Power System Engineering & Technology Development Division

दिनांक /Date:10.03.2023

To,

As per the Attached List

विषय: Procedure for shifting of Transmission Lines involving works by other Infrastructure Developers-regarding

महोदय/महोदया,

Several infrastructure projects of National Highways Authority of India (NHAI), Indian Railways, Airports Authorities, Border Roads Organization (BRO), Irrigation Departments, etc. are going on in various parts of the Country and many times, construction/development projects like roads, railways, airports, mines, flood banks/dam etc. come across existing/under construction transmission lines in their route alignment, leading to the need for shifting of such lines for construction of these projects. However, due to lack of coordination between the Infrastructure Developers and the transmission line Owner, the safety of the transmission lines was sometime compromised during the construction and also construction of these infrastructure projects were delayed substantially.

To ensure smooth coordination between the infrastructure developing agencies and transmission licensees while developing infrastructure projects Ministry of Power vide its letter No. 34-3/18/2022-TRANS(MoP) dated 18th May, 2022 requested Central Electricity Authority (CEA) to prepare a consolidated Standard Operating Procedure for shifting of Transmission lines while developing infrastructure projects. Accordingly, CEA prepared a consolidated Standard Operating Procedure for shifting of Transmission lines after deliberations/discussion with

सेवा भवन, आर. के. पुरम-I, नई दिल्ली-110066 टेलीफैक्स: 011-26732304 ईमेल: ce-psetd@nic.in वेबसाइट:www.cea.nic.in
Sewa Bhawan, R.K Puram-I, New Delhi-110066 Telefax: 011-26732304 Email: ce-psetd@nic.in Website: www.cea.nic.in

I/26656/2023

various stakeholders, in various meetings and submitted to Ministry vide CEA's letter no. CEA-PS-1477/4/2022-PSETD Division dated 11.11.2022. Ministry of Power Vide its letter no. 34-3/18/2022-TRANS(MoP) dated 03.03.2023 conveyed approval of the Hon'ble Minister of Power and NRE for **"Procedure for Shifting of Transmission Lines involving in work by other Infrastructure Developers"**.

A copy of the approved document is attached herewith for compliance of all the stakeholders in addition to the existing regulatory provisions of Central Electricity Authority (CEA) and other Authorities such as Environment & Forest, Defence, Airport, NHAI, BRO, etc., to ensure smooth coordination between the infrastructure developing agencies and transmission licensees while developing infrastructure projects.

भवदीय,

10/03/2023

(भंवर सिंह मीना/ Bhanwar Singh Meena)

निदेशक/ Director

Copy to:

1. Joint Secretary (Trans), Ministry of Power, Shram Shakti Bhawan, New Delhi (Email: afzal_mdp@nic.in; transdesk-mop@nic.in)
2. PPS to Member (PS), CEA (Email: memberpscea@nic.in)
3. Chief Engineer, PSPM division (Email: ceapspm@gmail.com)
4. Chief Engineer, CEI division (Email: cea.eidivision@gmail.com)

F. No. 34-3/18/2022-TRANS (MoP)
भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
(पारेषण प्रभाग / Transmission Division)
*****

श्रम शक्ति भवन, रफी मार्ग, नई दिल्ली- 110001
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001

दिनांक: 03.03.2023

To,

Chairperson
Central Electricity Authority
Sewa Bhawan, R.K. Puram
New Delhi – 110 066

Subject: Procedure for Shifting of Transmission Lines involve in work by other Infrastructure Developers – regarding

Sir,

I am directed to refer to CEA's letter No. CEA-PS-14-77/4/2022-PSETD Division dated 11.11.2022, therein, sharing the Standard Operating Procedure (SOP) for shifting of Transmission lines by various infrastructure developers, and to say that SOP as approved by the Hon'ble Minister of Power and NRE is enclosed..

2. It is, therefore, requested to circulate the said SOP to all the States/UTs Government and all the concerned Ministries / Department.

3. This issues with approval of the Competent Authority.

Yours Sincerely,

Enclosure: As stated.

3/3/23.

(बिहारी लाल)
अवर सचिव, भारत सरकार,
टेलीफैक्स: 2332 5242
ई-मेल: transdesk-mop@nic.in

Standard Operating Procedure for shifting of Transmission line for other infrastructure projects

Several infrastructure projects of National Highways Authority of India (NHAI), Indian Railways, Airports Authorities, Border Roads Organization (BRO), Irrigation Departments, etc. are going on in various parts of the Country and many times, construction/development projects like roads, railways, airports, mines, flood banks/dam etc. come across existing/under construction transmission lines in their route alignment, leading to the need for shifting of such lines for construction of these projects. However, due to lack of coordination between the Infrastructure Developers and the transmission line Owner, the safety of the transmission lines was being often compromised during the construction and also construction of these infrastructure projects were delayed substantially. Therefore, in addition to the existing regulatory provisions of Central Electricity Authority (CEA) and other Authorities such as Environment & Forest, Defence, Airport, NHAI, BRO, etc.,the following Standard Operating Procedure (SOP) for shifting of Transmission lines needs to be observed while developing infrastructure projects.

