सत्यमेव जयते

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

विषय: प्रचालन समन्वय उप-समिति की 227 वीं बैठक की कार्यसूची।

Subject: Agenda of the 227th OCC meeting.

प्रचालन समन्वय उप-समिति की **227 वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **17.01.2025** को **10:30** बजे से किया जायेगा । उक्त बैठक की कार्यसूची उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है ।

बैठक में सम्मिलित होने के लिए लिंक व पासवर्ड सभी सदस्यों को ई-मेल द्वाराप्रदान किया जाएगा।

कृपया बैठक में उपस्थित होने की सुविधा प्रदान करें।

The **227th** meeting of the Operation Co-ordination Sub-Committee will be conducted through Video Conferencing on **17.01.2025** from **10:30 Hrs**. The agenda of this meeting has been uploaded on the NRPC web-site http://164.100.60.165.

The link and password for joining the meeting will be e-mailed to respective e-mail IDs in due course.

Kindly make it convenient to attend the meeting.

Signed by Dharmendra Kumar Meena
Date: 13-01-2025 20:54:16

(डी. के. मीना)
निदेशक (प्रचालन)

सेवा में : प्रचालन समन्वय उप समिति के सभी सदस्य।
To : All Members of OCC

List of addressee (via mail)

OCC Members for FY 2024-25			
S. No.	**OCC Member**	**Category**	**E-mail**
1	NLDC	National Load Despatch Centre	nomination awaited (susha@grid-india.in)
2	NRLDC	Northern Regional Load Despatch Centre	somara.lakra@grid-india.in
3	CTUIL	Central Transmission Utility	kashish@powergrid.in
4	PGCIL	Central Government owned Transmission Company	rtamc.nr1@powergrid.in rtamcjammu@powergrid.in cpcc.nr3@powergrid.in
5	NTPC	Central Generating Company	hrastogi@ntpc.co.in
6	BBMB		powerc@bbmb.nic.in
7	THDC		ravindrasrana@thdc.co.in
8	SJVN		sjvn.cso@sjvn.nic.in
9	NHPC		surendramishra@nhpc.nic.in
10	NPCIL		df@npcil.co.in
11	Delhi SLDC	State Load Despatch Centre	gmsldc@delhisldc.org
12	Haryana SLDC		cesocomml@hvpn.org.in
13	Rajasthan SLDC		ce.ld@rvpn.co.in
14	Uttar Pradesh SLDC		cepso@upsldc.org
15	Uttarakhand SLDC		se_sldc@ptcul.org
16	Punjab SLDC		ce-sldc@pstcl.org
17	Himachal Pradesh SLDC		cehpsldc@gmail.com
18	DTL	State Transmission Utility	bl.gujar@dtl.gov.in
19	HVPNL		cetspkl@hvpn.org.in
20	RRVPNL		ce.ppm@rvpn.co.in
21	UPPTCL		smart.saxena@gmail.com
22	PTCUL		ce_oandmk@ptcul.org
23	PSTCL		ce-tl@pstcl.org
24	HPPTCL		gmprojects.tcl@hpmail.in
25	IPGCL	State Generating Company	ncsharma@ipgcl-ppcl.nic.in
26	HPGCL		seom2.rgtpp@hpgcl.org.in
27	RRVUNL		ce.ppmcit@rrvun.com
28	UPRVUNL		cgm.to@uprvunl.org
29	UJVNL		gm_engg_ujvn@yahoo.co.in
30	HPPCL		gm_generation@hppcl.in
31	PSPCL	State Generating Company & State owned Distribution Company	ce-ppr@pspcl.in
32	UHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	nomination awaited (md@uhbvn.org.in)
33	Jodhpur Vidyut Vitran Nigam Ltd.		addlcehqjdvvnl@gmail.com

34	Paschimanchal Vidyut Vitaran Nigam Ltd.		nomination awaited (md@pvvnl.org)
35	UPCL		cgmupcl@yahoo.com
36	HPSEB		cesysophpsebl@gmail.com
37	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	sanjay.bhargava@tatapower.com
38	Aravali Power Company Pvt. Ltd		amit.hooda01@gmail.com
39	Apraave Energy Ltd.,		rajneesh.setia@apraava.com
40	Talwandi Sabo Power Ltd.		ravinder.thakur@vedanta.co.in
41	Nabha Power Limited		Durvesh.Yadav@larsentoubro.com
42	MEIL Anpara Energy Limited		arun.tholia@meilanparapower.com
43	Rosa Power Supply Company Ltd		Suvendu.Dey@relianceada.com
44	Lalitpur Power Generation Company Ltd		avinashkumar.ltp@lpgcl.com
45	MEJA Urja Nigam Ltd.		rsjuneja@ntpc.co.in
46	Adani Power Rajasthan Limited		manoj.taunk@adani.com
47	JSW Energy Ltd. (KWHEP)		roshan.zipta@jsw.in
48	TATA POWER RENEWABLE	IPP having less than 1000 MW installed capacity (alphabetical rotational basis)	nomination awaited (dhmahabale@tatapower.com)
49	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.	sojpdd@gmail.com
50	UT of Ladakh		cepdladakh@gmail.com
51	UT of Chandigarh		elop2-chd@nic.in
52	Noida Power Company limited	Private Distribution Company in region (alphabetical rotational basis)	nomination awaited (ssrivastava@noidapower.com)
53	Fatehgarh Bhadla Transmission Limited	Private transmission licensee (nominated by central govt.)	nomination awaited (nitesh.ranjan@adani.com)
54	NTPC Vidyut Vyapar Nigam Ltd.	Electricity Trader (nominated by central govt.)	nomination awaited (ceonvvn@ntpc.co.in)

Contents

खण्ड-क: उ.क्षे.वि.स. Part-A: NRPC

A.1. Confirmation of Minutes

226th OCC meeting was held on 16.12.2024. Minutes of the meeting were issued vide letter dt. 08.01.2025. No comments received till now.

Decision required from Forum:

Forum may approve the minutes of 226th OCC meeting.

A.2. Status of action taken on decisions of 226th OCC meeting of NRPC

A.2.1. Status of action taken on decisions of 226th NRPC meeting is attached as **Annexure- A.0**.

A.3. Review of Grid operations

A.3.1. **Power Supply Position (Provisional) for December 2024**

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of December-2024 is as under:

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	120	128	7.0%	290	283	-2.4%
	(Req)	123	128	4.4%	307	283	-7.7%
DELHI	(Avl)	3477	2363	-32.0%	5573	5213	-6.5%
	(Req)	2300	2364	2.8%	5300	5213	-1.6%
HARYANA	(Avl)	6126	4625	-24.5%	9000	9351	3.9%
	(Req)	5933	4625	-22.0%	8554	9351	9.3%
HIMACHAL PRADESH	(Avl)	1127	1184	5.0%	2043	2254	10.3%
	(Req)	1204	1189	-1.2%	2158	2254	4.4%
J&K and LADAKH	(Avl)	1240	1956	57.8%	3130	3181	1.6%
	(Req)	2062	1978	-4.1%	3245	3181	-2.0%
PUNJAB	(Avl)	6100	4735	-22.4%	10100	9355	-7.4%
	(Req)	4531	4735	4.5%	8991	9355	4.0%
RAJASTHAN	(Avl)	9060	9998	10.4%	18360	18643	1.5%
	(Req)	10260	9998	-2.6%	18200	18643	2.4%
UTTAR PRADESH	(Avl)	10385	10321	-0.6%	21200	20666	-2.5%
	(Req)	10540	10324	-2.0%	21200	20666	-2.5%
UTTARAKHAN	(Avl)	1333	1335	0.1%	2450	2504	2.2%

D	(Req)	1380	1335	-3.2%	2490	2504	0.6%
NORTHERN REGION	(Avl)	38968	36646	-6.0%	73400	68500	-6.7%
	(Req)	38332	36677	-4.3%	66800	68500	2.5%

As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of December-2024 in terms of Energy Requirement for Haryana, HP, UTs of J&K and Ladakh, Rajasthan, UP and Uttarakhand and in terms of Peak Demand similar variation is noted for Chandigarh, Delhi, Haryana, UTs of J&K and Ladakh, UP. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

A.4. Maintenance Programme of Generating Units and Transmission Lines

A.4.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of February-2025 is scheduled on 16-January-2025 via Video Conferencing.

A.4.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of February-2025 is scheduled on 16-January-2025 via Video conferencing.

A.5. Planning of Grid Operation

A.5.1. Anticipated Power Supply Position in Northern Region for February 2025

The Anticipated Power Supply Position in Northern Region for February 2025 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	120	300	No Revision submitted
	Requirement	164	314	
	Surplus / Shortfall	-44	-14	
	% Surplus / Shortfall	-26.8%	-4.6%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Availability	3197	5637	
DELHI	Requirement	2200	5500	10-Jan-25
	Surplus / Shortfall	997	137	
	% Surplus / Shortfall	45.3%	2.5%	
HARYANA	Availability	5850	10610	No Revision submitted
	Requirement	4040	9353	
	Surplus / Shortfall	1810	1257	
	% Surplus / Shortfall	44.8%	13.4%	
HIMACHAL PRADESH	Availability	1221	2150	06-Jan-25
	Requirement	1251	2268	
	Surplus / Shortfall	-29	-118	
	% Surplus / Shortfall	-2.4%	-5.2%	
J&K and LADAKH	Availability	1230	3130	No Revision submitted
	Requirement	2240	3455	
	Surplus / Shortfall	-1010	-325	
	% Surplus / Shortfall	-45.1%	-9.4%	
PUNJAB	Availability	6200	10840	No Revision submitted
	Requirement	5142	10026	
	Surplus / Shortfall	1058	814	
	% Surplus / Shortfall	20.6%	8.1%	
RAJASTHAN	Availability	8480	17790	No Revision submitted
	Requirement	11292	18972	
	Surplus / Shortfall	-2812	-1182	
	% Surplus / Shortfall	-24.9%	-6.2%	
UTTAR PRADESH	Availability	14560	29420	No Revision submitted
	Requirement	10872	23868	
	Surplus / Shortfall	3688	5552	
	% Surplus / Shortfall	33.9%	23.3%	
UTTARAKHAND	Availability	1426	2550	04-Jan-25
	Requirement	1442	2600	
	Surplus / Shortfall	-16	-50	
	% Surplus / Shortfall	-1.1%	-1.9%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Availability	39201	76000	
NORTHERN REGION	Requirement	35144	67600	
	Surplus / Shortfall	4057	8400	
	% Surplus / Shortfall	11.5%	12.4%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of February-2025 and submit the measures proposed to be taken to bridge the gap between demand & availability, as well to dispose-off the surplus, if any, in the prescribed format.

A.6. Follow-up of issues from previous OCC Meetings- Status update.

The updated status of agenda items is enclosed at ***Annexure-A.I***.

All utilities are requested to update the status.

A.7. NR Islanding scheme

Latest status of Islanding Scheme of NR is attached as **Annexure-A.II.**

Members may kindly deliberate.

A.8. Coal Supply Position of Thermal Plants in Northern Region

A.8.1 In 186th OCC meeting, it was agreed that coal stock position of generating stations in northern region may be reviewed in the OCC meetings on the monthly basis.

A.8.2 Accordingly, coal stock position of generating stations in northern region during current month (till 09th January 2025) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
ANPARA C TPS	1200	0.87	16	14.8
ANPARA TPS	2630	0.54	16	24.2
BARKHERA TPS	90	0.58	24	29.1
DADRI (NCTPP)	1820	0.66	24	14.9
GH TPS (LEH.MOH.)	920	0.62	24	34.4
GOINDWAL SAHIB TPP	540	0.43	24	34.9
HARDUAGANJ TPS	1265	0.58	24	23.1
INDIRA GANDHI STPP	1500	0.64	24	29.4
KAWAI TPS	1320	0.80	24	17.8

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
KHAMBARKHERA TPS	90	0.58	24	19.9
KOTA TPS	1240	0.74	24	20.9
KUNDARKI TPS	90	0.58	24	27.4
LALITPUR TPS	1980	0.68	24	13.8
MAHATMA GANDHI TPS	1320	0.73	24	18.7
MAQSOODPUR TPS	90	0.58	24	18.5
MEJA STPP	1320	0.82	24	18.8
OBRA TPS	1094	0.65	24	7.2
PANIPAT TPS	710	0.53	24	26.5
PARICHHA TPS	1140	0.67	24	21.6
PRAYAGRAJ TPP	1980	0.76	24	29.1
RAJIV GANDHI TPS	1200	0.36	24	27.7
RAJPURA TPP	1400	0.76	24	31.8
RIHAND STPS	3000	0.88	16	17.0
ROPAR TPS	840	0.54	24	44.4
ROSA TPP Ph-I	1200	0.64	24	25.1
SINGRAULI STPS	2000	0.83	16	19.7
SURATGARH TPS	1500	0.38	24	20.3
TALWANDI SABO TPP	1980	0.31	24	7.7
TANDA TPS	1760	0.60	24	28.8
UNCHAHAR TPS	1550	0.74	24	26.1
UTRAULA TPS	90	0.29	24	29.1
YAMUNA NAGAR TPS	600	0.00	24	45.6
CHHABRA-I PH-1 TPP	500	0.82	24	12.7
KALISINDH TPS	1200	0.77	24	14.7
SURATGARH STPS	1320	0.43	24	13.8
CHHABRA-I PH-2 TPP	500	0.82	24	10.8
CHHABRA-II TPP	1320	0.62	24	14.2

A.9. Updating outage Details by Generating Station/utilities (Agenda by CEA)

A.9.1. To enhance the monitoring of approved Planned Maintenance schedules, Member (GO&D), CEA has directed that actual maintenance availed against approved planned maintenance is to be updated on priority by respective RPCs regularly on monthly basis.

A.9.2. In the 221st OCC meeting of NRPC, forum asked generating stations of NR to update the status of Planned Maintenance schedules versus actual maintenance availed for the previous month before every OCC meeting and it was decided that to

enhance the monitoring of approved Planned Maintenance schedules the said agenda item shall be taken as rolling/follow-up agenda in OCC meetings.

A.9.3. In this regard, list of Planned Maintenance schedules versus actual maintenance availed for the year 2024-25 for the month of December 2024 is attached as **Annexure-A.III.**

A.9.4. In this, regard, Generating Station/utilities of NR are requested to submit each month the details of the maintenance activities that transpired against the originally planned schedule. Further, any deviations from the planned schedule shall be explained by the concerned generating entities.

Generating utilities of NR to update status.

A.10. Implementation of AUFLS scheme in accordance with the report of Task Force on Automatic under Frequency Load Shedding (AUFLS) (Agenda by NRPC Sectt.)

A.10.1. In line with the report of Task Force on Automatic under Frequency Load Shedding (AUFLS) and df/dt scheme and Region wise quantum of load shedding in different stages of AUFLS communicated by NPC Secretariat, NRPC Sectt. has computed Stage-wise AUFLS relief quantum for each State/UT of NR.

A.10.2. The details of which are mentioned in the table below: -

State/UT	**Stage-1 49.4 Hz (5%)**	**Stage-2 49.2 Hz (6%)**	**Stage-3 49.0 Hz (7%)**	**Stage-4 48.8 Hz (7%)**	**Total**
	Stage-1 Relief	Stage-2 Relief	Stage-3 Relief	Stage-4 Relief	
Chandigarh	15.850	19.020	22.190	22.190	**79.248**
Delhi	299.338	359.205	419.073	419.073	**1496.690**
Haryana	526.332	631.599	736.865	736.865	**2631.661**
Himachal Pradesh	97.246	116.695	136.145	136.145	**486.231**
UT J&K & Ladakh	145.406	174.487	203.569	203.569	**727.031**
Punjab	601.638	721.966	842.293	842.293	**3008.190**
Rajasthan	811.056	973.268	1135.479	1135.479	**4055.282**
Uttar Pradesh	1191.769	1430.122	1668.476	1668.476	**5958.843**
Uttarakhand	113.069	135.682	158.296	158.296	**565.343**
Total	**3801.704**	**4562.045**	**5322.386**	**5322.386**	**19008.52**

A.10.3. In 226th OCC meeting, aforementioned relief was communicated to respective SLDC's of NR and forum asked States/UTs of NR to communicate feeder-wise, Stage-wise AUFLS quantum to NRPC/NRLDC before next OCC meeting.

A.10.4. In 15th NPC meeting held on 14.11.2024 following was approved by the committee

i. The AUFLS scheme must ensure Pumped storage hydro plants operating in pumping mode or ESS operating in charging mode shall be automatically disconnected before the first stage of UFR.

ii. Bulk consumers connected to ISTS and STU networks must implement the UFR scheme. Compliance should be ensured during the grant of connectivity by CTU and STU.

iii. The implementation of the **AUFLS and df/dt schemes must be completed by March 2025**. RPCs are required to regularly monitor the implementation of the UFR scheme as a whole including the bulk consumers connected at the ISTS level. RPCs may communicate above decisions to the respective States for implementation.

Respective SLDC's of NR to update the status.

A.11. Mandatory Submission of Daily and Monthly Generation Data on National Power Portal (Agenda by CEA)

A.11.1. OPM division CEA vide letter dated 30.12.2024 (copy enclosed as **Annexure-A.IV)** has asked all the generating utilities to submit their **monthly generation data on the NPP by the 7th of the following month without fail.**

A.11.2. This timeline will provide the Central Electricity Authority (CEA) sufficient time to validate and finalize the data for publication by the prescribed deadline set by Ministry of Statistics & Programme Implementation (MOSPI). In case the required data is not submitted within the stipulated timeframe, CEA will have no other option but to freeze the tentative monthly generation data as the final (actual) data.

A.11.3. Once the data is firmed up and published on the NPP, **no revisions or changes will be possible under any circumstances.**

Generating utilities of NR to comply.

A.12. AGC implementation at Parbati-3 Power Station and Parbati-2 HE Project: relaxation in Trial Run operation and COD of Units at Parbati-2 HE Project (Agenda by NHPC).

A.12.1. Parbati-3 Power Station of capacity 520 MW (4X130MW) is under operation since 2014. The Power of this power station is being evacuated to regional grid through 400KV Parbati-3-Banala and 400KV Parbati-3-Sainj-Banla transmission lines.

A.12.2. Hon'ble CERC vide Petition No.: 319/RC/2018 dated: 28th of August, 2019 issued an order on **"Automatic Generation Control (AGC) implementation in India".**

In the above order following was summarized:

In the interest of reliable and safe grid operation, the Commission directs that all the ISGS stations whose tariff is determined or adopted by CERC shall be AGC-enabled and the ancillary services including secondary control through AGC be implemented as per the following direction:

1) *All thermal ISGS stations with installed capacity of 200 MW and above and all **hydro stations having capacity exceeding 25 MW** excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by CERC are directed to **install equipment at the unit control rooms for transferring the required data for AGC as per the requirement to be notified by NLDC**. NLDC shall notify the said requirements within one month of this order.*
2) *All such ISGS stations whose tariff is determined or adopted by CERC shall have communication from the nearest wide band node to the RTU in the unit control room.*
3) ***The Central Transmission Utility (CTU) is directed to have communication availability from NLDC/ RLDCs to the nearest wide band node/ switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication**.*

A.12.3. In compliance of above order, NHPC had placed a work order in May 2020 to M/s Andritz for implementation of AGC at their eligible power stations including Parbati-3 Power Station. AGC was commissioned and functional at our ten locations except Parbati-3 Power Station due to non-availability of OPGW connectivity, accordingly this contract could not be closed and we are not able to release the balance payment to M/s Andritz due to contractual obligations.