STANDARD OPERATING PROCEDURE:

1. Subsequent to the erection of a transmission line (overhead line or underground cable),if any entity, including but not limited to BRO, NHAI, Indian Railways, Airports Authority, Irrigation Departments, etc.(hereinafter called Infrastructure Developer), proposes to carry out construction of road, railway track, airport, dam, flood bank, etc. or addition/alteration of existing infrastructure or similar type of work, whether permanent or temporary, which may affect the safety, reliability, availability, and clearances of the existing transmission lines or which may require shifting of whole or part of the transmission lines, such Infrastructure Developer or it's contractor employed to carry out such construction/addition/alteration, shall give intimation in writing to the Owner of the affected transmission line and to the Member (Power System), CEA and shall furnish therewith a detailed proposal including coordinates, scale drawing of the proposed work, finished level of Road/Rail, KMZ/KML file of the route etc.

2. Except for Projects of National Importance, all other requests for the diversion of transmission lines for other infrastructure projects shall be considered by the Owner of the transmission line, only if such diversion proposal for infrastructure projects serves wider public interest and is

recommended by the concerned State Government or the concerned Central Ministries. After getting the recommendations of the State Government or the concerned Central Ministry, such diversion proposal for ISTS lines, excluding Projects of National Importance, shall be taken up after approval by the Ministry of Power. For the Projects of National Importance, no such approval is required. Individual request for diversion shall not be considered.

3. On receipt of an intimation for the shifting of transmission line, the Owner of the transmission line shall examine the proposal for compliance of existing regulations and any other law for the time being in force, technical feasibility of the proposal, Right of Way (RoW) compliance and requirement of shifting or alteration of the transmission line and compensation required as per regulation, if any. The Owner shall carry out a joint survey with Infrastructure Developer to assess the ground conditions and collect relevant information. The Owner shall intimate its views/queries to the Infrastructure Developer, if any or its concurrence on the proposal within 30 days from the date of receipt of the proposal.

4. The Infrastructure Developer shall furnish clarificationsto the queries, if any,to the Owner of the affected transmission line within 15 days of receipt of queries/views.Any further communication, if any, among the parties in this regard shall be replied within 07 days from the receipt of the correspondence.

5. Both the parties will mutually decide whether the Owner of the transmission linewill carry out shifting/alteration of the transmission line or this responsibility will be taken up by the Infrastructure Developer.

6. If shifting or alteration work is executed by theInfrastructure Developer:

   (a) He shall submit the design documents and drawings relevant for the construction of transmission line to the Owner of the transmission line. The Owner shall examine/raise queries, if any, and provide its final approval of drawings within 3 Weeks from the date of receipt of documents.If required, the existing design documents and drawings available with the Owner may be provided to the Infrastructure Developer. No work of shifting of transmission line shall be executed before getting the final approval of drawings/documents by the Owner.

(b) All relevant cost incurred for shifting/alteration shall be borne by the Infrastructure Developer.

(c) The Infrastructure Developer shall be responsible for RoW compensation, forest clearances, wild life clearance etc.

(d) Both the parties may sign a Memorandum of Understanding (MoU) which will include mutually agreed terms and conditions.

(e) The Infrastructure Developer shallpay supervision charges, as specified in this SOP, to the Owner before commencement of work of shifting/altering the line.

(f) The Infrastructure Developer shall intimate the requirement of shutdown of existing transmission line for work of shifting or altering to the Owner of the transmission line for further necessary action in this regard. The shifting or alteration work shall be initiated only after the approval of RPC/SLDC.

7. If shifting or alteration work is executed by the Owner of the transmission line, the following provisions shall be followed:

(a) The Owner shall work out the cost implication of the shifting/alteration of the transmission line on the basis of the cost of material used after crediting the depreciated cost of the existing material which is being replaced and the wages of labour employed in effecting the shifting/alteration and intimate the same along with the time required for shifting/altering the transmission line to the Infrastructure Developer, within 30 days. The estimate may also include all statutory charges, supervision charges, amount for compensation of RoW/Forest Clearance/Wild life Clearance etc., as applicable.

(b) The Infrastructure Developer, shall deposit the amount of the estimated cost to the Owner, within30 days of the receipt of the cost estimate.

(c) If there is any dispute regarding the cost of alteration of the transmission line estimated by the Owner or the responsibility to pay such cost, the dispute may be referred to the Member (Power System), CEA which shall after hearing both parties decide upon the issue.

(d) Both the parties may sign an MoU which will include mutually agreed terms and conditions.

(e) The work of shifting/alteration shall be awarded through a tender, by the Owner and the price discovered through the tender and other charges as mentioned above shall be reimbursed by the Infrastructure Developer. In case the shifting project is of small size and/or the project is of urgent nature, and the Owner awards the

work on Rate Contract or cost plus basis, the reimbursement of cost of works, in such case, shall be as per actuals.

8. The Infrastructure Developer shall make a payment of supervision charges at the following rates to the Owner of the transmission line:

Infrastructure Project	**Shifting works by Infrastructure developers**	**Shifting works by the Owner**
Projects Under BharatmalaPariyojana	2.5%	Not Applicable
Other Infrastructure Projects	2.5%	15%

[Note:Supervision charges may be calculated as the percentage of estimated cost of material (after crediting the depreciated cost of the existing material) & wages (exclusive of GST) and then GST may be separately applied on the supervision charges.]

9. The shifting/alteration work shall normally be completed within 10 months from the date of first request of the infrastructure developer. In case the shifting project is of small size or the project is of urgent nature, a shorter time frame may be mutually decided between the Owner & the infrastructure developer.

10. The design, testing, construction and erection/laying of transmission line shall be in accordance with Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, Central Electricity Authority (Measures Relating to Safety and ElectricSupply) Regulations and relevant Standards. In addition, the applicable Regulations/Guidelines/Procedures of other Authorities such as NHAI, BRO, Airport, Defense, Forest, etc., shall be followed.

11. It shall be ensured that the reliability and safety of the transmission line is not compromised during or after the diversion work.

12. No cutting of soil within ten meters from the tower structure of 110 kV and above voltagelevel shall be permitted without the written permission of the Owner of tower structure.For towers located on hill slope, extra precautions shall be taken to ensure that any cutting/excavation on that hill does not compromise the safety and integrity of the tower structure and if it is expected that the stability of hill may be compromised due to cutting/excavation work, even for distance beyond 10 m, the written

permission of the Owner of tower structure shall be taken before commencing any such activity.

13. Before commencement of work upon road, rail, airport, flood bank, dam etc.,Infrastaructure Developer shall ensure that the provisions of Regulations 58, 60, 61 and 76 of Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010(as amended up to date)are not contravened either during or after the aforesaid construction.

14. The request for requirement of shutdown of existing transmission line for work of shifting or altering shall be submitted to the respective Regional Power Committee (RPC) or State Load Dispatch Center (SLDC), as applicable, well in advance by the Owner of the transmission line.

15. As per Ministry of Power's OM No. 34-311812022-Trans dated 03.08.2022, the RPC Secretariat shall provide deemed availability certificate for the shutdown period availed by transmission licensee (both RTM and TBCB) for shifting of their ISTS lines for all National Infrastructure Projects of NHAI, Railways, BRO etc., provided transmission customers are not affected by the shutdown of the line.All such applications for deemed availability shall be considered irrespective of date of application. However, deemed availability for past shifting of lines, where the diversion work has already been completed, shall not be considered

16. For the cases where deemed availability certificate for the shutdown period is not issued to transmission licensee for the shutdown period or part thereof, then in such cases, charges towards loss of availability due to such shutdowns shall be borne by Infrastructure Developer.

17. **Requirement for Overhead Transmission Lines Crossing of Road/highways :**

(a) At all road crossings, except National Highways, the towers/ poles shall be fitted with normal suspension or tension insulator strings depending on the type of towers. However, for all National Highways crossings, tension type towers/ poles with tension insulator stringsshall be used.
(b) A minimum of two sets of long rod insulators or two sets of disc insulator strings per phase per circuit shall be used.
(c) The crossing span shall not be more than 250 meters, unless higher span is permitted by NHAI.

(d) No joints in conductors or earth wire(s) shall be permitted, in crossing span.

(e) Theoverhead line crossing shall normally be at right angle as far as possible.

पतों की सूची:

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51.	Managing Director, Karnataka Power Transmission Corporation Ltd., Kaveri Bhawan Bangalore -560009	md@kptcl.com,
52.	Chairman & Managing Director Transmission Corporation of Telangana Ltd. Vidyut Soudha, Khairatabad, Hyderabad - 500082	cmd@tstransco.in,
53.	Managing Director Assam Electricity Grid Corporation Ltd., Bijulee Bhawan, Paltan Bazar Guwahati-781 001	managing.director@aegcl.co.in, md_aegcl@yahoo.co.in,
54.	Chairman & Managing Director Tripura State Elecy. Corporation Ltd. Govt. of Tripura, Bidyut Bhawan Agartala- 799 001.	cmd.tsecl@rediffmail.com,
55.	Managing Director Power Transmission Corporation of Uttarakhand Ltd. Vidyut Bhawan, Saharnpur Road, Near I.S.B.T. Crossing, Dehra Dun, Uttarakhand - 248002	md.ptcul@rediffmail.com,
56.	Managing Director TANTRANSCO, 10th Floor/NPKRR Malikai, No. 144 Anna Salai, Chennai-600002	mdtantransco@tnebnet.org,
57.	Managing Director, Assam Electricity Grid Corporation Ltd., Bijulee Bhawan, Paltan Bazar, Guwahati- 781 001	managing.director@aegcl.co.in, md_aegcl@yahoo.co.in,
58.	Managing Director, Madhya Pradesh Power, Generating Company Ltd, Shakti Bhawan Vidyut Nagar P.O.Jabalpur-482 008(MP)	mppgcl@mp.nic.in,
59.	Managing Director, Haryana Power Generation Corporation Ltd. UrjaBhawan, C-7, Sector-6, Panchkula, Haryana-13410	md@hvpn.org.in,

60.	Chairman, Gujarat UrjaVikas Nigam Ltd., Sardar Patel VidyutBhawan, Race Course, Vadodara- 390 007	md.guvnl@gebmail.com,
61.	Chairman & Managing Director U.P. Rajya Vidyut Utpada n Nigam Ltd. Shakti Bhawan, 14- Ashok Marg, Lucknow-226 001	cmd@upptcl.org,
62.	Chairman & Managing Director Toshiba Transmission & Distribution System (I) Pvt. Ltd. Rudraram, Patancheru Mandal, Medak District, Telangana – 502 329	marketing@toshiba-ttdi.com,
63.	Managing Director Chhattisgarh State Power Transmission Company Ltd., Dangania, Post Sunder Nagar Raipur – 492013.	mdtransco@cspc.co.in,
64.	Chairman & Managing Director Neyveli Lignite Corporation Limited Corporate Office, Block -1, Neyveli-607801	cmd@nlcindia.in,
65.	Chairman & Managing Director, Telangana State Power Generation Corporation Limited, VidyutSoudha, 'A' Block, Khairatabad, Hyderabad – 500 082	cmd@tsgenco.co.in,
66.	Mr. Vijay Chhibber, Director General, Electric Power Transmission association, Core 6-A, Ground Floor India, Habitat Centre, Lodi Road, New Delhi – 110 003.	epta.dg@gmail.com, dg.epta@epta.in,
67.	Member Secretary, Northern Regional Power Committee, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110 016	ms-nrpc@nic.in
68.	Member Secretary, Western Regional Power Committee, Plot No. F-3 MIDC, Area, Marol, Opp. SEEPZ, Central Road, Andheri(East), Mumbai – 400093	ms-wrpc@nic.in
69.	Member Secretary, Southern Regional Power Committee, 29, Race Course Cross, Road, Bangaluru– 560009.	mssrpc-ka@nic.in