A.12.4. NHPC vide letter dated 03.01.2025 (**Annexure-A.V**), sought the information from M/s Indigrid on implementation schedule of OPGW in Parbati-Banala-Koldam corridor. M/s Indigrid vide their email dated 08.01.2025 (**Annexure-A.VI**) intimated that time frame for implementation of OPGW {(Parbati-II – Parbati-III – 9.643 km,Parbati-III – Parbati Pooling (Banala) – 3.518 km, Parbati Pooling (Banala) – Koldam (NTPC) – 62.636 km, Parbati-II - Parbati Pooling (Banala) – 12.838 km)} is 18 months from 15.07.2024.

In view of above, it is understood that the OPGW shall be commissioned by 15 January 2026. Accordingly, the AGC at Parbati-3 power station shall only be tested and commissioned in line with commissioning of OPGW. The delay in testing and commissioning of AGC at Parbati-3 power station became a legal issue with M/s Andritz.

A.12.5. Further, it is intimated that **Parbati-2 HEP of capacity 800MW (4X200MW) is scheduled to be declared under Commercial operation by March 2025** and trial run operation of unit shall be taken up accordingly as per provisions of IEGC, 2023.

A.12.6. The power of Parbati-2 HEP shall be evacuated through exiting transmission line i.e. 400KV Parbati-2-Sainj-Banala and 400KV Parbati-2-Banala transmission line.

A.12.7. As per IEGC, 2023 Regulations-24 the following Documents and Tests prior to declaration of Commercial operation have to be submitted to concern RLDC:

(1) All thermal generating stations having a capacity of more than 200 MW and hydro generating stations having a capacity of more than 25 MW shall submit documents confirming the enablement of automatic operation of the plant from the appropriate load despatch centre by integrating the controls and tele-metering features of their system into the automatic generation control in accordance with the CEA Technical Standards for Construction and the CEA Technical Standards for Connectivity.

A.12.8. Further, as per CERC vide Petition No.: 319/RC/2018 dated: 28th of August, 2019, clause 34 (III), the responsibility to provide the communication availability from NLDC/RLDCs to the nearest wide band node/switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication lies with CTU.

A.12.9. Being an implementing agency in this corridor, M/s Indigrid confirmed that OPGW shall be functional in 400KV Parbati-2-Sainj-Banala and 400KV Parbati-2-Banala transmission line by January/February 2026. Due to non-availability of OPGW connectivity, AGC cannot be implemented/made functional. Also due to un-certainty in schedule for implementation of OPGW, the order for implementation of AGC at Parbati-2 HE project could not be undertaken earlier to avoid contractual issues.

A.12.10. Now, the commissioning schedule of OPGW has been confirmed by M/s Indigrid, therefore, it is proposed that commissioning schedule of AGC at Parbati-2 shall be ensured to be in line with the commissioning scheduled of OPGW.

A.12.11. In view of above facts, **the commissioning schedule of AGC at Parbati-2 HEP may be relaxed in line with IEGC, 2023 Regulations-24 requirements and therefore certification documents on AGC enablement cannot be provided/required during Trial Run/COD of units of Parbati-2, considering the reasons beyond the control of NHPC.**

Members may kindly deliberate.

A.13. Installation of CSD in 400KV Kalaamb Wangtoo and 400KV Kalaamb Sorang to control switching surges (Agenda by CTU)

A.13.1. In 224th OCC meeting held on 18.10.2024 agenda regarding installation of CSD in 400KV Kalaamb-Wangtoo and 400KV Kalaamb-Sorang to control switching surges was deliberated. In the said meeting, OCC forum asked CTU to do a study whether the reactor currently installed at the Karcham end could be relocated to either Wangtoo or Sorang, or alternatively, a new reactor could be installed. Power Grid representative informed that Space is not available at Kalaamb Substation premises for installation of Line Reactors It was also deliberated to determine whether to install a reactor at Wangtoo or Sorang, or alternatively, to install a Capacitor Switching Device (CSD) on the 400 kV Wangtoo and 400 kV Sorang lines at Kalaamb substation to manage switching surges.

A.13.2. In 225th OCC meeting held on 12.11.24, CTU informed that, based on their study, there is a voltage rise of approximately 13 kV on the 400 kV Kalaamb-Wangtoo line, which is within the permissible limit as per CEA planning criteria. However, to

mitigate switching surges, the reactor installed at the Karcham end could be relocated to either Wangtoo or Sorang.

A.13.3. In the meeting CTU stated that they have already mailed to HPPTCL and M/s Greenko to confirm the availability of space for installation of line reactor at their switchyard on Kalaamb-Wangtoo and 400KV Kalaamb-Sorang line. CTU also requested NRLDC to provide the voltage profile of the reactor at the Karcham end to assess its performance during the winter period. Further M/s Greenko confirmed that space is not available for installation of line reactor at Sorang end.

A.13.4. A Joint study meeting was held on 11.12.24 among CTUIL, CEA, Grid-India, POWERGRID & HPPTCL to deliberate on feasibility of reactor shifting at the Karcham end to either Wangtoo or Sorang S/s on 400KV Kalaamb - Wangtoo and 400KV Kalaamb-Sorang line In the meeting HPPTCL stated that space is not available for installation of line reactor at Wangtoo (HPPTCL) S/s end for 400 kV Wangtoo (HPPTCL) -Kala Amb (PG) line, same was also confirmed by HPPTCL by mail dated 12.12.2024.

A.13.5. In the meeting HPPTCL also confirmed that CSD already installed at Wangtoo end for 400 Wangtoo-Kala Amb line & 400kV Wangtoo-Sorang line. Powergrid also confirmed that CSD (taken on loan basis) already installed at Kala Amb end for 400 Wangtoo-Kala Amb line. Power Grid also raised requirement of CSD at both end for 400kV Kala Amb-Sorang line. HPPTCL also requested for Installation of CSD at Kala Amb end for avoiding GIS failure due to switching over voltages. Power Grid further stated that total number of CSD required at Kala Amb end may be 4 due to any main bay out.

A.13.6. In the meeting, Grid-India agreed for requirement of CSD devices however they have opined number of CSD requirement may be discussed in upcoming OCC meetings. Grid India & CTU also requested, POWERGRID to explore the possibility of breaker installation to make line reactor installed at Karcham end of 400kV Karcham-Wangtoo line as a bus reactor.

A.13.7. Subsequently, POWERGRID vide mail 06.01.25 informed that as presented in the meeting, purpose of CSD is to control switching surges during charging of the line.
At 400kV Kalaamb, S/s one and half breaker scheme arrangement is in service and at Sorang S/s (M/s Greenco) and Wangtoo (HPPTCL) S/s, Double Bus arrangement is in service and depending upon Grid conditions, line can be charged from any end and also from any of the main as well as Tie CBs at Kalaamb. In view of above, it is for system stability to install CSD in above Line CBs at Kalaamb, wangtoo and Sorang to avoid switching surges during line charging for smooth GRID operation. As CSD is already installed at Wangtoo HPPTCL, at present, total CSD requirement is 05 number i.e. 04 Number at Kalaamb (Both main and Tie CBs at Kalaamb) and 01 Number at Sorang. POWERGRID further requested that as Kalaamb is implemented as a TBCB project, installation of CSD may please be approved under ADD CAP.

Members may kindly deliberate.

A.14. SPS arrangement for load shedding at 400/220 kV Mandola & Maharani Bagh

Substation in view of N-1 criteria violation (Agenda by POWERGRID NR-1)

A.14.1. 400/220 kV Mandola & Maharani Bagh are critical substations of POWERGRID feeding directly to Delhi through 220 kV DTL feeders. N-1 criteria violation has been observed at both the substations in June'24 on regular basis. Cascading tripping's of ICTs at Mandola on 11th June'2024 led to power interruption in major parts of East/Noth Delhi. As the projected peak load in 2025 is expected to be higher than record loading in 2024, SPS arrangement for load shedding in case of tripping of ICT at both Mandola & Maharnibagh may be implemented to avoid power interruption in Delhi. The issue was discussed in 224th OCC meeting and following was agreed.

Forum asked CTU to take up the matter in its next CMETS meeting with the constituent states for augmentation of transformation capacity at Mandola & Maharani Bagh"

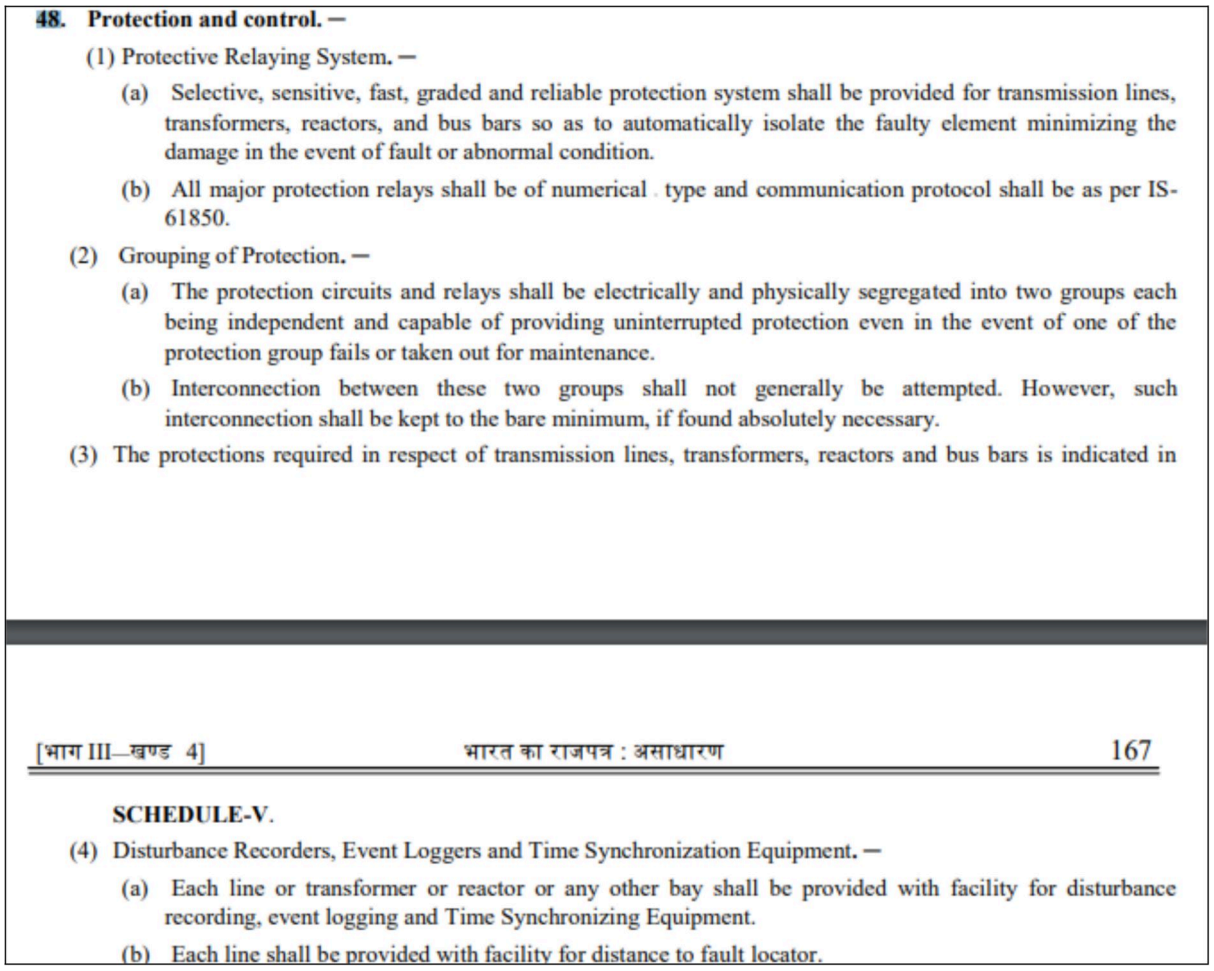
A.14.2. Powergrid has informed that the additional ICTs at Mandola & Maharani Bagh has been agreed in CMETS meeting subsequently however considering the increased load projections in 2025-26 summers, implementation of SPS at Mandola & Maharani Bagh SS may be deliberated.

Members may kindly deliberate.

A.15. Deemed availability of transmission elements for outages proposed to be availed for retro fitment of old relays with numerical relays (Agenda by POWERGRID NR-1)

A.15.1. Powergrid NR-1 has mentioned that, as per the CEA regulations on the "Technical Standards for Construction of Electrical Plants and Electric Lines Regulations, 2022" dated 27.12.2022, **page 166, clause 48. (1).(b),** the following requirement is specified:

"All major protection relays shall be of numerical type, and the communication protocol shall comply with IS-61850." (Relevant page of the regulations are shown below)



48. Protection and control. —

(1) Protective Relaying System. —

(a) Selective, sensitive, fast, graded and reliable protection system shall be provided for transmission lines, transformers, reactors, and bus bars so as to automatically isolate the faulty element minimizing the damage in the event of fault or abnormal condition.

(b) All major protection relays shall be of numerical type and communication protocol shall be as per IS-61850.

(2) Grouping of Protection. —

(a) The protection circuits and relays shall be electrically and physically segregated into two groups each being independent and capable of providing uninterrupted protection even in the event of one of the protection group fails or taken out for maintenance.

(b) Interconnection between these two groups shall not generally be attempted. However, such interconnection shall be kept to the bare minimum, if found absolutely necessary.

(3) The protections required in respect of transmission lines, transformers, reactors and bus bars is indicated in

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(4) Disturbance Recorders, Event Loggers and Time Synchronization Equipment. —

(a) Each line or transformer or reactor or any other bay shall be provided with facility for disturbance recording, event logging and Time Synchronizing Equipment.

(b) Each line shall be provided with facility for distance to fault locator.

A.15.2. Several POWERGRID substations, commissioned over 20 years ago, currently have static Bus Bar and LBB protection relays installed, such as at Ballabgarh, Bahadurgarh, Hissar, Mandola, Bhiwadi, Meerut, Bassi, etc.

A.15.3. Powergrid has mentioned that these static Bus Bar and LBB relays have limited settings and features, which have become obsolete and need to be upgraded to the latest numerical IEDs. In line with the CEA guidelines, these static Bus Bar and LBB relays are being replaced with the latest numerical relays having IEC61850 communication protocol.

A.15.4. To ensure the proper functionality and performance of these retrofitted Bus Bar and LBB relays, shutdown of associated elements (lines, transformers, reactors) along with the bus bar shutdown is required.

It is requested that the outages taken for the retrofitting work of Bus Bar and LBB protection relays at these substations be considered under deemed availability, as these outages are being utilized for system improvements in compliance with CEA regulations.

A.15.5. Further, Powergrid has intimated that WRPC has already agreed to the deemed outages for the elements involved in the retrofitting works of Bus Bar and LBB protection relays.

Members may kindly deliberate.

A.16. Requirement of complete 400 kV Bus-1 &2 shutdown at Mandola & Ballabgarh

SS for replacement of damaged sections 400 kV jack buses (Agenda by POWERGRID NR-1)

A.16.1. The issue regarding complete shutdown of 400 kV Bus-1&2 at Mandola has been discussed in 224th & 225th OCC. Powergrid has intimated that the matter was also deliberated in 8th Delhi OCC meeting and shutdown of 400 kV Mandola SS has been agreed by DTL however the consent for shutdown was denied in end. Further, Powergrid has informed that consent for shutdown of complete 400 kV Bus sections at Ballabgarh has not been provided by BBMB/HVPNL.

A.16.2. Considering the deteriorating condition of existing 400 kV Jack buses, Powergird has requested forum may deliberate the complete 400 kV bus sections shutdown at Mandola & Ballabgarh Substation**.**

A.16.3. Additionally, Powergrid has mentioned that outages of transmission elements during complete bus shutdown may be deemed available as the Jack buses are being replaced after 30 years of service.

Members may kindly deliberate.

A.17. Outages Due to Intense Fog Conditions from 28th to 30th Dec 2024 (Agenda by Powergrid NR-3)

A.17.1. Powergrid NR-3 has intimated that from 28th to 30th December, there were intense foggy weather conditions, leading to outages of various elements of POWERGRID and other utilities. The following tripping of POWERGRID's elements in Uttar Pradesh occurred due to insulator decapping caused by the dense fog:

Sr No	ELEMENT NAME	Outage Date & Time	Restoration Date & Time	Outage period (Hrs:Min)
1	400KV FATEHPUR-MAINPURI-II	28-12-2024 02:17	28-12-2024 12:29	10:12
2	500KV HVDC BALIA-BHWD POLE-II	29-12-2024 05:01	29-12-2024 17:51	12:50
3	765KV AGRA-FATEHPUR-I	29-12-2024 07:13	29-12-2024 19:13	12:00
4	500KV HVDC BALIA-BHWD POLE-I	29-12-2024 07:18	30-12-2024 02:09	18:51
5	500KV HVDC BALIA-BHWD POLE-I	30-12-2024 02:21	31-12-2024 05:08	26:47

A.17.2. From the table above it is evident that all the above tripping occurred during dense fog periods i.e. the early morning hours.

A.17.3. Moreover, Powergrid has mentioned that there was an advisory issued by the Ministry of Home Affairs Disaster Management Division (Ref. No. 40-4/2017-DM dated 29.12.2024) regarding dense fog conditions in Uttar Pradesh from 29th to 30th December.

A.17.4. Powergrid has submitted that as per CERC regulations, extreme weather conditions are considered a "Force Majeure" event (refer to the definition of Force Majeure in CERC Regulation, Chapter-1, Clause 3 (31), a).

A.17.5. In view of above, Powergrid has requested that above mentioned outages shall considered under “Force Majeure” head i.e. consider as Deemed available.

Members may kindly deliberate.

खण्ड-ख: उ.क्षे.भा.प्रे.के. Part-B: NRLDC

B.1. NR Grid Highlights for December 2024 and demand forecasting related

Demand met details of NR

S.No.	Constituents	Max Demand met (in MW)	Date & Time of Max Demand met	Max Consumption (in MUs)	Date of Max Consumption	Average Demand met (in Mus)
1	Chandigarh	283	31.12.24 at 09:00	5.0	31.12.24	4.1
2	Delhi	5213	31.12.24 at 10:50	85.2	31.12.24	76.0
3	Haryana	9351	20.12.24 at 09:45	169.2	18.12.24	152.1
4	H.P.	2254	25.12.24 at 09:00	41.3	20.12.24	38.3
5	J&K	3181	24.12.24 at 20:00	68.4	26.12.24	63.1
6	Punjab	9355	14.12.24 at 09:45	166.8	20.12.24	155.2
7	Rajasthan	18643	19.12.24 at 09:45	339.2	17.12.24	321.8

8	U.P	20666	19.12.24 at 19:14	362.2	20.12.24	333.9
9	Uttarakhand	2504	27.12.24 at 09:00	46.5	27.12.24	43.7
10	Northern Region	68769	20.12.24 at 10:21	1273.0	20.12.24	1188.3

*As per SCADA

- In Dec'24, the Maximum energy consumption of Northern Region was **1273 MUs** on 20th Dec'24 and it was 7.7 % higher than Dec'23 (1182 MU 20th Dec'23)

- In Dec'24, the Average energy consumption per day of Northern Region was **1188 MUs** and it was 6.7 % higher than Dec'23 (1065 MUs/day)

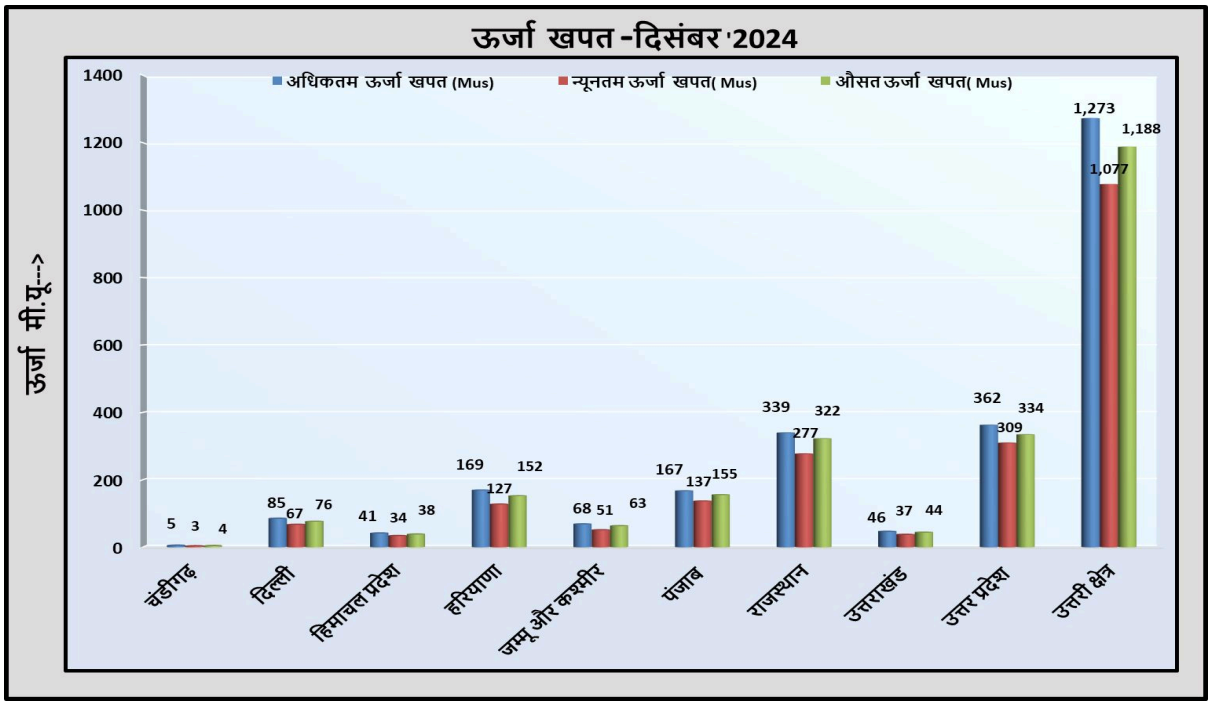
- In Dec'24, the Maximum Demand met of Northern Region was **68769 MW** on 20th Dec'24 @10:21 hours (*as per SCADA data)* as compared to 61380 MW on 19th Dec'23 @10:00hours.

- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the Dec'23 vs Dec'24**

क्षेत्र/राज्य	दिसंबर- 2023	दिसंबर- 2024	% अंतर
चंडीगढ़	3.8	4.1	9.3%
दिल्ली	71.3	76.0	6.6%
हिमाचल प्रदेश	36.3	38.3	5.4%
हरियाणा	143.4	152.1	6.1%
जम्मू और कश्मीर	58.4	63.1	8.1%
पंजाब	142.0	155.2	9.3%
राजस्थान	301.3	321.8	6.8%
उत्तराखंड	41.2	43.7	6.0%
उत्तर प्रदेश	316.1	333.9	5.6%

उत्तरी क्षेत्र	1113.7	1188.3	6.7%

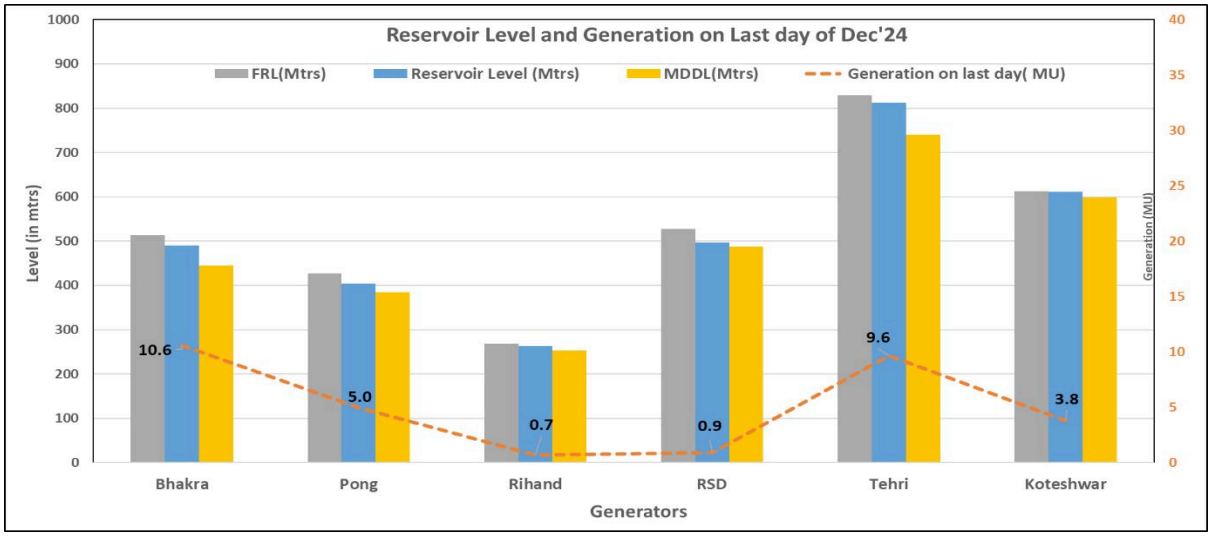
Energy Consumptions



Frequency profile

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Dec'24	49.998	50.416 (15.12.24 at 06:03:20 hrs)	49.493 (22.12.24 at 09:07:00 hrs)	5.58	76.45	17.97
Dec'23	49.99	50.41 (17.12.23 at 06:04:30 hrs)	49.53 (06.12.23 at 09:17:10 hrs)	7.83	75.21	16.96

Reservoir Level and Generation on Last Day of Month



Reservoir Level on last day of Dec month			(Low: -ve)			(High: +ve)
Year	**Bhakra**	**Pong**	**Rihand**	**RSD**	**Tehri**	**Koteshwar**
2024	491	404	263	497	813	611
2023	497	415	259	501	807	610
Diff (in m)	-7	-12	4	-4	6	2

Detailed presentation on grid highlights of Dec'2024 will be shared by NRLDC in OCC meeting.

B.2. Demand forecasting and resource adequacy related

Hon'ble CERC In the matter of Planning for safe, secure, and reliable integrated operation of the power system during critical periods arising on account of seasonal variations wherein the electricity demand increases rapidly by undertaking specific measures to mitigate the risks on the power system, under clause (h) of sub-section (1) of Section 79 of the Electricity Act, 2003 and the Regulation 31 of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 has issued suo-motto order 9/SM/2024 dated 07.10.2024.

Commission has issued the following directions to NLDC, RLDCs, and SLDCs in connection with the implementation of Regulations 31 and 33 of the Grid Code to address the anticipated surge in demand of electricity during October 2024 on account of seasonal variations:

a) All the State Load Despatch Centres and RLDCs shall furnish the details of operational planning undertaken by them in terms of Regulation 31(4) (a) of the Grid Code especially for October 2024. RLDC shall validate the adequacy of resources in terms of Regulation 31(4)(b) of the Grid Code.

b) All State Load Despatch Centres and Regional Load Despatch Centres shall prepare the worst-case scenario due to possible surge in demand during the period 1.10.2024 to 31.10.2024 in their respective control area and submit within seven days to the Commission with a copy to National Load Despatch Centre.

c) The State Load Despatch Centres or Regional Load Despatch Centres, as the case may be, should assess their demand-generation scenario in the upcoming

months, ensure the optimum generation, avoid undesirable planned outages, and advise the generating company to offer their availability. The State Load Despatch Centre or Regional Load Despatch Centre shall ensure the optimum scheduling during the shortage period and surplus power to get despatched during the deficit period.

d) The Distribution Companies, in case of a shortage scenario, can procure the power from surplus or requisitioned capacity of other states so that optimum despatch can be ensured for safe and reliable power system operations. The State Load Despatch Centre shall monitor the generation-demand deficit of the respective distribution companies.

e) The generating companies operating their plant with capacity less than its installed capacity due to technical issues, i.e., capacity under partial outage or forced outage, are advised to fix the issues to ensure the maximum generation capacity on-bar.

f) The draw schedule of the respective control area needs to adhere to prevent the reduction of system frequency. The State Load Despatch Centre or Regional Load Despatch Centre, as the case may be, shall monitor the deviation of the key system parameters.

g) The State Load Despatch Centres or Regional Load Despatch Centres, as the case may be, shall issue the system alerts to their respective grid-connected entities for the possible deficit during the likely surge in demand

The Regional Load Despatch Centres and State Load Despatch Centres shall submit the report on the implementation of the above measures, a load-generation scenario in their respective control areas, and any other measures taken to address the deficit of power supply during the period 1.10.2024 to 31.10.2024.

NLDC, RLDCs, and SLDCs were directed to submit their responses to the measures contained in para 9 of this order by 16.10.2024.

As per the information available with NRLDC, only J&K, Punjab, Rajasthan, HP & Uttarakhand have submitted their formal reply to CERC as per latest information available with NRLDC.

Whereas other states have neither submitted their response to CERC nor NRLDC with regard to order 9/SM/2024 dated 07.10.2024.

In 225 OCC meeting, NRLDC representative mentioned that:

- *As per the information available with NRLDC, only HP & Uttarakhand have submitted their formal reply to CERC.*
- *Punjab and J&K have shared some information with NRLDC, but formal communication to CERC from their side is yet to be done.*
- *Whereas other states have neither submitted their response to CERC nor NRLDC with regard to order 9/SM/2024 dated 07.10.2024.*

Delhi SLDC representative had mentioned that reply is with their legal team and would be submitted shortly to Hon'ble Commission. Punjab SLDC mentioned that nodewise

data has been requested from PSPCL, after receipt of the same, official reply would be submitted to CERC. No other update could be received from SLDCs in the meeting.

In 226 OCC meeting,

- *UP and Haryana SLDC representative stated that they have only submitted data to NRLDC and no reply has been submitted to CERC.*
- *Delhi SLDC representative stated that they have filed reply in first fortnight of Dec 2024.*

UP, Haryana and Chandigarh may provide update about their reply submission to CERC.

With reference to the Clause 31(2) of Central Electricity Regulatory Commission-IEGC Regulations, 2023 and the Operating Procedure of NRLDC prepared in accordance with the same, each SLDC has to furnish the demand estimation for day ahead, week ahead, month ahead (with time block wise granularity) and demand estimation for year ahead (with hour granularity). The sub-clause 31(2) (h) of IEGC-2023 states the following timeline for the submission of demand estimate data to RLDC.

Type of Demand Estimation	**Timeline**
Daily	10:00 hours of previous day
Weekly	First working day of previous week
Monthly	Fifth day of previous month
Yearly	30th September of previous year

Status of Day Ahead Forecasting, week ahead, month-ahead and year-ahead submission status for December-2024 as per Clause 31(4) (a) & (b) of IEGC-2023 is shown below:

Region	State	Day ahead	Weeky	Monthly	Yearly	Generation Adequacy	ST-NRAP Data Submission
		Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)
NR	Punjab	Y	Y	Y	N	N	N
	Haryana	Y	N	N	N	N	N
	Rajasthan	Y	N	N	N	N	N
	Delhi	Y	N	Y	Y	N	N
	UP	Y	Y	Y	Y	N	N
	Uttarakhand	Y	Y	Y	N	N	N
	HP	Y	Y	Y	Y	N	N
	J&K	Y	N	N	N	N	N
	Chandigarh	Y	Y	N	N	N	N

In accordance with above, all SLDCs are requested to timely furnish the demand estimation data along with generation adequacy data as per the formats available at *https://drive.google.com/drive/folders/1KWY4G9gTBLV5wTJkhGEIeRptKP-QbhjL?usp=drive_link* to NRLDC through mail (nrldcmis@grid-india.in) and FTP as per above timeline.

The relevant clauses from IEGC 2023 related to demand forecasting exercise and resource adequacy exercise as discussed in 225 OCC meeting are enclosed in **Annexure-B.I:**

All SLDCs need to take actions at their end for timely submission of demand forecasting and resource adequacy data on day-ahead, week-ahead, month ahead and year ahead basis. It is also requested to share actions being taken at your end to ensure compliance of listed clauses of IEGC 2023 as Annex-B.I.

In 226 OCC meeting, it was requested that SLDCs share actions being taken at their end to ensure compliance of above listed clauses of IEGC 2023. Further, report of self-audit carried out as per compliance of IEGC 2023 may also be submitted to NRLDC/ NRPC. All SLDCs agreed to take actions as discussed in the meeting.

Self-audit report has been received from NHPC.

Resource Adequacy guidelines issued by the CEA outline the roles and responsibilities of all stakeholders and provide a framework for RA planning in India. This matter was also discussed during the 52nd NRPC TCC meeting under Agenda Item A.12 to sensitize stakeholders on the importance of RA activities as per the approved CEA guidelines and IEGC provisions to enhance grid reliability. The format for data submission for ST-NRAP is provided in Annexure-II of the NLDC operating procedure (Link: *https://posoco.in/wp-content/uploads/2024/08/NLDC-Operating-Procedure_2024.pdf*).

Latest communication from NRLDC dated 09.01.2025 in this regard to all SLDCs is attached as ***Annexure B.II.***

SLDCs to provide update. Members may please discuss.

B.3. a.) Status of insulator washing and replacement of porcelain insulators with polymer insulators

With low temperature across Northern region and with high humidity in the air, fog starts to appear across the Northern region. This problem is generally most severe from 15Dec- 15Feb period & more prominent in areas having high pollution. During this time, additional care need to be taken by system operator as many multiple element tripping events have been reported in the past especially in Punjab, Rajasthan, Haryana and Eastern UP. Such tripping are more severe if the lines are tripping from generation complex.

To furnish details of Progress on cleaning and replacement of porcelain insulator with polymer insulator. NRLDC has already requested vide emails dated 26.09.2024, 30.09.2024 & 07.11.2024, all transmission utilities to furnish the utility-wise latest status of the replacement of porcelain insulators with polymer insulators so that crucial lines for which such works are pending may be identified & prioritized.

However, tripping of lines were reported in last few weeks during fog timings. List of line that reported tripping on 3 or more instances last year during Dec-Jan months during fog-prone time of 20:00-10:00hrs along with their insulator status is shown below:

S. No.	Line Name	Owner	Tripping instances in Dec24-Jan'25 till 09.01.2025 between 20:00-10:00hrs	Insulator replacement status available with NRLDC
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	RRVPNL	10	NA
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	RRVPNL	6	Porcelain
3	132 KV Dehar(BB)-Kangoo(HP) (HPPTCL) Ckt-1	HPPTCL	5	NA
4	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	UPPTCL	5	Partial (13%)
5	400 KV Bareilly-Unnao (UP) Ckt-1	UPPTCL	4	Partial (15%)
6	400 KV Akal-Jodhpur (RS) Ckt-1	RRVPNL	4	Polymer
7	132 KV Khatima(UK)-Pilibhit(UP) (PTCUL) Ckt-1	PTCUL	4	NA
8	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	UPPTCL	4	Partial
9	400 KV Sahupuri(UP)-Biharshariff(PG) (PG) Ckt-1	POWERGRID,UPPTCL	4	NA
10	220 KV Agra(PG)-	POWERGR	4	NA

	Bharatpur(RS) (PG) Ckt-1	ID,RRVPNL		
11	400 KV Sahupuri(UP)-Biharshariff(PG) (PG) Ckt-2	POWERGRID,UPPTCL	4	NA
12	220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2	PTCUL	3	NA
13	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	RRVPNL	3	NA
14	132 KV Jogindar Nagar(PS)-Bassi(HP) (HPPTCL) Ckt-2	HPPTCL	3	NA
15	400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	UPPTCL	3	Partial (13%)

During 225 OCC meeting, Punjab SLDC representative stated that due to smog, number of transmission lines had tripped in last one week. However, lines for which washing and cleaning was not done and had tripped recently, would be taken on priority.

NRLDC had also conducted a meeting with PSTCL representatives on 21.11.2024 to discuss preparedness measures taken by Punjab to minimize tripping of lines due to fog.

In 226 OCC meeting,

RVPN representative stated that they are undertaking washing/cleaning and installation of bird guards in lines emanating from 220kV RAPS.

NRLDC representative also stated that RAPS islanding was designed for average/peak load condition whereas in case of tripping of lines from RAPS in morning hours, load in island is lower and there is no significant reactive power absorption by RAPS units, therefore, survival of island in case it is formed at morning hours is comparatively lower.

Punjab SLDC representative stated that insulator for 400kV Muktsar-Makhu ckt. 2 has been changed from porcelain insulators to polymer insulators.

b) Fog related frequent trippings of EHV lines during fog conditions in the Northern Region in December 2024-January 2025.

- Frequent trippings of inter-regional, intra -regional transmission lines including high power carrying capacity HVDC transmission line (500 KV HVDC Balia-Bhiwadi) observed.
- Link lines of NR-ER and WR-NR have also tripped during the night and early morning hours. Outage of the inter-regional lines limits the transfer capability across regions. Further tripping of transmission lines emanating from Generating Stations have also been observed.
- Faults reported mostly-DC line earth fault and Phase- to -earth fault in AC lines during foggy weather conditions. De-capping of insulators and insulators found broken on patrolling have been reported. The same indicates the need of insulator cleaning/washing in short term and replacement of porcelain insulators with polymer insulators in long term where frequent trippings have been observed recently.
- Updating the status of insulators in the control area of respective utilities and sharing the future plan for avoiding tripping due to fog related issues.

- Letter from CGM(SO), NRLDC dated 07.01.2025 regarding the insulator cleaning and replacement works in view of high peak winter demand (~ 70 GW) and trippings observed recently enclosed as **Annexure B.III.**

All transmission utilities are once again requested to furnish the utility-wise latest status of the replacement of porcelain insulators with polymer insulators so that crucial lines for which such works are pending may be identified & prioritized. Members may please discuss.

B.4. Periodic testing of generators and FACTS/HVDC Devices

In 213 OCC meeting held in Nov 2024, the requirements w.r.t. periodic testing of generators and FACTS/HVDC Devices were discussed when presentation was made by Solvina team in OCC forum.

Subsequently, in 219 OCC meeting and 73 NRPC meeting held in May 2024, the agenda was again discussed. During these meetings, it was discussed that:

Regulation 40 (1) of CERC (IEGC) Regulations, 2023 stipulate that there shall be periodic tests, as required under clause (3) of this Regulation, carried out on power system elements for ascertaining the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

The tests shall be performed once every five (5) years or whenever major retrofitting is done. If any adverse performance is observed during any grid event, then the tests shall be carried out even earlier, if advised by SLDC or RLDC or NLDC or RPC, as the case may be.

Further, Regulation 40(1)(b) stipulate that “All equipment owners shall submit a testing plan for the next year to the concerned RPC by 31st October to ensure proper coordination during testing as per the schedule. In case of any change in the schedule, the owners shall inform the concerned RPC in advance.”

Extract of IEGC 2023 clause 40,

“40. PERIODIC TESTING

(1) There shall be periodic tests, as required under clause (3) of this Regulation, carried out on power system elements for ascertaining the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

(2) General provisions

(a) The owner of the power system element shall be responsible for carrying out tests as specified in these regulations and for submitting reports to NLDC, RLDCs, CEA and CTU for all elements and to STUs and SLDCs for intra-State elements.