70.	Member Secretary, Eastern Regional Power Committee 4, Golf Course Road, ERPC Building, Tollygunj, Kolkata – 33.	mserpc-power@nic.in
71.	Member Secretary, North Eastern Regional Power Committee NERPC Complex, Dong Parmaw, Lapalang, Shillong – 793006 (Meghalaya)	ms-nerpc@gov.in
72.	Shri E.V. Rao, KEC International Limited, RPG House, 463, Dr. Annie Besant Road,Worli, Mumbai-4000 030	raoev@kecpg.com,
73.	Shri Kaushal Thakkar, Manager, Kalpataru Power Transmission Ltd., Plot No. 101, Part III,GIDC Estate, Sector 28, Gandhinagar- 382028, Gujarat	kaushal.thakkar@kalpatarupower.com, thakkarkaushal86@yahoo.com,
74.	Shri Chanchal Kumar, Managing Director, National Highways & Infrastructure Development Corporation Ltd(NHIDCL), 3rd Floor, PTI Building, 4-Parliament Street, New Delhi – 110001	md@nhidcl.com; ed1@nhidcl.com;
75.	Shri I R Venkatraman (Head & VP - Regulatory & Contracts) Unit No. 101, First Floor, Windsor, Village KoleKalyan, off CST Road, Vidyanagari Marg, Kalina, Santacruz (East), Mumbai – 400 098	Email: venkatraman.inumula@indigrid.com

8.1 Director (PSPA-I), CEA, stated that the proposal of LILO of 220 kV Sasaram(PG)-Sahupuri(UPPTCL) line at 220/132/33kV New Karamanasa GSS(BSPTCL) was discussed in 18th Meeting of Standing Committee on Power System Planning of Eastern Region held at Kolkata on 13th June 2016, wherein, New Karamanasa 220/132/33kV GSS (BSPTCL) along with the above LILO was approved. However, the proposal was to be ratified in the SCPSPNR/ NRPC (TP) meeting.

8.2 BSPTCL vide letter dated 18th March, 2021, informed that they are not getting shutdown approval from NLDC for carrying construction/commissioning activities of the above LILO.

8.3 UPPTCL vide letter dated 12.04.2021 has submitted following on the above LILO proposal at 220kV New Karamanasa GSS(BSPTCL)

(i) 220 kV Sasaram line is one of the primary source, feeding the 220 kV S/s Sahupuri, which in turn is suppling power to 220 kV Bhelupur (2x60 MVA), 220 kV Raja ka Talab (1x60+1x40 MVA) and a number of 132 kV S/s, as shown in SLD below. (Normally power drawl from this line is of the order of 100 to 150 MW).

(ii) In case of LILO of the subject line, Sahupuri will be connected to Karamanasa GSS of BSPTCL & drawl of ISTS power may be affected in certain loading conditions.

(iii) Further, 220 kV Sarnath — Sahupuri line is proposed to be LILOed at (under construction) 220 kV Bhadaura (Ghazipur) S/s and after construction of this LILO, 220 kV Sahupuri will be disconnected from 400 kV Sarnath and the connectivity will be from 220 kV Bhadaura.

(iv) Up-gradation of 220 kV Sahupuri to 400 kV level is planned and tentatively expected by February/March, 2022.

In view of above observations, UPPTCL has suggested that LILO of 220 kV Sasaram(PG)-Sahupuri(UPPTCL) line at 220 kV New Karamanasa GSS(BSPTCL) may be permitted after up-gradation of 220 kV Sahupuri to 400 kV level, so that power supply to Varanasi District can be maintained in reliable & uninterrupted manner.

8.4 UPPTCL further informed that UPPTCL has given consent to above proposal of BSPTCL subject to power drawl by BSPTCL to be restricted to 30 MW, till the time Sahupuri S/s is upgraded at 400 kV level.

8.5 Members noted the same.

9.0 Enhancement of ATC/TTC for Punjab due to unprecedented load growth of summer

9.1 Director (PSPA-I), CEA, stated that PSTCL vide letter dated 05.08.2021 has submitted that unrestricted demand of the state during the current paddy season has been intimated as 15500 MW by the distribution licensee i.e. PSPCL. However, Punjab has ability to meet about 13500 MW of load in solar hours with existing ATC limit of 6800 MW with full IPPs generation at 400/220/132 kV generating nodes. Therefore, in order to meet the state's demand, ATC limit is required to be increased to at least 9000 MW (for paddy season 2022). PSPCL has informed that no significant addition of generation within the State is likely in coming year. State of Punjab has to deal with peculiar load profile wherein demand is nearly two times during Paddy season of June-September than that in the rest of the year. Therefore, it would not be a viable option to enter into long/Medium term arrangements at the cost of surrendering power and paying fixed charges in the lean season apart from applicable transmission charges. Hence, to meet the increasing power demand, enhanced ATC/TTC is the only solution.