(b) ***All equipment owners shall submit a testing plan for the next year to the concerned RPC by 31st October to ensure proper coordination during testing as***

***per the schedule**. In case of any change in the schedule, the owners shall inform the concerned RPC in advance.*

(c) The tests shall be performed once every five (5) years or whenever major retrofitting is done. If any adverse performance is observed during any grid event, then the tests shall be carried out even earlier, if so advised by SLDC or RLDC or NLDC or RPC, as the case may be.

(d) The owners of the power system elements shall implement the recommendations, if any, suggested in the test reports in consultation with NLDC, RLDC, CEA, RPC and CTU.

(3) Testing requirements

The following tests shall be carried out on the respective power system elements:

TABLE 9 : TESTS REQUIRED FOR POWER SYSTEM ELEMENTS

Power System Elements	Tests	Applicability
Synchronous Generator	(1) Real and Reactive Power Capability assessment. (2) Assessment of Reactive Power Control Capability as per CEA Technical Standards for Connectivity (3) Model Validation and verification test for the complete Generator and Excitation System model including PSS. (4) Model Validation and verification of Turbine/Governor and Load Control or Active Power/ Frequency Control Functions. (5) Testing of Governor performance and Automatic Generation Control.	Individual Unit of rating 100MW and above for Coal/lignite, 50MW and above gas turbine and 25 MW and above for Hydro.
Non synchronous Generator (Solar/Wind)	(1) Real and Reactive Power Capability for Generator (2) Power Plant Controller Function Test (3) Frequency Response Test (4) Active Power Set Point change test. (5) Reactive Power (Voltage / Power Factor / Q) Set Point change test	Applicable as per CEA Technical Standards for Connectivity.
HVDC/FACTS Devices	(1) Reactive Power Controller (RPC) Capability for HVDC/FACTS (2) Filter bank adequacy assessment based on present grid condition, in consultation with NLDC. (3) Validation of response by FACTS devices as per settings.	To all ISTS HVDC as well as Intra-State HVDC/FACTS, as applicable

In accordance with above, Generators and HVDC/FACT owners were required to furnish the Testing schedule for 2024-25 by 31st October 2023. As the time has already passed, Generators and HVDC/FACT owners were supposed to furnish the Testing schedule for 2025-26 by 31st October 2024.

The procedure for testing is available at the NLDC website at https://posoco.in/wpcontent/uploads/2023/09/Final-Procedure-of-Periodic-Testing-for-Power-System-Elements-submitted-to-CERC.pdf. This may be used for testing.

Along with testing, the mathematical models (preferably PSSE models) based on the results of testing need to be provided, so that All India case can be built with the respective generic models.

As per the decision of 73 NRPC meeting, NRPC forum asked all Generators and HVDC/FACT owners to furnish the Testing schedule for 2024-25 and 2045-26 to NRPC/NRLDC at the earliest.

However, the same is still pending.

Matter was then once again discussed in 54th Protection Sub-Committee Meeting held on 25th November, 2024. During the meeting, utilities had requested that list of third party testing agencies may be provided by NRLDC/NRPC. It was discussed that as of now there is no such criteria for selection of third party for carrying out testing. However, the third party should be a certified agency.

NRLDC representative stated that as the testing plan is yet to be received from utilities, a google sheet has been prepared and it is requested that testing plan for 2024-25 and 2025-26 may be updated in the sheet provided at the earliest as per the requirement of IEGC 2023 and decision of 73 NRPC meeting. Google sheet link is:

https://docs.google.com/spreadsheets/d/18KTutJ66bK9LdOOhuHfzlmBeYH7_TgMs/edit?gid=849497112#gid=849497112

MS NRPC stated that testing has to be carried out as per IEGC 2023, and was also discussed in NRPC meeting earlier. As it has been mentioned in IEGC and also decision of NRPC forum, all generating units and HVDC/FACT devices owner were asked to provide testing schedule in the google sheet attached.

OCC and NRPC forum had asked all generating units and HVDC/FACT devices owner to provide testing schedule in the google sheet attached. SLDCs were asked to take up the matter with respective state generating units. Still response from most of the utilities is pending.

Members may please discuss.

B.5. Reactive power injection from LV side to HV side by state transmission network

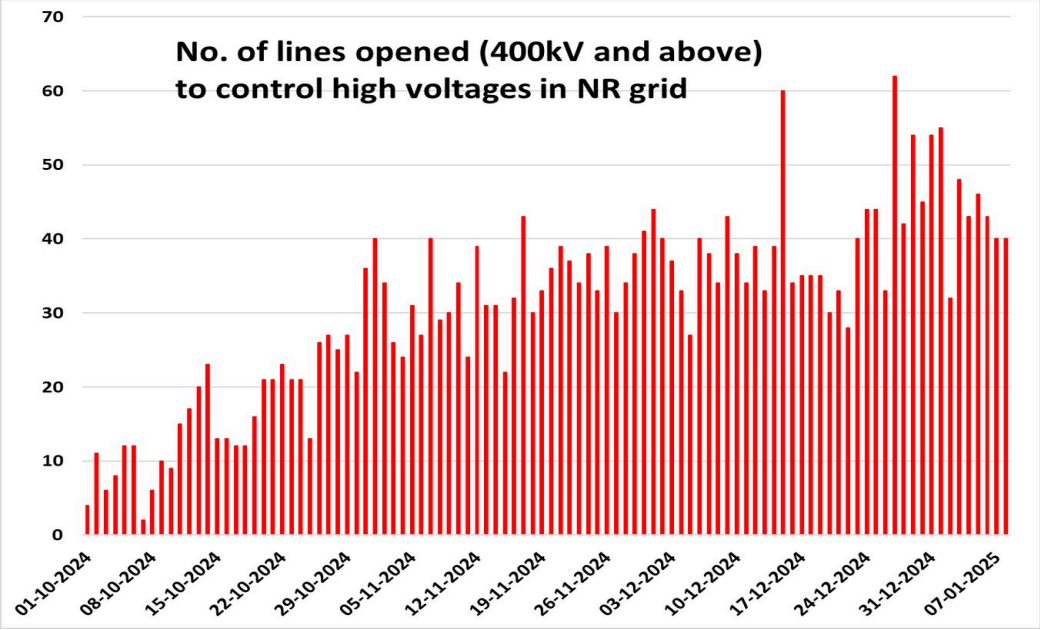
As it is well known that Northern region faces issues related to severe high voltages in the grid in winter months due to less demand as the transmission system remains lightly loaded. A number of measures are already being taken to control high voltages in the grid such as:

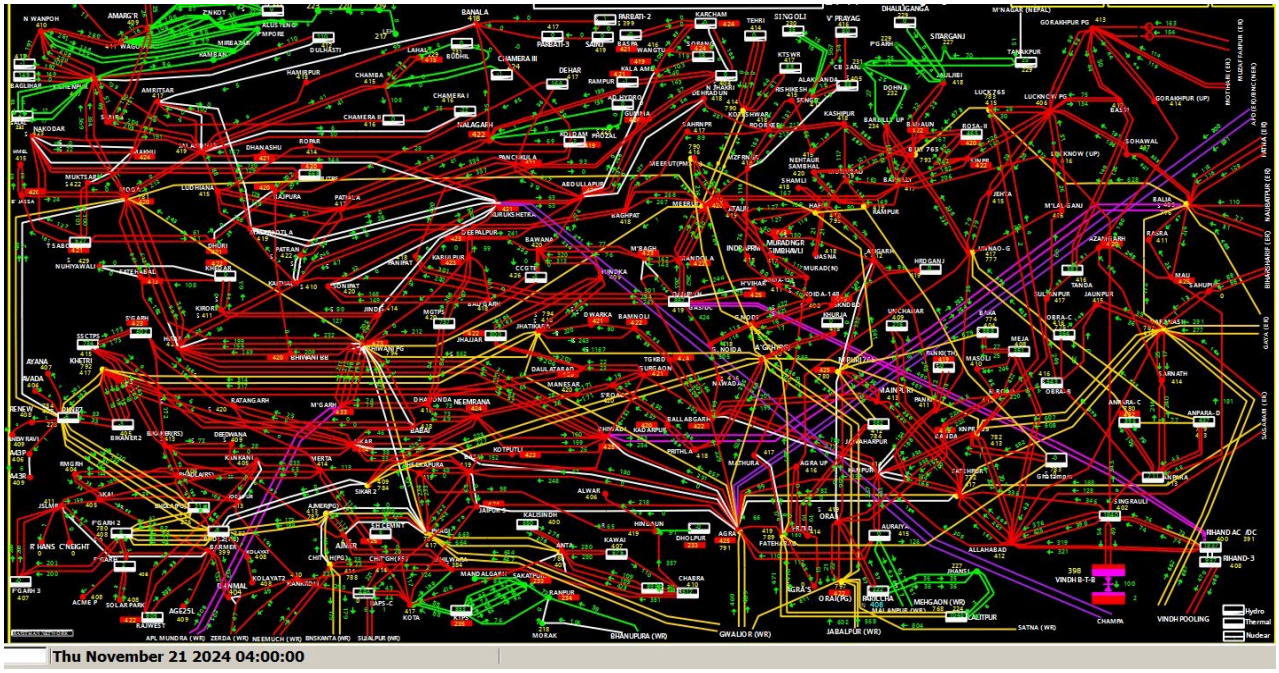
- Ensuring to switch off capacitors & switch on reactors.
- Ensuring healthiness of all commissioned reactors in the system
- Monitoring of reactive power through SCADA displays.

- Reactive power support (absorption) by generating stations as per the capability curve.
- Synchronous condenser operation especially of hydro units during night hours for dynamic voltage support.
- ICT Tap Optimization at 400kV & above is carried out by NRLDC.
- Utilisation of line reactors as bus reactor in case of opening of EHVAC transmission lines.
- Opening of EHV lines based on expected voltage reduction and also considering security & reliability of system

Switching of bus reactors, line reactors are done as frequently as twice in a day at same location. For instance, during peak hours, voltages being on lower side, reactors are switched off while during off peak hours, reactors are brought into relieve high voltages. Capacitors switching is done primarily at lower voltage levels. The dynamic reactive power resources like generators, SVC, STATCOM keep on changing the VAr value as per system requirement or system operator's instructions. Tap optimization is being done mainly on seasonal basis. Manual opening of high voltage line is also carried out as a last resort to alleviate alarming high voltages in the system.

Even after taking all measures it is being seen that large number of EHVAC transmission lines have to be opened to control high voltages in the grid. Number of transmission lines (400kV & above) opened to control high voltage in last 90 days as well as snapshot of high voltages in grid is shown below:





Such opening of transmission lines always increases risk of system insecurity as transmission system gets weak due to opening of transmission lines and also susceptibility of tripping of lines especially during foggy weather. As such there seems to be requirement for planning of additional reactive compensation in the grid to control high voltages at both interstate as well as intrastate level.

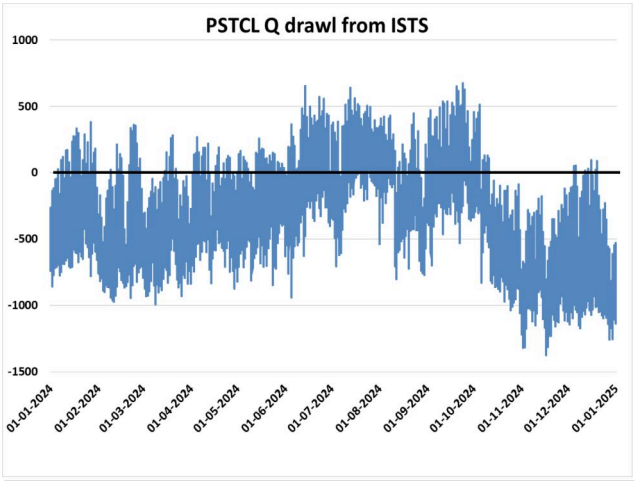
This point was also highlighted from NRLDC side in 226 OCC meeting, wherein following was discussed:

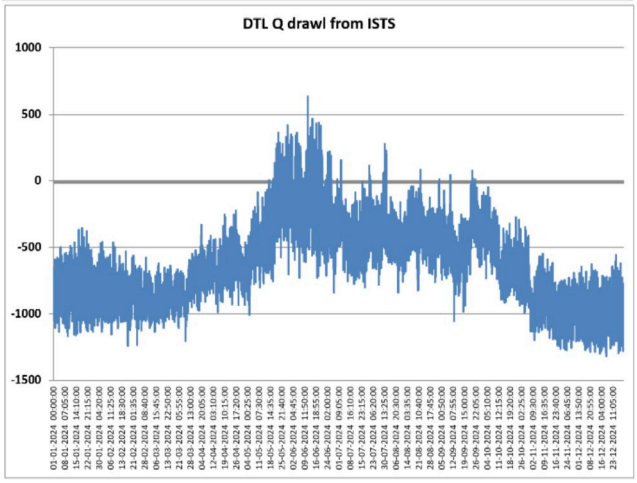
CTUIL representative stated that in NR, around 60-80% reactive compensation has been provided at ISTS level. Reactive compensation planning and implementation at intrastate level needs to be expedited to cater low/high voltage scenarios.

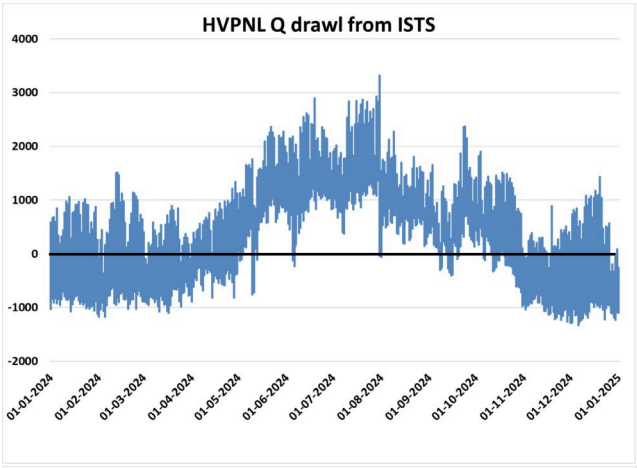
OCC asked all SLDCS to analyse reactive power change with ISTS grid and accordingly plan reactive power devices at intrastate level. This would also help to minimize opening/closing of EHVAC lines in winter months.

NRLDC has analysed reactive power flow of all states of NR for last year i.e. 2024. The points which are used to calculate MW drawl of state from ISTS have been used to calculate the MVAr drawl by state from ISTS.

Following is the result of such analysis:


PSTCL Q drawl from ISTS
1000
500
0
-500
-1000
-1500
01-01-2024
01-02-2024
01-03-2024
01-04-2024
01-05-2024
01-06-2024
01-07-2024
01-08-2024
01-09-2024
01-10-2024
01-11-2024
01-12-2024
01-01-2025


DTL Q drawl from ISTS
1000
500
0
-500
-1000
-1500


HVPNL Q drawl from ISTS
4000
3000
2000
1000
0
-1000
-2000
01-01-2024
01-02-2024
01-03-2024
01-04-2024
01-05-2024
01-06-2024
01-07-2024
01-08-2024
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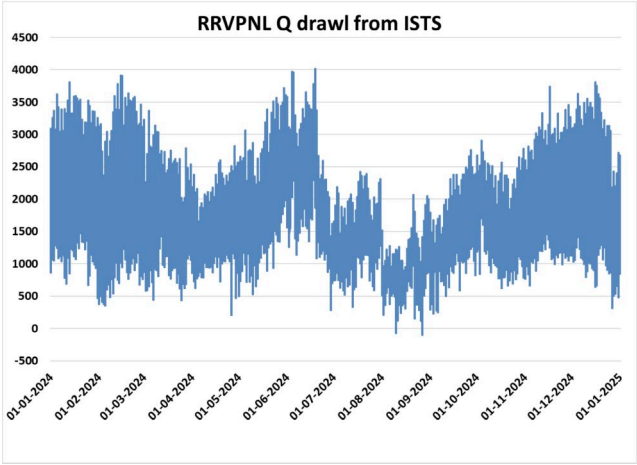
01-10-2024
01-11-2024
01-12-2024
01-01-2025


RRVPNL Q drawl from ISTS
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-500
01-01-2024
01-02-2024
01-03-2024
01-04-2024
01-05-2024
01-06-2024
01-07-2024
01-08-2024
01-09-2024
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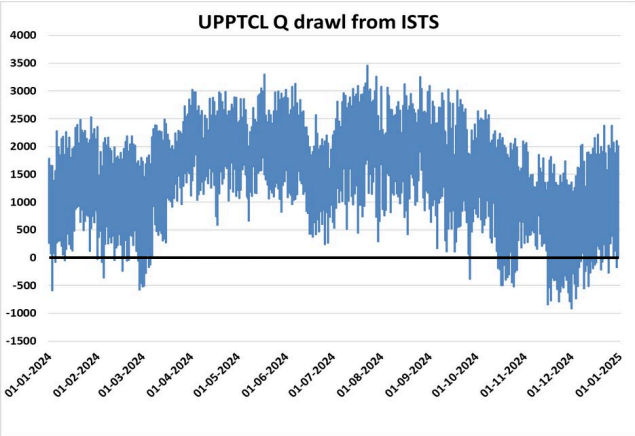
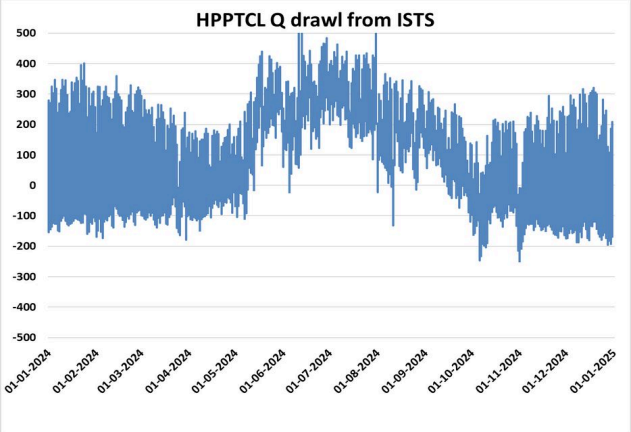
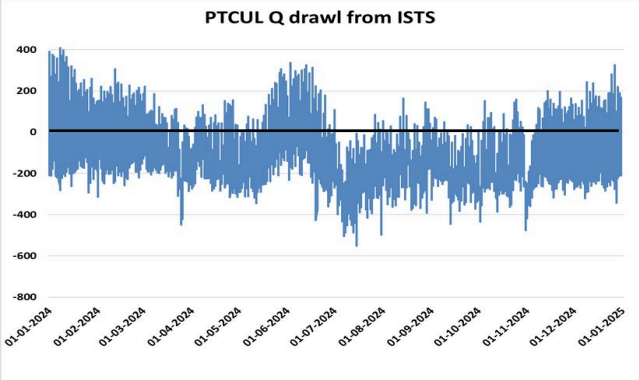
01-11-2024
01-12-2024
01-01-2025



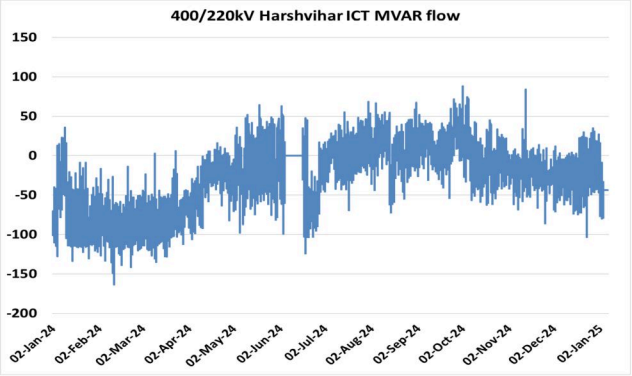


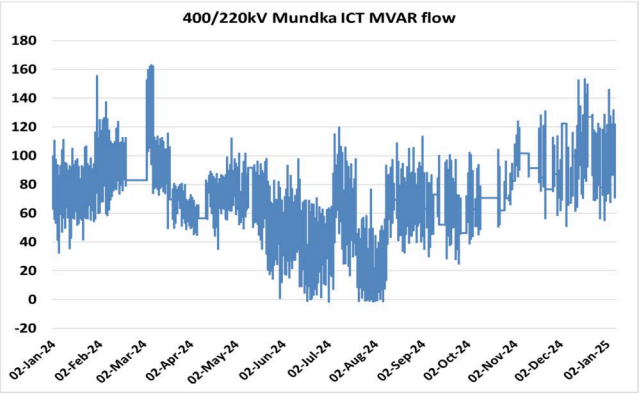


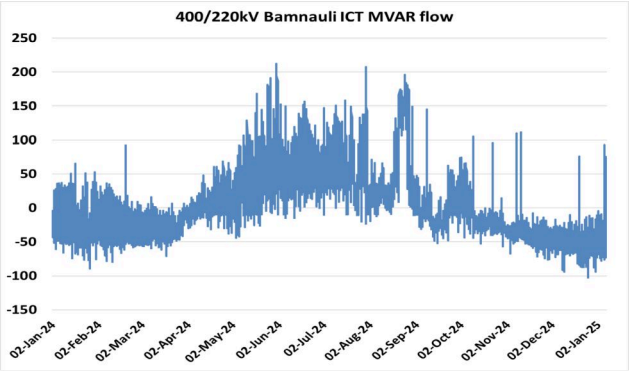
State	MVar Variations	Proposed solutions in intrastate
Punjab	-1300 to 600	Bus reactors required
Delhi	-1200 to 500	Bus reactors & STATCOM required
Haryana	-1000 to 3000	Bus reactors & capacitors required
Rajasthan	0 to 4000	Capacitor requirement
UP	-500 to 3000	Capacitor requirement
Uttarakhand	-500 to 400	Bus reactors & capacitors required

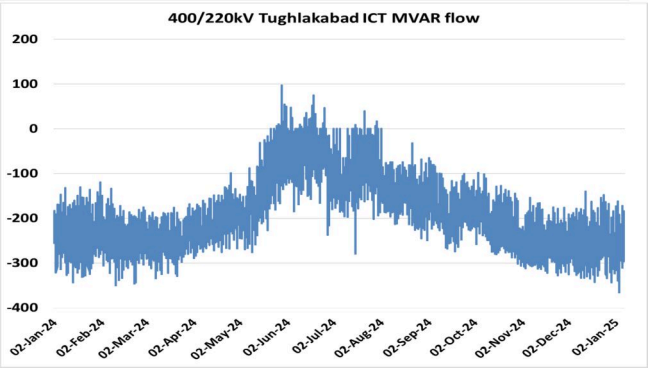
HP	**-200 to 400**	**Capacitor requirement**

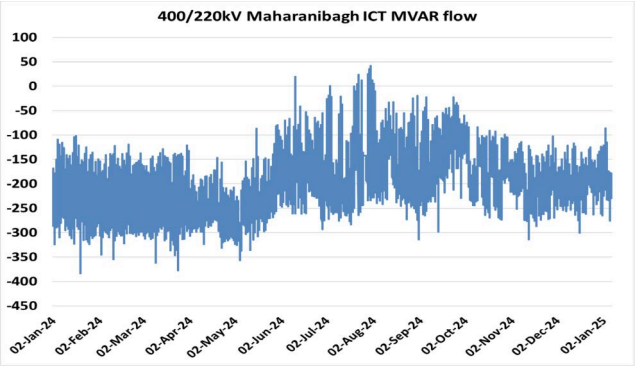
Further, station-wise MVAr flow has been assessed for 400/220kV substations in Delhi state control area. Delhi state control area having high network of cables, generates high reactive power and suggests that there is huge MVAr flow from Low voltage side to High voltage side. Station-wise MVAR flow pattern for year 2024 for DTL as well as POWERGRID substations in Delhi is shown below:

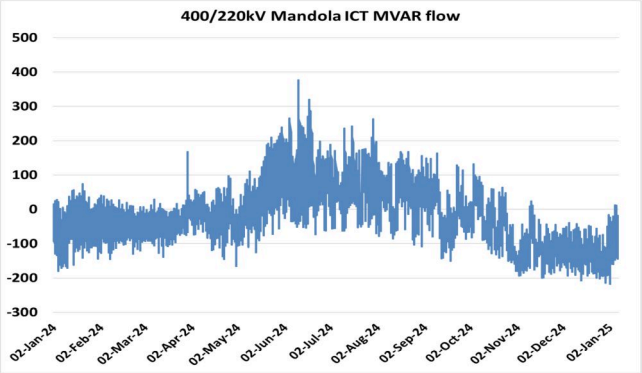


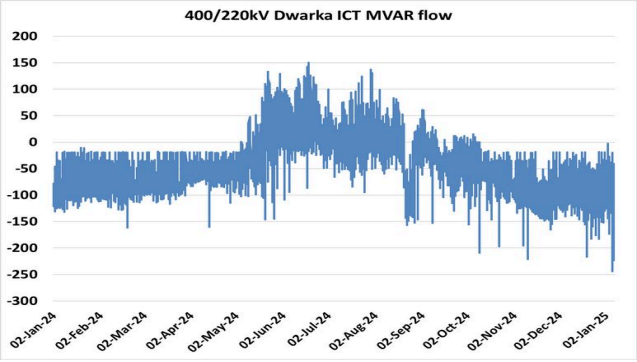












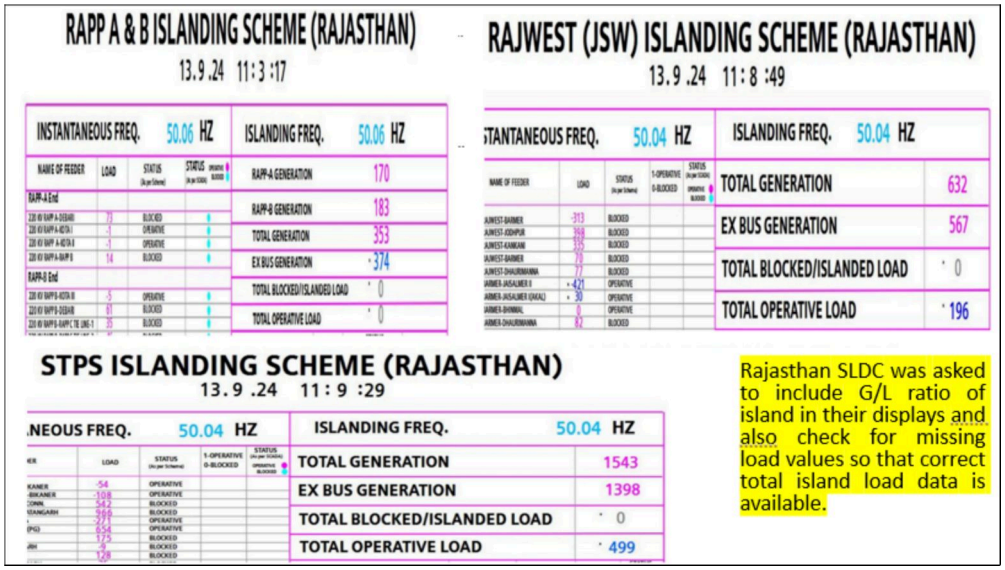
There clearly seems to be planning for more reactive power support (reactive power absorption devices) at 400/220kV Tughlakabad, Dwarka and Maharanibagh.

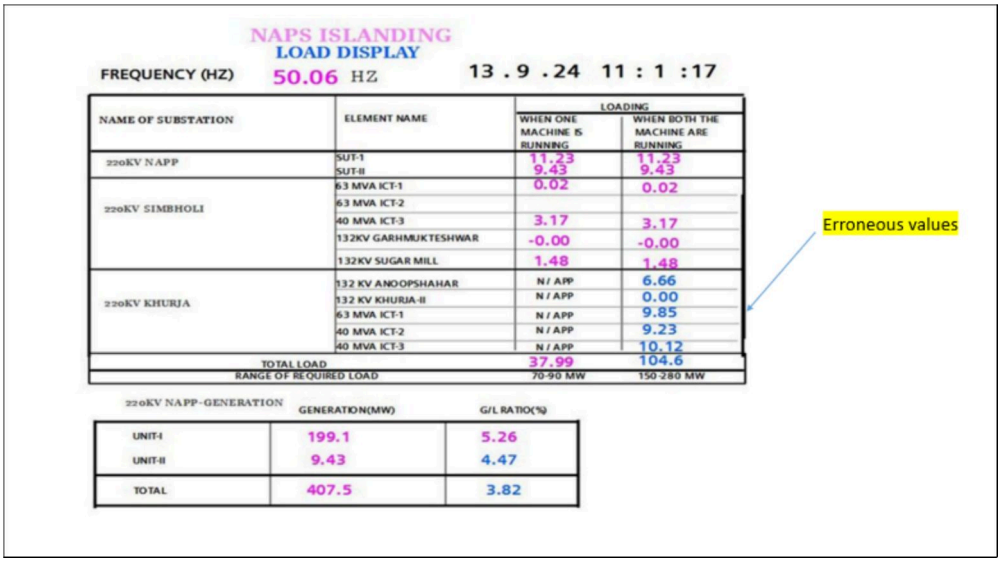
Respective STUs and SLDCs are requested to provide update. Members may please discuss.

B.6. Mock testing of islanding scheme and simulation studies

Following four islanding schemes are operational in the Northern Region: NAPP Islanding Scheme (Uttar Pradesh), RAPP Islanding Scheme (Rajasthan), Bawana Islanding Scheme (Delhi), and Pathankot-RSD Islanding Scheme (Punjab). As per the SOP for mock islanding schemes approved in the recently concluded OCC 223, SLDCs are requested to prepare and share their plans for conducting mock testing of islanding schemes in their control areas.

None of the four utilities have yet created a SCADA network map for their island areas. However, Uttar Pradesh and Rajasthan have developed SCADA displays with partial island summaries, although telemetry issues still need resolution.





During 224 OCC meeting, NRLDC representative mentioned that only the NAPS Islanding Scheme of UP has incorporated the G/L ratio in its SCADA display according to the shared format. UP representative added that due to a recent fire incident at Khurja S/S, the telemetry from the 220kV Khurja S/S is currently unavailable, and they promised to share an update on the restoration of telemetry from Khurja as soon as possible.

NRLDC representative also requested that all concerned utilities provide updated islanding base cases for different load-generation balance scenarios (Summer: Peak/Off-peak and Winter: Peak/Off-peak) along with dynamic data of the generators in the island for conducting dynamic simulation studies. He reiterated that the Islanding SCADA display should be made available at NRLDC as per the format shared in previous OCC meetings.

During 225 OCC meeting, UP, Rajasthan, Punjab and Delhi SLDC were requested to provide update.

UP SLDC representative informed that NAPS has been asked to carry out mock testing of ufr which are part of islanding scheme. After receiving testing report from NAPS, same shall be shared with OCC forum.

No other update could be received from other SLDCs.

OCC asked all SLDCs to proactively take actions as discussed in the meeting.

Further, NRLDC had also conducted an online meeting on 03.12.2024 with all relevant stakeholders from UP, Rajasthan, Delhi and Punjab regarding any issues being faced in carrying out mock testing exercise of islanding scheme.

Following updates were received in the meeting:

1. Uttar Pradesh (NAPS Islanding Scheme)
   - Field testing of relays has been completed; a detailed report will be shared by 15th December 2024.
   - PSSE basecase files will be submitted within one month.
   - NRLDC demonstrated modelling the island in PSSE using the Bawana Island example (Delhi SLDC).
2. Rajasthan (RAPS Islanding Scheme)
   - Regular UFR testing is ongoing and will extend to Islanding UFR relays.
   - A detailed report as per the SOP will be submitted by the first week of January 2025.
   - PSSE basecase files will be provided within one month.
3. Delhi (Bawana Islanding Scheme)
   - DTL will conduct field mock testing as per the SOP within one month and submit a detailed report accordingly.
   - PSSE basecase files will be shared within one month.
4. Punjab (RSD Islanding Scheme)
   - Field mock testing as per SOP will be conducted within one month, and a detailed report will follow.
   - PSSE basecase files will be submitted within one month.

UP, Rajasthan, Delhi and Punjab SLDCs are requested to provide update. Members may please discuss.

B.7. Reactive power performance of generators

During winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings, it is seen that MVAR data telemetry is poor/ inaccurate from most of the generating stations. For some of the generators it is seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 20 days (20 Nov 2024 – 09 Dec 2024) is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity as per capability curve (on LV side)	MVAR performance (-) Absorption (+) Generation	Voltage absorption above (in KV)

						(HV side data)	
1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-160 to 80	410
		2	490		-147 to 294	-150 to 60	408
2	Singrauli NTPC	1	200	UP	-60 to 120	-15 to 5	397
		2	200		-60 to 120	0 to 30	404
		3	200		-60 to 120	0 to 20	402
		4	200		-60 to 120	-15 to 5	400
		5	200		-60 to 120	-20 to 10	400
		6	500		-150 to 300	0 to 60	405
		7	500		-150 to 300	0 to 50	404
3	Rihand NTPC	1	500	UP	-150 to 300	-50 to 50	398
		2	500		-150 to 300	-60 to 30	397
		3	500		-150 to 300	-100 to 0	394
		4	500		-150 to 300	-110 to 0	394
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-100 to 150	-
		2	600		-180 to 360	-130 to 50	-
5	Anpara C UP	1	600	UP	-180 to 360	-150 to 50	770
		2	600		-180 to 360	-	770
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-210 to 0	410
		2	660		-198 to 396	-210 to 0	408
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-80 to 50	404
		2	660		-198 to 396	-90 to 50	404
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300	-110 to 60	412
		2	500		-150 to 300	-110 to 120	415
		3	500		-150 to 300	-	-
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-210 to 70	405
		2	700		-210 to 420	-210 to 80	405
10	MGTPS	1	660	Haryana	-198 to	-130 to 40	404

					396		
		2	660		-198 to 396	-130 to 70	405
11	Bawana	1	216	Delhi-NCR	-65 to 130	-	-
		2	216		-65 to 130	-70 to 10	410
		3	216		-65 to 130	-	-
		4	216		-65 to 130	-	-
		5	253		-65 to 130	-70 to 10	412
		6	253		-65 to 130	-	-
12	Bara PPGCL	1	660	UP	-198 to 396	-40 to 80	772,778
		2	660		-198 to 396	-50 to 60	772,778
		3	660		-198 to 396	-70 to 50	772,778
13	Lalitpur TPS	1	660	UP	-198 to 396	-100 to 50	760
		2	660		-198 to 396	-80 to 50	765
		3	660		-198 to 396	-100 to 50	758
14	Anpara D UP	1	500	UP	-150 to 300	-	-
		2	500		-150 to 300	-150 to 0	760
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-50 to 50	410
		2	250		-75 to 150	-40 to 50	412
		3	250		-75 to 150	-40 to 40	410
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-50 to 150	412
		6	660		-198 to 396	-70 to 150	412

All generating stations are requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine.

Since with IEGC 2023 implementation, reactive energy performance also has financial impact, it is desirable that all generating stations continue to support grid voltages by having reactive power performance as per their capability curve and grid requirement.

Some of the generating units such IGSTPP Jhajjar, MGTPS Jhajjar, Bara need to explore possibility of further MVAR absorption. Further, intrastate generators in Rajasthan control area may be asked to support through adequate reactive power generation during day-time when Rajasthan grid experiences low voltage.

During 226 OCC meeting, NRLDC representative presented following are few observations based on data of 20 Nov 2024 – 09 Dec 2024 analysed at NRLDC end:

- Some of the machines at NTPC Singrauli are generating MVAr whereas some are absorbing MVAr
- IGSTPP Jhajjar and MGTPS performance needs improvement, unnecessary MVAR generation could be avoided. AVR setpoint to be reduced.
- AVR setpoint may also be reduced for Dadri Stage-II, Talwandi Saboo stations. It was mentioned that Railways has also highlighted high voltage in their supply from 220kV Dadri gas and NRLDC would be communicating with Dadri Gas for tap change.
- More reactive power support can be obtained from Chhabra 250MW generating units.
- No internal generation in Delhi state control area is leading to high voltages in the Delhi network as no dynamic reactive compensation is available from thermal machines for MVAR generation from cables.

NTPC representative stated that they will check performance of Singrauli units, AVR is planned to be replaced for one unit.

OCC expressed concern on performance of IGSTPP Jhajjar, and asked to reduce AVR setpoint, change tap position, so that voltage profile in the grid is improved.

As per IEGC clause 39.(3),

Quote

(3) All generating stations connected to the grid shall generate or absorb reactive power as per instructions of the concerned RLDC or SLDC, as the case may be, within the capability limits of the respective generating units, where capability limits shall be as specified by the OEM.

Unquote

Following are few observations based on data of 10 Dec 2024 – 09 Jan 2025 analysed at NRLDC end:

- Some of the machines at NTPC Singrauli are generating MVAr whereas some are absorbing MVAr
- IGSTPP Jhajjar performance needs improvement, unnecessary MVAR generation could be avoided. As requested previously AVR setpoint to be reduced.
- AVR setpoint may also be reduced for Dadri Stage-II, Talwandi Saboo and Bawana stations.

Further, a procedure has been prepared in accordance with regulation 39(6) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 (hereinafter referred to as the “IEGC, 2023”). Relevant extracts are quote below.

Quote

…..(6) NLDC, RLDCs and SLDCs shall assess the dynamic reactive power reserve available at various substations or generating stations under any credible contingency

on a regular basis based on technical details and data provided by the users, as per the procedure specified by NLDC

Unquote

The final procedure prepared by NLDC after deliberation with stakeholders is available @ https://posoco.in/wp-content/uploads/2023/10/NLDC_Procedure-on-Assesment-of-Dynamic-Reactive-Reserve.pdf

Displays are to be created in control rooms to monitor the available dynamic reactive reserve. The format for monitoring such reserve as part of procedure is shown below:

Format-IA- for Generating stations / Condenser / IBR

Sl No	Generating Station	Installed Capacity	On Bar Active Capability	On Bar Current Generation	On bar reactive Capability at that bus in MVAr		Actual Reactive Injection (+)/ Absorption (-) in MVAr	Dynamic reactive power reserves in MVAr	
		MW	MW	MW	Qmax (+)	Qmin (-)		Qmax (+)	Qmin (-)
		A	B	C	D	E	F	G=D-F	H=E-F
1									
2									

All generating stations are requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine. Generators may also set their Vsch (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement with intimation to RLDC/SLDC.

SLDCs are requested to develop such displays at their end to effectively monitor the dynamic reactive power reserve in the system in compliance to IEGC 2023.

B.8. Sharing of ATC/TTC assessment and basecase with NRLDC

All NR states except Chandigarh UT are sharing basecase and ATC/TTC assessment with NRLDC. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

CERC vide their order dated 29.09.2023 has granted approval of "'Detailed Procedure for Allocation of Transmission Corridor for Scheduling of General Network Access and Temporary General Network Access under Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022".