9.2 PSTCL has further mentioned that they have carried out load flow studies and has proposed following transmission works for enhancing ATC/TTC limits to 10,000/10,600 MW (considering 1000 MW annual load growth for FY 2022-23):-

(a) Transmission elements required at ISTS Sub-Stations.

Sl. No.	Sub-Station	Description of Works	Timeline for completion
1	400 kV PGCIL Ludhiana	Augmentation of 1x315 MVA, 400/220 kV ICT to 1x500 MVA.	May, 2022
2	400 kV PGCIL Patiala	Augmentation of 1x315 MVA, 400/220 kV ICT to 1x500 MVA.	May, 2023

(b) Transmission elements required in Intra State Sub-Stations of PSTCL:

Sl. No.	Sub-Station	Description of Works	Timeline for Completion
1	400 kV Dhanansu	Installation of addl. 1x500 MVA,	May, 2023
2	400 kV Dhanansu	LILO of 400 kV Nakodar-Kurukshetra line at 400 kV Dhanansu S/s.	May, 2023

In view of above, PSTCL has proposed augmentation of 1x315 MVA, 400/220 kV ICT to 1x500 MVA.at Ludhiana and Patiala.

9.3 PSTCL stated that as the demand in Ludhiana is expected to increase, therefore augmentation is much needed in Ludhiana S/s. Further, as there is a strict timeframe for this augmentation by May, 2022, therefore PSTCL requested POWERGRID to check if there is a possibility to divert any 500 MVA ICT to Ludhiana S/s.

9.4 POWERGRID stated that the 315 MVA ICTs at Ludhiana and Patiala S/s which are to be replaced by 500 MVA ICTS, can be kept as regional spare. In this regard, CTU suggested that there is requirement of 315 MVA ICT at Bhinmal, therefore ICT can be shifted to Bhinmal or kept as regional spare.

9.5 After deliberations, following was agreed:

(i) Augmentation of 1x315 MVA, 400/220 kV ICT to 1x 500 MVA at Ludhiana

(ii) The 315 MVA ICT spared from Ludhiana may be shifted to Bhinmal based on the residual life assessment or refurbishment (if required)

(iii) Augmentation of 1x315 MVA, 400/220 kV ICT to 1x 500 MVA at Patiala. The 315 MVA spared ICT at Patiala may be used as Regional spare.

10.0 Issue of requirement of reactors and FSCs installed at various locations in Northern Region:

Director (PSPA-I), CEA, stated that CTUIL had forwarded letters from POWERGRID intimating that they have been directed by CERC for the following:

(i) To check the further requirement of 80 MVAR line reactor installed at Kanpur end of 400 kV Kanpur- Fatehpur line (earlier Kanpur- Singrauli line)

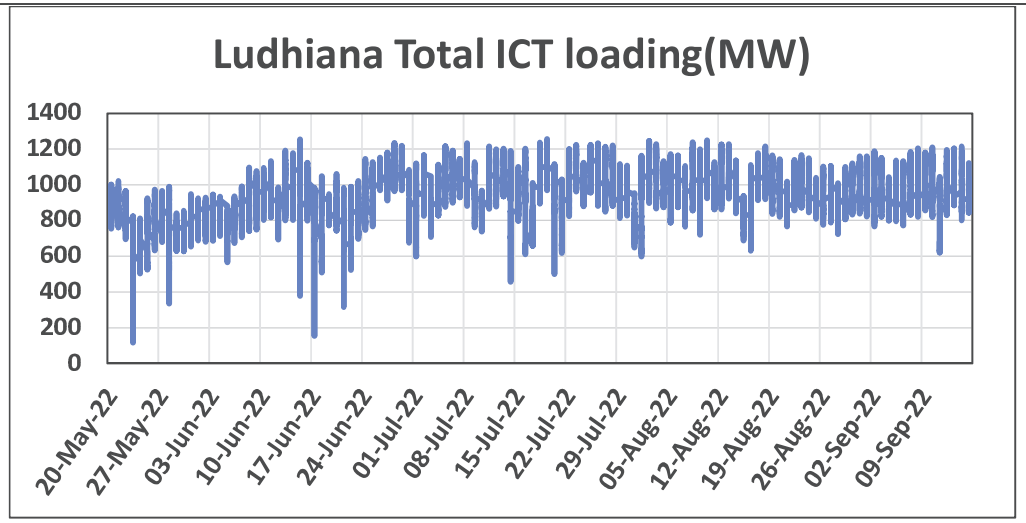

Figure-2 Loading of Ludhiana ICTs (1630MVA) (Source :POSOCO/NRLDC)

From the loading pattern, it emerged that the loading of ICTs at Ludhiana is consistently in the range of 1000-1200 MW in paddy season (Jun-Aug) with peak loading of 1257 MW against 1630MVA transformation capacity (~77% loading). Considering the load growth as indicated by PSTCL, outage of one 500 MVA ICT at Ludhiana, balance ICTs may become ' N-1' non-compliant in future. In the 198th OCC meeting held on 17.08.2022, NRLDC had also highlighted that the loading of 400/220kV ICTs at Ludhiana was close to N-1 limits.