Detailed roles and responsibilities for State Load Dispatch Centers in various timelines of the approved procedure are provided in the table below.

Purpose	***S No***	***Action of Stakeholder***	***Responsibili***	***Submission***	***Data/ Informati***

			ty	***to***	***on Submission Time line***
1. Revision 0 TTC/ATC Declaration for Month 'M'	*1(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models*	*SLDC*	*RLDC*	*10th Day of 'M-12' month*
	1(b)	*Declaration of TTC/ATC of the intra- state system by SLDC in consultation with RLDC*			*26th Day of 'M-12' month*
2. Interconnection Studies for elements to be integrated in the month 'M'	*2(a)*	*Submission of node-wise load and generation data & sharing of network simulation models for intra-state elements coming in the next six months*	*SLDC*	*RLDC*	*8th Day of 'M- 6' month*
	2(b)	*Sharing of inter-connection study results*			*21st Day of 'M-6' month*
3. Month Ahead TTC/ATC Declaration & Base case for Operational Studies for Month 'M'	*3(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability Assessment of TTC/ATC of the intra- state system and sharing of updated network simulation models*	*SLDC*	*RLDC*	*8th Day of 'M- 1' month*
	3(b)	*Declaration of TTC/ATC of the intra- state system in consultation with RLDC*	*SLDC*	*RLDC*	*22nd Day of 'M-1' month*

To encourage participation from SLDCs regarding basecase preparation and ATC/TTC assessment, two workshops have been conducted from Grid-India/NRLDC side. One workshop was conducted 31.08.2023 before the finalization of the procedure and another on 10.01.2024 recently to involve further participation from SLDCs. Subsequently, workshop was organized on 9-11 December 2024 at NRLDC for all SLDCs under initiative by FOLD.

Although all SLDCs are now involved in preparation of basecase & ATC/TTC assessment, it is seen that the timelines as per CERC approved procedure are not being followed and number of times basecases are not received from SLDC side.

B.8.1 ATC/TTC assessment sharing 11 months in advance

The procedure mentions that:

"SLDCs in consultation with RLDCs shall declare the import and export TTC, ATC, and TRM of the individual control/bid areas within the region in accordance with Regulation 44 (3) of the Grid Code 2023. RLDCs shall assess the import and export TTC, TRM and ATC for the group of control/bid areas within the region (if required). The computed TTC, TRM and ATC figures shall be published on the website of respective SLDCs and RLDCs, along with the details of the basis of calculations, including assumptions, if any, **at least eleven (11) months in advance**. The specific constraints indicated in the system study shall also be published on the website."

Accordingly, SLDCs are requested to send the PSSE cases for four scenarios for Oct'25 i.e. Afternoon Peak, Solar Peak, Evening Peak & Off-Peak hours as communicated from NRLDC side. It is requested that the basecases as well as ATC/TTC assessments may be shared with NRLDC as per CERC approved procedure. Further, the above exercise needs to be carried out regularly monthly.

It was discussed in last several OCC meetings & all states were requested to share basecase as well as ATC/TTC assessments for M-12 scenarios on monthly basis with NRLDC as per CERC approved procedure. Accordingly, it is requested to submit the basecase as well as ATC/TTC assessments.

B.8.2 Sharing of Data and study results for interconnection studies

As per **Regulation 33 of IEGC 2023,**

(9) Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC.
(10) Each RLDC shall undertake a study on the impact of new elements to be commissioned in the next six (6) months in (a) the ISTS of the region and (b) the intra-state system on the inter-state system and share the results of the studies with NLDC.
(11) NLDC shall undertake study on the impact of new elements to be commissioned in the next six (6) months in (a) inter-regional system, (b) cross-border link and (c) intra-regional system on the inter-regional system.

In line with above, utilities are requested to share the list of elements/LGB data/interconnection study results etc. as per the approved procedure which are expected to be commissioned within next six months. This needs to be practised as monthly exercise on regular basis.

The agenda was discussed in last several OCC meetings & all utilities were requested to share list of elements/LGB data/interconnection study results etc. as per the approved procedure on monthly basis.

B.8.3 TTC/ATC of state control areas for Feb 2025 (M-1)

As discussed in previous OCC meetings, most of the NR states except Ladakh and Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC.

Based on simulation studies and discussions between SLDCs and NRLDC, ATC/TTC limits for NR states for the month of Feb'2025 are attached as **Annexure-B.IV**.

OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

The agenda was also discussed in last several OCC meetings wherein all states agreed to send the data as well as PSSE basecases on time for all three (M-1, M-6, M-11) scenarios.

In 226 OCC meeting,

- NRLDC representative stated that the agenda was also discussed in last several OCC meeting wherein all states agreed to send the data as well as PSSE basecases on time for all three (M-1, M-6, M-11) scenarios. CGM NRLDC asked states to get help from NRLDC in case of any difficulty and emphasized on the need for regularity in sharing the data.
- NRLDC representative presented the status of basecase and data sharing by NR states for the last six months.
- It was mentioned that UP, Punjab, Rajasthan and J&K are regularly sharing basecase as well ATC/TTC assessment with NRLDC. Haryana, Delhi, Uttarakhand and HP are sharing data, but on some occasions it is getting missed. It was requested that all SLDCs may timely share the same.
- All SLDCs agreed to share basecase as well as ATC/TTC assessment as per CERC approved procedure.

Still, it is being observed that response from some SLDCs is not as per desired levels. Latest status for Jan 2025 is shown below:

August 2024 Mails

	ATC/TTC Declaration				Interconnection Studies	
	M-1 (September-24)		M-11 (August-25)		M-6 (Feb-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	No	Shared only for 1 cardinal point	No	No	No	No
Himachal	No	No	No	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

September 2024 Mails

	ATC/TTC Declaration				Interconnection Studies	
	M-1 (October-24)		M-12 (September-25)		M-6 (Mar-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	No	No	No	No
Haryana	No	No	No	No	No	Shared only for 1 cardinal point
Himachal	Shared only for 1 cardinal point	Shared only for 1 cardinal point	Shared only for 1 cardinal point	Shared only for 1 cardinal point	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

October 2024 Mails

	ATC/TTC Declaration				Interconnection Studies	
	M-1 (November-24)		M-12 (October-25)		M-6 (Apr-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	No	No	No	No
Haryana	Yes	Yes	No	No	No	No
Himachal	Yes	No	Yes	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	case, no data regarding cardinal		No	No	No	No

November 2024 Mails

	ATC/TTC Declaration				Interconnection Studies	
	M-1 (December-24)		M-12 (November-25)		M-6 (May-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	Yes	Yes	No	No	No	No
Himachal	Yes	No	Yes	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

Submitted with one month delay

December 2024 Mails

	ATC/TTC Declaration				Interconnection Studies	
	M-1 (January-25)		M-12 (December-25)		M-6 (June-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	No	Yes	No	No	No	No
Himachal	Yes	No	Yes	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

January 2025 Mails

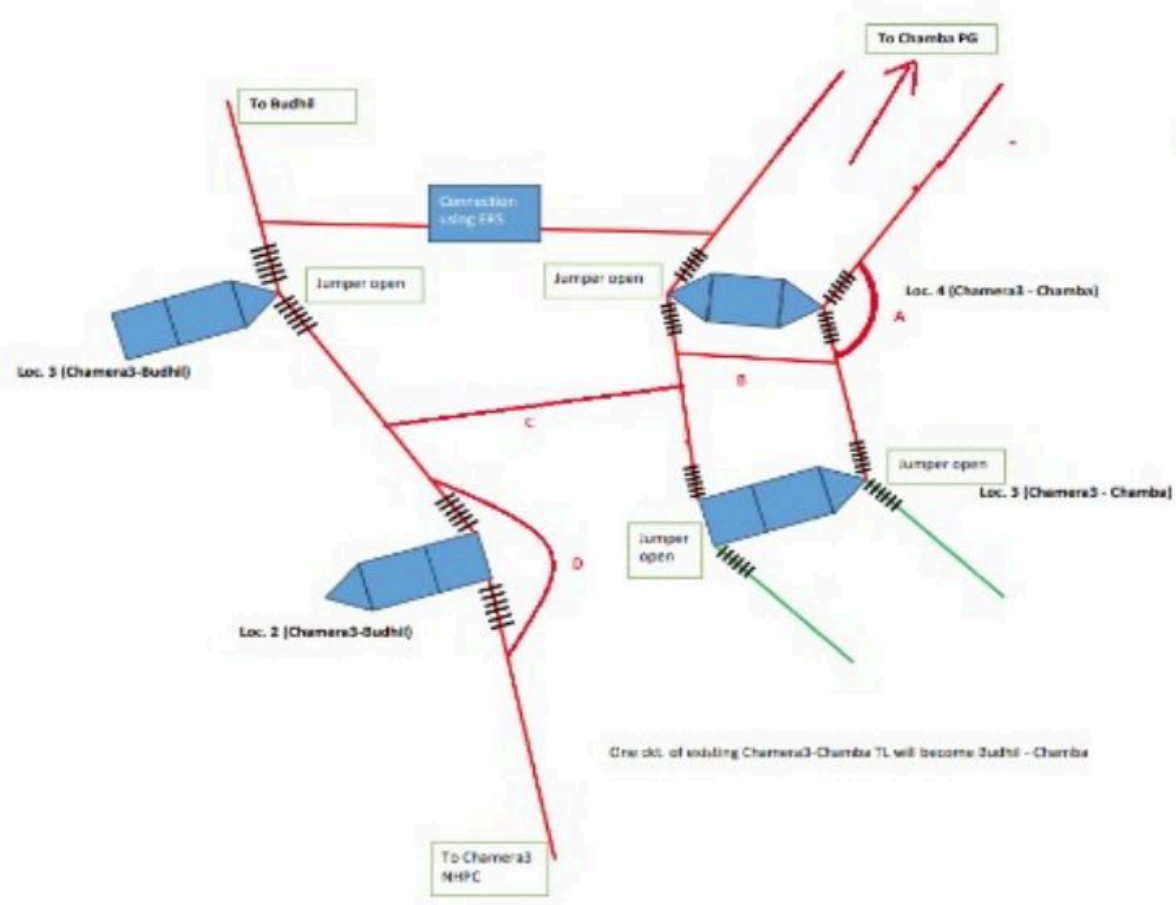
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (February-25)		M-12 (January-26)		M-6 (July-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh						
Delhi						
Haryana						
Himachal						
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh						
Punjab					Yes	Yes
Rajasthan						
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand						

Delhi, Haryana and Uttarakhand SLDCs are requested to provide update.

Members may please discuss.

B.9. Long outage of 220kV Chamera 3-Chamba D/C line

220 KV Chamera_3(NH)-Chamba(PG) (PG) Ckt-1 and ckt-2 were out due to tower collapse on 09-07-2023. Tower collapse was reported at Loc no. 1 from Chamera-3 end and subsequently an interim arrangement was worked out in separate meeting between NRPC, PGCIL(NR2), Chamera3(NHPC), Budhil(Grenko), HPPTCL and NRLDC.



New circuits after installation of the alternative mechanism are in service as:
a) 220 kV Budhil-Chamba transmission line
b) 220 kV Chamera III-Chamba line

As the interim arrangement was done to facilitate safe evacuation of hydropower during the peak hydro season, it is requested that the works on collapsed tower may be expedited and the line may be restored to its normal configuration.

In 215 OCC meeting, NHPC representative stated that tower has been damaged and washed away, accordingly proposal is being worked out to directly string the conductor to gantry. Proposal is being taken up between NHPC and POWERGRID and it is expected that the line would be charged before monsoon season. Work from NHPC side is expected to be completed by Apr 2024.

During the 218 OCC meeting,

- POWERGRID representative stated that gantry tower design at NHPC end is not available. NHPC requested POWERGRID to develop the approximate tower design with help of some vendor.
- Cost estimate and work plan is under approval for both POWERGRID and NHPC. After approval of the work, the implementation would take 3-4 months and accordingly it is expected that line would be restored to normal configuration by Nov'2024.

During 223 OCC meeting,

- POWERGRID representative informed that tower design and other related issue have been resolved and MOU has been proposed between POWERGRID and NHPC and sent to NHPC for formalities at their end. Based on signing of MOU by NHPC, restoration timeline can be provided.
- No update could be received from NHPC side.

Major concern is that NHPC (Chamera-III) generation is being evacuated through single line and generation evacuation reliability is reduced. NRLDC communication dated 07.01.2025 sent to NHPC & POWERGRID for expeditious restoration of line is attached as **Annexure B.V**.

POWERGRID and NHPC are requested to provide update.

B.10. Multiple element tripping events in Northern region in the month of December 2024:

A total of 15 grid events occurred in the month of **December'24** of which **05** are of GD-1 category, **03** are of GI-2 Category and **07** are of GI-1 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.VI.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 220/132kV CB Ganj(UP) and 220KV Tanakpur HEP on 29th December, 2024 (As per PMU at Bareilly(PG), Y-B phase to phase fault with delayed fault clearing time of 920ms is observed).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **05** events out of **15** grid events occurred in the month. In 04 (no.) of grid event, there was no fault in the grid.

Remedial actions taken by constituents to avoid such multiple elements tripping may be shared.

As per IEGC clause 37.2 (c), Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted within 24 hrs of the event and as per IEGC clause 37.2 (e), the user shall submit a detailed report in the case of grid disturbance or grid incidence within one (1) week of the occurrence of event to RLDC and RPC.

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken by respective utilities in OCC & PSC forum. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events to RLDC in line with the regulations.

Members may like to discuss.

B.11. Frequent event of multiple elements tripping and loss of wind generation at 400/220kV Akal (RS) S/s:

Frequent events of multiple elements tripping at 400/220kV Akal S/s have been observed in recent past. On 09.01.2025, all the 400kV & 220kV elements at Akal S/s tripped during B-N fault on 220kV Bus and again on 12.01.2025, all the 400kV & 220kV elements at Akal S/s tripped during R-N fault on 400kV Akal-Barmer Line-1. Significant quantum of RE generation pooled at Akal S/s also affected during the event i.e., ~435 MW on 09.01.2025 & ~210 MW in 12.01.2025.

Blackout of complete station during a single phase to earth fault shows that protection systems are not in healthy condition at 400/220kV Akal S/s. Similar grid events of multiple elements tripping at Akal S/s and loss of wind generation occurred in past on 13.09.2024 & 08.06.2024. During analysis of grid event on 08.06.2024, it was reported by Rajasthan that bus bar protection is not in service. Rajasthan was requested to expedite the restoration of bus bar protection at Akal S/s.

NRLDC has continuously highlighted the issue of bus bar protection at Akal S/s in OCC & PSC forum. Issues are in discussion at PSC forum since 51st PSC meeting held on 12.07.2024, however, there is no further progress. Recent grid event on 12.01.2025 due to breaker stuck of 400kV Akal-Barmer Line-1 and improper protection coordination, highlighted further shortcomings in protection system.

DR/EL & tripping reports of grid event occurred on 09.01.2025 also not received yet. Delay in submission of DR/EL and analysis of tripping events leads to further delay in corrective actions. Therefore, RVPNL is requested for expeditious restoration of bus bar protection at 220kV level at Akal S/s. Further, other issues related to protection system, their coordination and healthiness of equipment's also need inspected and rectified at the earliest. SLDC-RS / RVPNL are also requested to ensure timely submission of DR/EL & grid event analysis report in compliance with IEGC clause 37.2(c), 37.2(e) and 15.3 of CEA grid standard.

Members may like to discuss.

B.12. Status of submission of DR/EL and tripping report of utilities for the month of December'24.

The status of receipt of DR/EL and tripping report of utilities for the month of **December'24** is attached at **Annexure-B.VII**. It is to be noted that as per the IEGC provision under clause 37.2 (c), tripping report along with DR/EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement.

Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the trippings shall be **uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx"** within 24 hours of the events as per IEGC clause 37.2(c) and clause 15.3 of CEA grid standard. Apart from prints of DR outputs, the corresponding COMTRADE files may please also be submitted in tripping portal / through email.

Members may like to discuss.

B.13. Mock trial run and testing of black start facilities at generating stations in Northern Region

As per Indian Electricity Grid Code (IEGC) clause 34.3

"*Detailed procedures for restoration post partial and total blackout of each user system within a region shall be prepared by the concerned user in coordination with the concerned SLDC, RLDC or NLDC, as the case may be. The concerned user shall review the procedure every year and update the same. The user shall carry out a mock trial run of the procedure for different sub-systems including black-start of generating units along with grid forming capability of inverter based generating station and VSC based HVDC black-start support at least once a year under intimation to the concerned SLDC and RLDC. Diesel generator sets and other standalone auxiliary supply source to be used for black start shall be tested on a weekly basis and the user shall send the test reports to the concerned SLDC, RLDC and NLDC on a quarterly basis*".

Hydro and gas-based plants are capable of self-black-start. Conducting periodic mock black start exercises are extremely important to ensure the healthiness of black start facilities and also to build awareness as well as confidence among the system operators.

In view of above, regional entity generating stations shall conduct the dead bus charging of their units on rotation basis as per availability of schedule under intimation to the NRLDC. Testing of Diesel generator sets and other standalone auxiliary supply source to be used for black start shall also be done on a weekly basis. SLDC shall also ensure the same in their respective control area. This will ensure the healthiness of black start facility at generating stations. Further, NRLDC shall coordinate with the ISGS and states to conduct the mock black start exercise of subsystems.

Therefore, regional entity generating stations and SLDCs were requested to share the annual schedule plan for conducting dead bus charging / mock black start exercise of generating stations / sub-systems during 2024-25 in the format attached as **Annexure-B.VIII**. Constituents were also requested to share the test report of diesel generators / auxiliary supply on a quarterly basis. In this regard, a communication has already been sent to constituents through NRLDC letter dated 24.04.2024.

Details received from AD Hydro HEP, Tehri HEP, Karcham Wangtoo HEP, Koteshwar HEP, SJVN, NHPC, Budhil, Auraiya GPS, Singoli Bhatwari HEP, Koldam HEP, Dadri GPS, Delhi, Punjab and Uttarakhand.

Mock black start exercises conducted during 2024-25 till date are as follows:

a) **GTPS (IPGCL) on 10.04.2024**
b) **Ranjit Sagar Dam(RSD) HEP on 07.05.2024**
c) **Kishenganga HEP on 09.11.2024**
d) **Tehri HEP on 13.11.2024**
e) **Koteshwar HEP on 27.11.2024**
f) **N.Jhakri & Rampur HEP on 08.12.2024**
g) **Chamera-I HEP on 12.12.2024**
h) **Dhauliganga HEP on 13.12.2024**
i) **Bairasiul HEP on 14.12.2024**
j) **Tanakpur HEP on 19.12.2024**

ISGS and SLDCs are requested to take following actions:

- To share the tentative schedule of mock black start exercise of generating stations in their respective control area.
- SLDCs are requested to share the tentative schedule plan of mock black start exercise of generating stations in their respective control area.
- To conduct dead bus charging after self-starting the generating station if schedule with load is not available.
- To share the test report of mock black start exercise conducted along with weekly DG testing on monthly/quarterly basis.

Members may like to discuss.

B.14. Mock testing of System Protection Schemes (SPS) in Northern Region

As per IEGC clause 16.2

''For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the concerned RPC(s) shall perform regular load flow and dynamic studies and mock testing for reviewing SPS parameters & functions, at least once in a year. RLDC or NLDC shall share the report of such studies and mock testing including any short comings to respective RPC(s). The data for such studies shall be provided by CTU to the concerned RPC, RLDC and NLDC.''