POWERGRID vide mail 14.09.22 confirmed the feasibility to replace the existing 315 MVA ICT (1st or 3rd) at Ludhiana with a 500 MVA ICT. However, POWERGRID informed that currently ICT-1 tertiary is being used for auxiliary supply of SVC whereas ICT-3 tertiary is being used for station load at Ludhiana. During replacement any of the option of replacement of ICT-1 or ICT-3 needs to be explored. In case of replacement of ICT-1, any outage of SVC on account of auxiliary supply failure may be considered deemed available or 66kV cable may be considered for loading of tertiary of ICT-2 (500MVA) or ICT-3 (315MVA) for SVC auxiliary supply. POSOCO stated that deemed availability cases can be discussed in separate forum i.e. OCC/NRPC meetings. However in case 66kV cable is deployed, thereon be any issue in SVC auxiliary supply.

CTU enquired about the year of make for ICT-1 & 3. POWERGRID replied that ICT-1 is year 2008 make whereas ICT-3 is year 2010 make. CTU stated that as there is only 2 years difference in ICT make year, any one of the ICTs (1 or 3), which is more techno economically feasible may be selected for replacement with 500MVA ICT. POWERGRID stated that they will confirm the techno economically feasibility of both the ICTs. POWERGRID vide mail 10.10.22 informed that for Auxiliary supply arrangement for SVC during replacement of 315MVA ICT-1, it is proposed that 66kV Cable of approx. 250 Meter length may be considered from adjacent ICT-2 till ICT-1. CGM POWERGRID indicated that PSTCL desired schedule i.e. May'23 gives them only 7 months for ICT replacement, which is not sufficient and implementation timeframe should be at least 15 months. In the meeting, PSTCL was also requested to indicate their requirement well in advance so that TSP get adequate time for implementation.

Considering the unprecedented growth of load in Punjab and request of PSTCL, following ISTS scheme was agreed

- Replacement of 1x315 MVA (3rd) 400/220kV ICT (ICT-1) to 500 MVA at 400/220 kV Ludhiana (PG) S/s*

**along with 66kV cable for shifting auxiliary supply to SVC from ICT-1 to ICT-2*

It was decided that implementation timeframe shall be kept 15 months (from allocation of project), however POWERGRID may make best efforts for May'23 schedule and 315MVA ICT will be used as regional spare.

E. Replacement of 1x250 MVA, 400/220 kV ICT to 500 MVA at 765/400/220 kV Moga S/s

It was deliberated that at present the total transformation capacity of 765/400/220kV Moga S/s is 1565 MVA (1x250+1x315+2x500). PSTCL requested to replace the 250 MVA ICT at Moga S/s with 500 MVA ICT. As per data received from POSOCO/NRLDC, loading pattern of Moga ICTs (Nov'21 onwards) is as shown below:

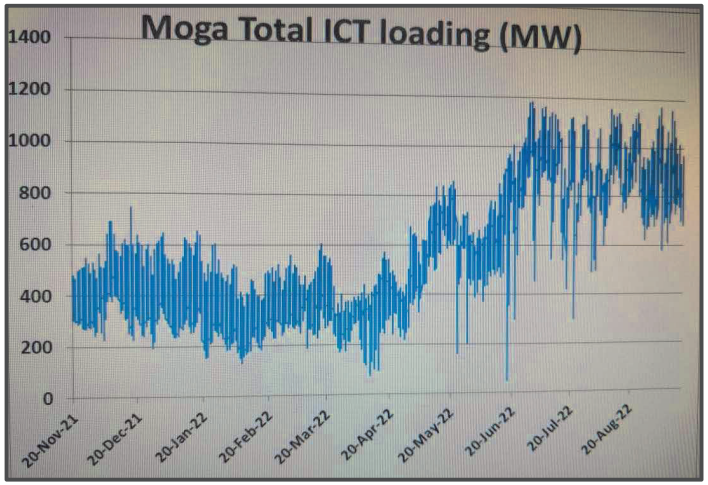

Figure 3 Loading of Moga ICT*s* (1565MVA) (Source : NRLDC/POSOCO)

From the loading pattern it emerged that the loading of ICTs at Moga is consistently in the range of 1000-1150 MW in paddy season (May'22 onwards) with peak loading of about 1200 MW against 1565MVA (~75% loading). Considering the load growth as indicated by PSTCL outage of one 500 MVA ICT at Moga, other ICTs may become ' N-1' non-compliant in future. In the 198th OCC meeting of NRPC held on 17.08.2022, NRLDC had also highlighted that the loading of 400/220kV ICT at Moga was close to N-1 limits.

POWERGRID vide mail 14.09.22 also confirmed the feasibility to replace the existing 250 MVA ICT at Moga with 500 MVA ICT. However, POWERGRID informed that 220kV CTs in 220kV ICT bay needs to be replaced due to low rating. Considering the unprecedented growth of load in Punjab & request of PSTCL, it was agreed to replace the 250 MVA ICT at 765/400/220kV Moga with a 500 MVA ICT. CGM, POWERGRID also proposed that given the age of 250MVA ICT (year 1994), same may be decapitalized.

PSTCL desired schedule i.e. May'23 for above replacement also. However as stated by POWERGRID during above deliberations. transformer implementation schedule should be minimum 15 month. Therefore, it was decided that implementation timeframe shall be 15 months (from allocation of project), however POWERGRID may make best efforts to May'23 schedule. Considering above, following ISTS scheme was agreed:

iii. New intermediate substation in between may also be proposed and the line length may be reduced as switching of 320km long inter-regional line may lead to issues in future.