As per IEGC clause 16.3

''The users and SLDCs shall report about the operation of SPS immediately and detailed report shall be submitted within three days of operation to the concerned RPC and RLDC in the format specified by the respective RPCs.''

There are 53 numbers of System Protection Scheme (SPS) approved in Northern Region out of which 05 number of SPS are under implementation stage. These SPS are implemented at major generation complexes, important evacuating transmission lines and ICTs which are N-1 non-complaint. Details of SPS in Northern Region is available on NRLDC website at link https://nrldc.in/download/nr-sps-2024/?wpdmdl=13255&lang=en .

SPS is designed to detect abnormal system conditions and take predetermined, corrective action to preserve system integrity and provide acceptable system performance. Therefore, correct operation of SPS as per designed logic is important to serve its purpose. To ensure this, mock testing of SPS needs to be conducted at a regular period. Clause 16.2 of IEGC 2023 also mandates the mock testing of SPS for reviewing SPS parameters & functions, at least once a year.

In view of the above, concerned constituents / utility were requested to share the tentative schedule plan for conducting mock testing of SPS in their respective control area during 2024-25 in format attached as **Annexure-B.IX.** In this regard, communication has already been sent to constituents through NRLDC letter dated 01.05.2024 and continuous follow up is being done in OCC & PSC meeting since May 2024.

Update in this regard **received from Uttarakhand, Rajasthan & UP only.**

Members are requested to conduct the mock testing of SPS in their respective control area, share the tentative schedule of mock testing of SPS and share the report of the same.

Members may like to discuss.

B.15. Revision of document for Reactive Power Management of Northern Region:

NRLDC has been issuing 'Reactive Power document of Northern Region' on annual basis. Reactive Power Management document for Northern region has been revised and same has been shared with all the constituents.

Document is also available on NRLDC website in document section. Web link of document section is https://newnr.nrldc.in/documents/Documents

The document is password protected and password was already informed to all the NR constituents through NRLDC letter dated 31st Dec 2024.

B.16. Revision of document for System Restoration Procedure Document of Northern Region:

NRLDC has been issuing '**System Restoration Procedure Document of Northern Region**' on annual basis. The document was last revised on 31st Jan 2023 & updated document link is as below:

https://nrldc.in/download/nr-sps-2024/?wpdmdl=13255&lang=en

The document is password protected and password was already informed to all the NR constituents through letter dated 08th Jan 2025.

In view of new addition/modification of transmission & generation element in NR grid since Jan'24, the document is being reviewed for update.

Constituents are requested to provide feedback, suggestion and updated information by 15th Jan 2025.

Status of action taken on decision of 226th OCC meeting of NRPC

S.N.	Agenda	Decision of 226th OCC meeting of NRPC	Status of action taken
1	A.17. Review of existing combined islanding scheme of RAPP-A and RAPP-B (Agenda by RAPS)	Forum asked NPCIL to hold a separate meeting with RVPN to discuss the matter and subsequently present a detailed proposal to the OCC forum.	NPCIL to update status.
2	A.24. Implementation of AUFLS scheme in accordance with the report of Task Force on Automatic under Frequency Load Shedding (AUFLS) (Agenda by NRPC Sectt.)	Forum asked SLDC to identify and communicate feeder-wise, Stage-wise load relief to RPC/RLDC.	Respective SLDC's of NR to update status.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Nov-2024
◎ HARYANA — Oct-2024
◎ HP — Sep-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Nov-2024
◎ RAJASTHAN — Sep-2024
◎ UP — Dec-2024
◎ UTTARAKHAND — Dec-2024
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Dec-2024
◎ HARYANA — Sep-2024
◎ HP — Oct-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Sep-2024
◎ RAJASTHAN — Sep-2024
◎ UP — Nov-2024
◎ UTTARAKHAND — Dec-2024
◎ BBMB — Jun-2024
All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest.</td></tr>
<tr><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased</td></tr>
</table>

			◎	UTTARAKHAND	Increased
			◎	BBMB	Increased
4	Status of Automatic Demand Management System in NR states/UT's	The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:	The status of ADMS implementation in NR is enclosed in **Annexure-A.I.II.**		
			◎	DELHI	Scheme Implemented but operated in manual mode.
			◎	HARYANA	Scheme not implemented
			◎	HP	Scheme not implemented
			◎	PUNJAB	Scheme not implemented
			◎	RAJASTHAN	Under implementation.
			◎	UP	Scheme implemented by NPCIL only
			◎	UTTARAKHAND	Scheme not implemented
5	Status of availability of ERS towers in NR	As per the decesion of 68th NRPC and 211th OCC meeting, ERS availability monitoring is being taken as rolling/follow-up agenda in OCC meetings for regular monitoring of ERS under different utilities in Northern region.	As per the information received from different utilities in Northern region, updated status of availability of ERS towers in Northern Region attached as **Annexure-A.I.III.**		
6	Submission of breakup of Energy Consumption by the states	All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:	Status of the information submission (month) from states / utilities is as under:		
				State / UT	Upto
			◎	CHANDIGARH	Not Submitted
			◎	DELHI	Nov-24
			◎	HARYANA	Oct-24
			◎	HP	Nov-24
			◎	J&K and LADAKH	JPDCL- Mar'24 KPDCL- Not Submitted
			◎	PUNJAB	Oct-24
			◎	RAJASTHAN	Sep-24
			◎	UP	Sep-24
			◎	UTTARAKHAND	Aug-24
			Chandigarh is requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format		
7	Status of FGD installation vis-à-vis installation plan at identified TPS	List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed. Further, progress of FGD installation work on monthly basis is monitored in OCC	Status of the information submission (month) from states / utilities is as under:		
			◎	HARYANA	Jun-2024
			◎	PUNJAB	Jun-2024
			◎	RAJASTHAN	Nov-2024
			◎	UP	Jan-2024
			◎	NTPC	Feb-2023
			FGD status details are enclosed as **Annexure-A.I.IV.**		

Category→	Consumption by Domestic Loads	Consumption by Commercial Loads	Consumption by Agricultural Loads	Consumption by Industrial Loads	Traction supply load	Miscellaneous / Others
<Month>						

		basis is monitored in OCC meetings.	All States/utilities are requested to update status of FGD installation progress on monthly basis.
8	Information about variable charges of all generating units in the Region	The variable charges detail for different generating units are available on the MERIT Order Portal.	All states/UTs are requested to submit daily data on MERIT Order Portal timely.

9	Reactive compensation at 220 kV/ 400 kV level at 8 substations			
	State / Utility	Substation	Reactor	Status
i	DTL	Peeragarhi	1x50 MVAr at 220 kV	1x50 MVAr Reactor at Peeragarhi has been commissioned on dated 18.09.2023
ii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	2x50 MVAR Reactor at Harsh Vihar has been commissioned on dated 31th March 2023.
iii	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
iv	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
v	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work completed on 07.11.2023. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
vii	PTCUL	Kashipur	1x125 MVAR at 400 kV	Tender for Procurement of 125 MVAR Reactor has been floated on 04.11.2024 and tender opening date is 30.12.2024.
viii	RAJASTHAN	Jodhpur	1x125 MVAr	1X 125 MVAR reactor at Jodhpur has been commissioned on dated 09.12.2024

Annexure-A-I.I

1. Down Stream network by State utilities from ISTS Station:

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Mar'25	02 No. of bays shall be utilized for LILO-II of 220kV Jatwal-Bishnah Transmission Line, the work of which is delayed due to persisting RoW issues. expected date of completion is Mar 2025 subject to availability of funds and resolving of RoW issues), Updated in 220th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	Mar'25	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. RoW issues persisting; At present new-wampoh-mirbazar 5km and harwan-alstung 16km have been completed, expected date of completion is Mar 2025 subject to availability of funds and resolving of RoW issues), Updated in 214th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Mar'25	Under construction.Updated in 222nd OCC by HVPNL
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1	Utilized: 7	• 220 kV D/C Shahajahanpur (PG) - Gola line	Commissioned	Energization date: 26.10.2023 updated by UPPTCL in 215th OCC
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• 220 kV Hamirpur-Dehan D/c line	Commissioned	HPPTCL has commissioned the Planned 220kV Dehan-Hamirpur TL utilizing 2 No. 220kV Bays.Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Dec'24	Issue related to ROW as intimated in 218th OCC by HVPNL. **Status:** Work was stalled since 29.07.2021 due to ROW issues and farmers agitation and further restarted on 9.10.2023 with the help of district administration. Now, work was again stalled since30.11.2023 due to severe ROW issues. Expected to be completed by 31.12.2024. Foundation 209/212. Erection 193/212. Stinging 37.8/50.3 km
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Oct'25	Line work awarded to M/s R S Infra Projects Pvt. Ltd. Noida, Uttar Pardesh on dated 09.03.2024. Work of route plan and route alignment has been started by the firm as intimated in 218th OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	Dec'24	Work in progress. Updated in 220th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4	Utilized: 6 Unutilized: 0	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	Commissioned	Updated in 216th OCC by DTL
				• Masjid Mor – Tughlakabad 220kV D/c line.	Commissioned	Updated in 216th OCC by DTL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 2 Under Implementation:2	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Commissioned	Energization date: 31.05.2024 updated by HPPTCL in 220th OCC
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	Tendering process is yet to be started.Updated in 219th OCC by HPPTCL
				• Network to be planned for 2 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• D/C line Kadarpur - Sec-56 Gurugram.	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposal to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
				• S/C line Kadarpur - Sec-52 Gurugram	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
				• S/C line Kadarpur - Pali	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of both circuits of 220kV D/c Sohna-Rangla Rajpur at Roj Ka Meo line at 400kV Sohna Road	Dec'24	Updated in 216th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. **Status:-** Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Aprroved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	Mar'25	Contract awarded on 08.08.23 to M/s Skipper with completion in March 25.Updated in 218th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Energization date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.01.2025	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 223rd OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	Jul'25	Work awarded to M/s Man Structurals Pvt Ltd. JV M/s Aquarian Enterprises on 09.01.2024. Contractual date: 06.05.2025 and Tentative date of completion :06.05.2025 Route has been approved and further work is in progress.Updated in 218th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	31.12.2024	Updated in 224th OCC by HVPNL. **Status:** The stringing work between TL No. 19 & 20, TL No. 22 & 23 and TL No. 22 & 24 is pending for want of necessary consent from the forest department. The case has already been uploaded on Parivesh portal and is currently pending at the O/o AIGF, Forest Dept. Panchkula.
				• Sonepat - HSIISC Rai 220kV D/c line	Commissioned	Energization date: 31.05.2024 updated by HVPNL in 220th OCC
				• Sonepat - Kharkhoda Pocket A 220kV D/c line	08.03.2025	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. Both bays are under construction and erection of electrical equipment is under progress. Tetative date of completion of both bays at PGCIL end is end of July 2024.
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work is under progres. Stub Setting: 14/2017. Permission for Highway is awaited from concerned department as updated in 218th OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Date of bid opening has been extended up to 30.04.2024 as updated in 218th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	Nov'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL. 6 months more are needed due to ROW issues as updated by PSTCL in 220th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL. _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Commissioned	Ckt-1 commissioned at 16:13hrs on dated 06.08.24 & Ckt-2 commissioned at 20:10 hrs on dated 05.08.24. Updated in 223rd OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Commissioned	Updated in 218th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Commissioned	Energization date: 24.05.2024 updated by HVPNL in 220th OCC
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Mar'25	Updated in 222nd OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Under Implementation:2	• Amritsar – Patti 220kV S/c line	31.08.2024	Issue in connectivity agreement with CTU. CTU asked PSTCL to approach CEA and thereafter CEA may plan a meeting with PSTCL and CTU to resolve the issue. Updated in 225th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	31.08.2024	Issue in connectivity agreement with CTU. CTU asked PSTCL to approach CEA and thereafter CEA may plan a meeting with PSTCL and CTU to resolve the issue. Updated in 225th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra- Daultabad S/c line at 400 kV Bahadurgarh PGCIL	Mar'25	Updated in 220th OCC by HVPNL. **Status:** NIT has been floated vide NIT No. EPC-D-96 dated 15.10.23 to be opened on 22.12.23. • Now, the tender has been dropped and likely to be refloated by 31.07.2024.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	Mar'25	Updated in 220th OCC by HVPNL. **Status:** • Revised BOQ forwarded from Design wing to contract wing. • Tender has floated vide NIT No. EPC-D-100 dated 04.01.2024 with tender opening date of 26.02.2024. • Tender has been opened on 26.03.24 and 03 nos. bids has been received. The work is likely to be awarded by the 31.07.2024.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	08.03.2025	Updated in 220th OCC by HVPNL. **Status:** Contract awarded on 09.08.23 to M/s R S Infra Noida. Work has been started.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV S/C Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG)	06.10.2025	Work order has been issued on 06.10.2023, work under progress as updated by RVPNL in 215th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220 kV D/C Kankroli(PG) - Nathdwara line	-	Standard bid document has been finalized on 13.08.2024 and bid is under preparation as updated by RVPN in 222nd OCC.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchagon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Commissioned	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed , final agrrement is expected to be signed by May'24. Updated in 218th OCC by PSTCL.
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	Commissioned	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is commissioned on 20.01.2024. Updated in 217th OCC by HPPTCL.
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'25	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Tender is yet to be awarded. Timeline one year communicated by PSTCL in 220th OCC meeting

Status of ADMS implementation in NR:

Sl. No.	State / UT	Status	Remarks
1	DELHI	Scheme Implemented but operated in manual mode.	A committee has been constituted under the chairmanship of GM, SLDC Delhi to formulate the logic for implementation of ADMS. Delhi SLDC informed that two meetings have been held by the committee and based on the delibration in those meetings, SoP has been formed by the committee. Delhi SLDC has shared the logic for implementation of ADMS with NRLDC for their observation and upon examination of same NRLDC has submitted its views/comments to Delhi SLDC. In 222nd OCC meeting Delhi SLDC intimated that they would be shortly having a meeting with its Discoms and NRLDC views would be delibrated in the said meeting. Delhi SLDC intimated that they have shared revised SoP with NRPC and NRLDC after incorporating the views of NRLDC In 225th OCC meeting NRPC representative apprised forum that revised Standard Operating Procedure (SOP) of Automatic Demand ManagementScheme (ADMS) by the DISCOMs in NCT of Delhi has been approved in 51st TCC and 76th NRPC meeting. In 52nd TCC and 77th NRPC DTL intimated that tentative timeline for implemenation is 28th February 2025.
2	HARYANA	Scheme not implemented	Haryana SLDC intimated that as per Joint Roadmap of implementation of ADMS in Haryana supplied to NRPC vide memo dated 17.10.2023 (Annexure-II), the implementation plan was proposed to be carried out in two parts, as mentioned below: PART-I: Control with Transmission Utility PART-II: Control with Distribution Utility It is pertinent to mention that as part of upcoming SCADA-EMS system i.e. upgradation of SCADA-EMS system, a feature in the name of LSS (Load Shedding Software)/ ADMS is part of the Technical Specification of project to be delivered. Therefore, the functionalities of ADMS application will be covered under 'Part-I: Control with Transmission Utility' will already be covered using the RTUs available at select substations along with the ADMS software being delivered by M/s GE under SCADA upgradation project. Hence, there is no need to acquire a separate ADMS application & associated hardware for data centre for implementation of PART-I. Further for Part -II a committee has been constituted for further finalization of the ADMS module with control with Discoms is under discussions for preparation of DPR.
3	HP	Scheme not implemented	HP SLDC imentioned that HPSEB had intimated that initially 142 Nos. of feeders were identified for operation under ADMS functionality but most of these feeders were from same sub-station. Therefore, now they have increased the no. of sub-station and identified the non-critical feeders. Load relief to be given through these feeders is under finalization. The revised feeder list to be shared by HPSEBL with the SLDC within one month.
4	PUNJAB	Scheme not implemented	i. A committee comprising of following officers of PSPCL & PSTCL has been constituted to finalize the logic regarding implementation of Automatic Demand Management System in Punjab Control Area. A meeting in this regard was held on dated 26-02-2024 at PSLDC Complex, Patiala. The committee deliberated various loading scenarios and proposed the following logic for the management of demand: 1. If the frequency sustains below 49.90 Hz for duration of 3 minutes, the Automatic Demand Management System will initiate a 50% reduction in the Over Drawl. 2. In case the frequency falls further below 49.85 Hz, the Over Drawl will be reduced to zero. 3. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation. ii. In 222nd OCC, MS NRPC asked Punjab to co-ordiante with Powergrid for integration of their propsoed logic with the ULDC phase-III SCADA system for timely implementation.

5	RAJASTHAN	Under implementation	In 226th OCC meeting, RVPN informed that 201 nos. of circuit breakers have been mapped to ADMS, all 201 circuit breakers tested upto yard individually. Total 650CBs are to be mapped in phased manner.
6	UP	Scheme implemented by NPCIL only	i. A meeting regarding ADMS was held on 15.01.2023 with the UPPCL under the chairmanship of MD UPPTCL ii. A committee formed for identification of load at 33 kV level under the chairmanship of Director (Distribution), UPPCL. iii. Another committee under the chairmanship of Director UPSLDC shall identify the technical and operational requirement for ADMS implementation iv. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation and likely to be commissioned by March 2025. v. In order to operate identified 33 kV feeders under ADMS scheme, integration of 132 kV substations with SCADA system is under implementation in the Reliable Communication Scheme and expected date of completion of the scheme is October 2024. vi. MS, NRPC apprised forum that a letter has been written to Director, SLDC for co-odinatng with Director (Distribution), UPPCL for expediting the finalization of feeder list at 33kV for ADMS implementation.
7	UTTARAKHAND	Scheme not implemented	i. UPCL has prepared a system architecture in which all the non-monitored sub-stions have been selected and 11kV feeders have been considered for ADMS operation. For the scheme, discom has also done group-wise selection of feeders and quantum of MW relief to be given for automatic demand response at 11kV level has also been decided. UPCL has awarded the tender for implementation of the aforementioned scheme to M/s Metergy Pvt.Ltd. ii. As per the status report submitted by M/s Metergy Pvt.Ltd, the survey work of 30 nos. incomer sites have been completed and order has been placed by UPCL for hardware equipments. iii. Uttarakhand SLDC informed that feeder list at 11kV level has been finalized and logic of ADMS implementation is under finalization. iv. Uttarakhand has intimated that It is bring to your notice that installation MFT(Multi Function Transducers) at various interstate points at PTCUL Substations under ADRS Project of UPCL is in progress.

Annexure-A.I.III.