CTU representative informed the following:

i. Outage of 765kV D/C line from Jalore-Mandsaur has not been studied as transmission system is being planned for N-1 contingency only and any additional transmission system would come with additional cost.

ii. In case of N-1 contingency, the angular difference is around 25 degrees which is under the stipulated planning criteria. As what mentioned by NRLDC i.e. when both lines trip is an N-1-1 contingency. This is a rare contingency and this too may occur during peak solar. He also informed forum regarding possibility of making LILO of line so as to reduce line length in future. He further informed that an additional corridor is being planned from Jalore. Therefore, in that condition, angular control will be much better in future.

Unquote

A.2 Requirement of 02 Nos. 500MVA, 400/220 kV and 02 Nos. 160 MVA 220/66 kV Power Transformer (agenda by PSETD Division, CEA)

A.2.1 EE (P& SS), NRPC apprised the forum that PSETD Division, CEA in its letter dated 23.01.2023 (**Annexure –I**) has referred the issue of DTL to NRPC Sectt. for requirement of 02 Nos. 500MVA, 400/220 kV and 02 Nos. 160 MVA 220/66 kV Power Transformer

A.2.2 He added that DTL in its letter No. F.DTL/Dir (O)/201/2022-23/F.03/216 dated 11.01.2023 had requested CEA to direct other State Transmission Utility (STUs) to provide 02 Nos. 500 MVA and 02 Nos. 160 MVA Transformers on returnable basis or cost-plus basis so that DTL may have spare Power Transformers in-hand to overcome any exigency during the period of G-20 events scheduled to be held in Delhi in the year 2023.

A.2.3 He apprised that PSETD Division, CEA has mentioned that DTL was well aware in advance about the hosting of G-20 Summit in the year 2023 by India and many related events including Summit to be held in the Capital City of Delhi. Therefore keeping in view, the importance of the said event, DTL may have taken the advance action for ensuring the availability of the spare transformers for the reliable power supply in the said event.

A.2.4 Also, PSETD Division, CEA had mentioned that CEA would explore and assess the availability of the spare transformers with constituent of Northern Region for making available to DTL. However, DTL has also to take the necessary action in this regard for

getting the spare transformers for ensuring the reliability of power supply during G-20 event.

A.2.5 DTL representative in the meeting highlighted that they have floated tender on multiple times for procurement of transformers but it could not be materialized due to covid-19 situation and price fluctuation due to the other global events. He intimated that they are already in process of shifting one 315 MVA transformer from Ballabgarh to Mundka and POWERGRID has agreed to it and target date for completion of cited activity is 15th April'23. Taking this into consideration there will be total 3 transformers in Mundka and it would be n-1 compliant. He further added that DTL is planning HTLS for Bamnuali, Najafgarh, Kanjawala and Bawana circuit then power flow will be from Bamnuali to Bawana and henceforth n-1 requirement will be met for two transformers at Bawana and it is expected to be completed by April'24.

A.2.6 DTL representative highlighted that they are doing procurement through short term tender basis for two 100MVA, two 160 MVA and two 500 MVA transformer and expected delivery schedule is 7 to 12 months. The same would be returned to the constituent of Northern Region from whom spare transformer is being arranged. With this there will be no bottleneck in the transmission constraint of DTL for reliable power supply during the hosting of G-20 summit.

A.2.7 POWERGRID stated that they have already given 2 nos of 315 MVA transformers each at Bawana and Mundka Sub-station of DTL. Additionally, another 315 MVA transformer is also being shifted to Mundka from Ballabhgarh by POWERGRID. He expressed that POWERGRID may hold 315 MVA transformer (to be shifted to Bhinmal) at Ludhiana for use of DTL G-20 meeting.

A.2.8 DTL requested that one 315 MVA transformer may be given at Mundka in place of holding it at Ludhiana as it may take time for transportation in case of requirement.

A.2.9 Forum decided that POWERGRID shall provide one 315 MVA transformer (earlier to be shifted to Bhinmal) from Ludhiana to Mundka in view of request of DTL for preparation of G-20 meeting scheduled in Sept' 2023.

A.2.10 In view of above, it has been noted by NRPC forum that there is very high dependency of DTL on POWERGRID in relation to transformation capacity. MS, NRPC mentioned that NRPC Sectt. may write a letter to CMD, DTL for taking necessary action to decrease dependency on POWERGRID.

A.3 Unchahar#6 (St-IV U#1) Flue Gas De-Sulphurisation (FGD) unit Performance Guarantee (PG) Test (agenda by NTPC)

NRPC Members for FY 2023-24		
S. No.	**NRPC Member**	**Category**
1	Member (GO&D), CEA	-
2	CTUIL	Central Transmission Utility
3	PGCIL	Central Government owned Transmission Company
4	NLDC	National Load Despatch Centre
5	NRLDC	Northern Regional Load Despatch
6	NTPC	Central Generating Company
7	BBMB	
8	THDC	
9	SJVN	
10	NHPC	
11	NPCIL	
12	Delhi SLDC	State Load Despatch Centre
13	Haryana SLDC	
14	Rajasthan SLDC	
15	Uttar Pradesh SLDC	
16	Uttarakhand SLDC	
17	Punjab SLDC	
18	Himachal Pradesh SLDC	
19	DTL	State Transmission Utility
20	HVPNL	
21	RRVPNL	
22	UPPTCL	
23	PTCUL	
24	PSTCL	
25	HPPTCL	
26	IPGCL	State Generating Company
27	HPGCL	
28	RRVUNL	
29	UPRVUNL	
30	UJVNL	
31	HPPCL	
32	PSPCL	State Generating Company & State owned Distribution Company
33	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)
34	Jaipur Vidyut Vitran Nigam Ltd.	
35	Madhyanchal Vidyut Vitaran Nigam Ltd.	
36	UPCL	
37	HPSEB	
38	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity
39	Aravali Power Company Pvt. Ltd	
40	CLP Jhajjar Power Ltd.,	
41	Talwandi Sabo Power Ltd.	
42	Nabha Power Limited	
43	Lanco Anpara Power Ltd	
44	Rosa Power Supply Company Ltd	
45	Lalitpur Power Generation Company Ltd	
46	MEJA Urja Nigam Ltd.	
47	Adani Power Rajasthan Limited	
48	JSW Energy Ltd. (KWHEP)	
49	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)
50	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.
51	UT of Ladakh	
52	UT of Chandigarh	
53	BYPL	Private Distribution Company in region (alphabetical rotaional basis)
54	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)
55	Adani Enterprises	Electricity Trader (nominated by central govt.)

Chief Engineer (C&S)

U.P. State Load Despatch Centre
U.P. Power Transmission Corporation Ltd.
VibhutiKhand – II, Gomti Nagar,
Lucknow - 226010
Phone: 0522-2722866
E-mail: cecs@upsldc.org

Annexure-A.VI

No. 104 CE(C&S)/SCADA/NRPC Agenda/ Diff. in Drawal Date: 22 March, 2023

Member Secretary, NRPC,
18-A, SJSS Marg, Katwaria Sarai,
New Delhi, 110016.

Additional **Agenda for 64th Meeting of NRPC, New Delhi by UPSLDC.**

Sub: Difference in drawl of Uttar Pradesh, SEM vs SCADA.

Details of energy drawl by Uttar Pradesh from 27.02.2023 to 05.03.2023 as per SCADA data and SEM is given in the table below:

Date	Drawl as per SEM (in MU)	Drawl as per SCADA (in MU)	Difference (in MU)
27.02.2023	94.552	96.599	-2.047
28.02.2023	97.796	101.382	-3.586
01.03.2023	100.086	106.838	-6.752
02.03.2023	95.064	109.946	-14.882
03.03.2023	106.156	110.151	-3.995
04.03.2023	102.047	106.943	-4.896
05.03.2023	94.942	100.077	-5.135

From the above data it is evident that there is significant discrepancy in SEM and SCADA drawl which needs to be checked on urgent basis as drawl from the grid has commercial implication on Discom. It is also to mention that before 27.02.2023 this difference was minimal.

It is also to be mentioned that LILO of 400KV Bareilly (PG) - Moradabad (UPPTCL) circuit –II at 400 KV Rampur (PRSTL) was done on 27-02-2023. It is therefore requested that NRPC should check the data of actual drawl points and resolve the issue at the earliest.

It is also to be mentioned that algebraic sum of all the SEM installed at the boundary, do not match with the total energy drawl given in regional energy account. Therefore it is requested to provide point wise SEM drawl along with calculations so that SCADA data can be verified at the state level.

It is requested to resolve the issue at the earliest.

(Amarendu)
Chief Engineer (C&S)

No. CE(C&S)/SCADA/NRPC Agenda/ Diff. in Drawal Date: March, 2023

Copy forwarded to the following for information and necessary action:

1. Director (SLDC), UPSLDC, Vibhuti Khand- II, Gomti Nagar, Lucknow.
2. SE (SC/OA & Sch/EA), UPSLDC, Vibhuti Khand- II, Gomti Nagar, Lucknow.

(Amarendu)
Chief Engineer (C&S)

FORMAT

< Name and Address of Utility>

Undertaking by the Utility in respect of Compliance to Cyber Security requirement

(to be submitted during First-Time Charging)

The following element is proposed to be charged on _____<date> tentatively around _____hours.

S no and Name of the element:

Details of CISO & Alternate CISO (Refer Article 2 of Guideline):

S/N	Name	Designation	Role (CISO / Alt-CISO)	Contact Number	E-mail

Details of Internet facing IPs on-boarded to CSK (Refer Article 5c-1 of Guideline):

S/N	Public IP Pool details with range / CIDR	Service Provider name

It is hereby certified that necessary Cyber Security measures and controls has been suitably implemented and shall be kept operational / practiced immediately as the element is charged and commissioned.

Further, certified that:

1. The concerned utility shall intimate / has already intimated their details regarding Cyber Security compliance, as required, with the concerned Sectoral CERT as prevailing guideline / practice.
2. The concerned utility / station has implemented the cyber security requirements and guidelines as provisioned in CEA (Cyber Security in Power Sector) Guidelines, 2021.
3. The Utility shall carry out necessary Vulnerability Assessment (as per periodicity provisioned in the CEA Guideline) of the complete IT / OT infrastructure associated with Data Acquisition, Control and all other related functions of the subject element through CERT-In empanelled third-party auditor. It is also certified that the open vulnerabilities reported through such VA Test shall be closed by the concerned utility within 1 month from date of vulnerability reported.

The undersigned also undertakes to co-ordinate with the concerned sectoral CERT and to abide by the requirement of CERT-In directions relating to information security practices dated 28.04.2022 (and Amendments thereof) and to report any Cyber incidence to the concerned agencies within the stipulated time.

Place:

Date: (**Name and Designation of the authorized person with official seal**)