Status of availability of ERS towers in NR

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
1	PTCUL	400kV	418.394	NIL	1		Tender has been scraped due to single tender.
		220kV	1045.135	NIL	1		
2	Powergrid NR-1	220 KV	1842.88	NIL	1		
		400 KV	11074.26	12 Towers	3	All 400kV ERS at Ballabhgarh	make-Lindsey
		765 KV	4721.85	15 Towers	1	All 765kV ERS at Meerut	Make-SBB
		500 KV HVDC	653.88	NIL	1		
		800 KV HVDC	416.58	NIL	1		
3	Powergrid NR-2	66 KV	37.56	Nil	1		ERS tower available for 400KV rating can be used in place of lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can be erected will reduce due to increase in Tower Hight.
		132 KV	262.7	Nil	1		
		220 KV	2152	Nil	1		
		400 KV	8097.3	02 Set (32 Towers)	2	Kishenpur & Jalandhar	
		765 KV	337.5	Nil	1		
4	Powergrid NR-3	800KV HVDC	2205	NIL	1		400KV ERS will be also be used in other voltage level lines
		500KV HVDC	2566	NIL	1		
		765KV	4396	NIL	1		
		400KV	12254	26 Towers	3	Kanpur	
		220KV	1541	NIL	1		
		132KV	207	NIL	1		
5	PARBATI KOLDAM TRANSMISSION COMPANY LIMITED	400kV	457	NIL	1		Procurement under process.
6	PATRAN TRANSMISSION COMPANY LTD	400kV	0.4	NIL	1	It is kept in Bhopal and on need basis is moved across region	Not available, will tie up based on the requirements in future. However the parent company IndiGrid owns one set of ERS for all five regions.
7	NRSS-XXIX TRANSMISSION LTD	400kV	853	NIL	1		
8	GURGAON PALWAL TRANSMISSION LTD	400kV	272	NIL	1		
9	RAPP Transmission Company Limited.	400kV	402	NIL	1		
10	NRSS XXXVI Transmission Limited	400kV	301.924	NIL	1		Element I - Operational comprising of 3 kms. Element II - Work Under Progress comprising of 221.924 kms. Element II - Work Under Progress comprising of 77 kms.
11	HPPTCL	220 kV	659	NIL	1		
		400 kV	75.7	NIL	1		
12	RVPN	132 kV	18969.958	1	4	01 No. ERS available at 220 kV GSS Heerapura, Jaipur	ERS proposed : 01 Set at 400 kV GSS, Jodhpur. 01 set at 400 kV GSS Bikaner
		220 kV	16227.979		3		
		400 kV	6899.386		2		
		765 kV	425.498		1		
13	DTL	220kV	915.498	NIL	1	400kV Bamnauli Sub station	ERS tower available for 400KV rating can also be used for lower voltage lines as well
		400kV	249.19	02 Sets (32 towers)	1		
14	JKPTCL						JKPTCL, Jammu: being procured JKPTCL, Kashmir:10 tower procured (out of which 3 on loan to JKPTCL, Jammu)

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
15	HVPN						HVPN does not have ERS Set. Technical Specifications have been finalized. The agenda has been sent to Hon'ble Energy Minister for approval. Thereafter, the purchase proposal shall be placed before HPPC meeting for negotation and decision
16	PSTCL	400 kV	1666.43	2	2		
		220 kV	7921.991				
17	UPPTCL 1- Meerut	132KV	27508.321	24 Nos(15 Running+9 Angle)		400 kV S/s Gr. Noida	ERS will be also be used in other voltage level lines.
		220KV	14973.453				
		400KV	6922.828				
	UPPTCL 2-Prayagraj	765KV	839.37	24 Towers		220 kv S/s phulpur	ERS will also be used in other voltage lines.
		400KV	1804.257				
		220KV	2578.932				
		132KV	4714.768				
18	POWERLINK						
19	POWERGRID HIMACHAL TRANSMISSION LTD						
20	Powergrid Ajmer Phagi Transmission Limited						
21	Powergrid Fatehgarh Transmission Limited						
22	POWERGRID KALA AMB TRANSMISSION LTD						
23	Powergrid Unchahar Transmission Ltd						
24	Powergrid Khetri Transmission Limited						
25	POWERGRID VARANASI TRANSMISSION SYSTEM LTD						
26	ADANI TRANSMISSION INDIA LIMITED		2090	1 Set (12 towers)	1 set (12 towers)	Sami (Gujarat)	Make-Lindsey ERS set available for 400KV & 500KV rating can be used for lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can reduce due to increase in Tower Height & nos of conductors.
27	BIKANER KHETRI TRANSMISSION LIMITED		482				
28	FATEHGARH BHADLA TRANSMISSION LIMITED	500 kV HVDC 400 kV HVAC	291				
29	NRSS-XXXI(B) TRANSMISSION LTD	400 kV	577.74	Not Available	Not Available		In the advance stage of process of finalising arrangement for providing ERS on need basis with other transmission utility (M/s INDIGRID).
30	ARAVALI POWER COMPANY PVT LTD	765 kv HVAC					

*The transmission Utility with line length less than 500 ckt kms (of 400 KV lines) may be given option either to procure ERS or have agreement with other transmission utilities for providing ERS on mutually agreed terms, when need arises. (As per MoP directions)

FGD Status

Updated status of FGD related data submission

NTPC (27.02.2023)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (10.01.2024)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (18.06.2024)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (20.11.2024)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (10.01.2024)
Lalitpur TPS
Lanco Anpara Power Ltd. (01.01.2024)
ANPARA-C TPS

HGPCL (22.11.2024)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (01.01.2024)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (05.01.2024)
Prayagraj TPP
APCPL (01.05.2024)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB

NTPC
DADRI (NCTPP)
Talwandi Sabo Power Ltd.
TALWANDI SABO TPP
L&T Power Development Ltd.
Nabha TPP (Rajpura TPP)

Target Dates for FGD Commissioning (Utility-wise)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
APCPL	INDIRA GANDHI STPP U#2 (Target: 30-09-2023), INDIRA GANDHI STPP U#3 (Target: 30-06-2023)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
HGPCL	PANIPAT TPS U#6 (Target: 31-12-2025), PANIPAT TPS U#7 (Target: 31-12-2025), PANIPAT TPS U#8 (Target: 31-12-2025), RAJIV GANDHI TPS U#1 (Target: 31-08-2027), RAJIV GANDHI TPS U#2 (Target: 31-08-2027), YAMUNA NAGAR TPS U#1 (Target: 31-08-2027), YAMUNA NAGAR TPS U#2 (Target: 31-08-2027)

NTPC	DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-06-2022), DADRI (NCTPP) U#6 (Target: 31-03-2023), RIHAND STPS U#1 (Target: 31-10-2025), RIHAND STPS U#2 (Target: 30-06-2026), RIHAND STPS U#3 (Target: 31-12-2024), RIHAND STPS U#4 (Target: 31-03-2025), RIHAND STPS U#5 (Target: 30-06-2025), RIHAND STPS U#6 (Target: 31-10-2025), SINGRAULI STPS U#1 (Target: 31-12-2024), SINGRAULI STPS U#2 (Target: 31-12-2024), SINGRAULI STPS U#3 (Target: 31-12-2024), SINGRAULI STPS U#4 (Target: 31-12-2024), SINGRAULI STPS U#5 (Target: 31-03-2025), SINGRAULI STPS U#6 (Target: 31-06-2024), SINGRAULI STPS U#7 (Target: 31-03-2024), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-08-2022), MEJA Stage-I U#1 (Target: 31-10-2023), MEJA Stage-I U#2 (Target: 30-06-2023), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-03-2023), TANDA Stage-II U#4 (Target: 30-09-2023)

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2025), ANPARA C TPS U#2 (Target: 31-12-2025)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2026), PRAYAGRAJ TPP U#2 (Target: 31-12-2026), PRAYAGRAJ TPP U#3 (Target: 31-12-2026)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2026), GGSSTP, Ropar U#3 (Target: 31-12-2026), GGSSTP, Ropar U#4 (Target: 31-12-2026), GGSSTP, Ropar U#5 (Target: 31-12-2026), GGSSTP, Ropar U#6 (Target: 30-12-2026)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 30-11-2025), KOTA TPS U#6 (Target: 30-11-2025), KOTA TPS U#7 (Target: 30-11-2025), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2025), ANPARA TPS U#2 (Target: 31-12-2025), ANPARA TPS U#3 (Target: 31-12-2025), ANPARA TPS U#4 (Target: 31-12-2025), ANPARA TPS U#5 (Target: 31-12-2025), ANPARA TPS U#6 (Target: 31-12-2025), ANPARA TPS U#7 (Target: 31-12-2025), HARDUAGANJ TPS U#8 (Target: 31-12-2026), HARDUAGANJ TPS U#9 (Target: 31-12-2026), OBRA TPS U#9 (Target: 31-12-2026), OBRA TPS U#10 (Target: 31-12-2026), OBRA TPS U#11 (Target: 31-12-2026), OBRA TPS U#12 (Target: 31-12-2026), OBRA TPS U#13 (Target: 31-12-2026), PARICHHA TPS U#3 (Target: 31-12-2026), PARICHHA TPS U#4 (Target: 31-12-2026), PARICHHA TPS U#5 (Target: 31-12-2026), PARICHHA TPS U#6 (Target: 31-12-2026)

MIS Report for Status of Islanding Schemes

Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healitheness	SOP	SCADA Display Page	Remarks
1	NAPS IS	UP	Implemented	Yes (08-10-2021)	Yes	Yes	-
2	RAPS IS	Rajasthan	Implemented	16-Aug-21	Yes	Yes	List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP IS submitted by RVPN on 04.12.2021.
3	Delhi IS	Delhi	Implemented				
4	Pathankot-RSD IS	Punjab	Implemented				

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding (Required / Not Required)	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	Scheme has been approved in 59th NRPC meeting held on 31.10.2022. In the 226th OCC meeting, UPPTCL representative apprised that Unchahar-Lucknow Islanding scheme has been successfully implemented and same is visible at SCADA of UPSLDC also (except 03 Substation: Namely 132 kV S/s tripula, 132 kV S/s bachhrawan and 132 kV S/s Hussainganj.) The data of above 03 substation is not available at UPSLDC due to lack of OPGW. The work of laying OPGW cable is under progress and same shall be completed by end of December.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Under Implementation	Scheme has been approved in 71th NRPC meeting held on 29.01.2024. In 226th OCC, UPPTCL representative apprised forum that management is of view that procurement of UFRs for the Lalitpur-Agra islanding scheme should be explored through PSDF funding. A proposal for the same has been prepared and submitted to the PSDF Secretariat.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 225th OCC, RRVPNL representative mentioned they have revised their DPR for Jodhpur-Barmer-Rajwest IS and, instead of using cloud storage, they will be opting for network-attached storage. As a result, there is a price variation, and they have obtained approval from their management and would submit their proposal for PSDF funding.	-	-		-	-	-	-	-	-	-	-
4	Suratgarh IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 226th OCC, RRVPNL representative mentioned DPR for implementation of Suratgarh islanding scheme would be submitted after finalization of DPR for Jodhpur-Barmer-Rajwest islanding scheme.	-	-		-	-	-	-	-	-	-	-
5	Patiala-Nabha Power Rajpura IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 226th OCC, Punjab SLDC apprised forum that during a meeting with the PSDF Secretariat on 22nd October 2024, they had given a presentation on the DPR submitted to the PSDF Secretariat, and the minutes of the meeting are awaited.		-		-	-	-	-	-	-	-	-
6	Kullu-Manali-Mandi IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 226th OCC, HPSLDC representative informed that proposed UFR scheme for Kullu-Manali islanding scheme has been recommended by the Appraisal Committee of the State PSDF for approval of Hon'ble HPERC. The islanding scheme would now be taken up in the Monitoring committee for State PSDF funding approval. Meeting of Monitoring committee is yet to be convened.		-		-	-	-	-	-	-	-	-
7	Shimla-Solan IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. a separate meeting was conducted by NRPC Sectt. with HPSLDC, HPSEBL and M/s GE on 18.09.2024, wherein HPSEBL informed that payment to M/s GE would be made within two months and subsequently work regarding the implementation in revised setting of Bhaba HEP would be completed by M/s GE within one month. A letter dated 06-01-25 from HPSLDC has been received intimating that except Sandhya HEP which is under forced outage other generators (excluding the generators under HPSEBL) have carried out necessary action. (Letter attached as **Addenum** to this Annexure)										

											Approved Planned Outage-1			Actual Planned Outage-1		
Capacity (MW) 30-11-2023	Name of Station	UNIT_NM	STN_TYPE_ID	SECTOR	REGION_NM	ST_NM	SH_NM	IPP	FUEL_NM	Capacity (MW) 31-03-2025	Start Date	End Date	Reason	Start Date	End Date	Reason for any deviation
500	INDIRA GANDHI STPP	1	T	CENTRAL SECTOR	Northern	Haryana	APCPL	FALSE	COAL	500	27-Nov-24	3-Dec-24	Boiler License Renewal			
135	JALIPA KAPURDI TPP	3	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	6-Dec-24	13-Dec-24	Boiler License Renewal			
135	JALIPA KAPURDI TPP	7	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	16-Dec-24	27-Dec-24	Boiler License Renewal			
135	JALIPA KAPURDI TPP	5	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	29-Nov-24	10-Dec-24	Boiler Inspection			
225	KASHIPUR CCPP	1	T	IPP SECTOR	Northern	Uttarakhand	SrEPL	FALSE	NATURAL GAS	225	23-Dec-24	26-Dec-24	Offline Waterwash			

Annexure-A.IV

भारत सरकार / Government of India

विद्युत मंत्रालय / Ministry of Power

केंद्रीय विद्युत प्राधिकरण / Central Electricity Authority

प्रचालन निष्पादन प्रबोधन प्रभाग / Operation Performance Monitoring Division

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To,

[Name of the Generating Utility]

Subject:- Mandatory Submission of Daily and Monthly Generation Data on National Power Portal – reg.

Sir/Madam,

It has been observed that several utilities are not submitting their daily and monthly generation data on the National Power Portal (NPP) using the login credentials (username and password) provided to them. This lapse in submission is causing significant delays in compiling and disseminating critical information to higher authorities.

2. As per relevant provisions of the Electricity Act, 2003, this Division of CEA is entrusted with the responsibility to collect, compile & record the data concerning the generation of power and publish various reports like Daily Generation Report, Monthly Generation Report, PLF report etc. All these reports need to be prepared based on the information furnished by various generating stations/utilities on daily, monthly and yearly basis in a time bound manner.

3. It may be mentioned that the data submitted on the NPP is essential for framing replies and preparing reports for various references, including:

- Responses to Parliamentary Questions.
- Replies to VIP references.
- Preparation of other Official Reports and submissions to related communication.

4. It has been directed by the Ministry of Statistics & Programme Implementation (MOSPI) that the monthly generation data must be compiled by the 15th of the following month. This directive aligns with the objective of reducing the time lag in publishing the Index of Industrial Production (IIP) data, a critical short-term indicator of industrial growth in the country.

5. In view of the above requirement, it is imperative that all utilities submit their **monthly generation data on the NPP by the 7th of the following month without fail.** This timeline will provide the Central Electricity Authority (CEA) sufficient time to validate and finalize the data for publication by the prescribed deadline set by MOSPI. In case the required data is not submitted within the stipulated timeframe, CEA will have no other option but to freeze the tentative monthly generation data as the final (actual) data. Once the data is firmed

up and published on the NPP, **no revisions or changes will be possible under any circumstances.**

6. All generating utilities are therefore urged to prioritize this activity and ensure timely submission of accurate data. Non-compliance with the submission deadlines may result in discrepancies in reporting, which could adversely impact decision-making at the highest levels of governance.

7. Further in case any of the generating stations are facing any problem in feeding the online data into the NPP Portal, they may contact this Division (NIC Officers, **Sh. Ajay Badola, (Mob. No. 9899382669**) and **Sh. Akash, (Mob. No. 9810496775**) or may send email at npp.suppoprt@nic.in for assistance.

This matter is to be treated with utmost urgency and adherence by all stakeholders.

This issues with the approval of the Member (GO&D), CEA.

Yours faithfully

(अरुण कुमार/ Arun Kumar)
(निदेशक/ Director)
प्रचालन निष्पादन प्रबोधन प्रभाग / OPM Division

Annexure-A.V Annexure -1

एनएचपीसी लिमिटेड
(भारत सरकार का एक नवरत्न उद्यम)
NHPC Limited
(A Government of India Navratna Enterprise)

ओएंडएम विभाग
O&M Department
एनएचपीसी ऑफिस कॉम्प्लेक्स, सैक्टर-33,
फ़रीदाबाद (हरियाणा)-121003
NHPC Office Complex, sector-33,
Faridabad (Haryana)-121003
वैबसाइट/Website: www.nhpcindia.com

NH/O&M/GMC/21/ \173

03.01.2025

To,

Sh. Lokendra Ranawat
Head of Regulatory
M/s Indigrid
10th Floor, Berger Towers,
Delhi One Building,
Sector-16B, DND Flyway,
Noida 201301
Email: Lokendra.ranawat@indigrid.com

Sub.: Status of OPGW implementation in Parbati-Banala Corridor regarding.

Sir,

Parbati-3 hydro Power Station of capacity 520 MW (4X130MW) is under operation since 2014. The Power of this power station is being evacuated to regional grid through 400KV Parbati-3-Banala and 400KV Parbati-3-Sainj-Banala lines.

Hon'ble CERC vide Petition No.: 319/RC/2018 dated: 28th of August, 2019 issued an order on **"Automatic Generation Control (AGC) implementation in India".**

In the above order following was summarized:

In the interest of reliable and safe grid operation, the Commission directs that all the ISGS stations whose tariff is determined or adopted by CERC ***shall be AGC-enabled and the ancillary services including secondary control through AGC be implemented*** *as per the following direction:*

1) *All thermal ISGS stations with installed capacity of 200 MW and above and all hydro stations having capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by CERC are directed to install equipment at the unit control rooms for transferring the required data for AGC as per the requirement to be notified by NLDC. NLDC shall notify the said requirements within one month of this order.*
2) *All such ISGS stations whose tariff is determined or adopted by CERC shall have communication from the nearest wide band node to the RTU in the unit control room.*
3) ***The Central Transmission Utility (CTU) is directed to have communication availability from NLDC/ RLDCs to the nearest wide band node/ switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication.***

In compliance of above order, NHPC had already placed work order for implementation of AGC at Parbati-III PS in May 2020, however, due to non-availability of OPGW connectivity AGC has not been commissioned.

Parbati-II

एनएचपीसी लिमिटेड
(भारत सरकार का एक नवरत्न उद्यम)
NHPC Limited
(A Government of India Navratna Enterprise)

ओ&एम विभाग
O&M Department
एनएचपीसी ऑफिस कॉम्प्लेक्स, सैक्टर-33,
फ़रीदाबाद (हरियाणा)-121003
NHPC Office Complex, sector-33,
Faridabad (Haryana)-121003
वैबसाइट/Website: www.nhpcindia.com

It was learnt during various OCC/TEST meetings that due to some commercial obligations between TSPs the implementation of OPGW in the given corridor was pending, however, now the dispute has been resolved and OPGW is going to be implemented by M/s Indigrid and other TSPs.

Further, it is intimated that Parbati-2 HEP of capacity 800MW (4X200MW) is scheduled to be commissioned/COD by March 2025. The power of Parbati-2 HEP shall be evacuated through exiting transmission line i.e. 400KV Parbati-2-Sainj-Parbati-3-Banala and 400KV Parbati-2-Banala transmission line.

As per IEGC, 2023 Regulations-24 some requisite Documents and Tests reports prior to declaration of Commercial operation have to be submitted to concern RLDC which includes AGC enablement from NRLDC in accordance with the CEA Technical Standards for Construction and the CEA Technical Standards for Connectivity.

Due to non-availability of OPGW connectivity the operation/ implementation of AGC shall be pending and the statutory compliance to NRLDC for commissioning activities may get hindered/delayed.

In view of above, M/s Indigrid is requested to kindly confirm the following:

1) OPGW in 400KV Parbati-3-Banala, 400KV Parbati-3-Sainj-Parbati-2-Banala is being implemented by M/s Indigrid.
2) The schedule of commissioning of OPGW in above Transmission lines and other lines, if any for AGC connectivity between Parbati-3/Parbati-2 Power Station to NLDC.

NHPC also requests to expedite the installation of OPGW to match Parbati-II commissioning/COD.

Thanking You.

Regards,

(S K Mishra)
General Manager (O&M)
NHPC Ltd.

Copy to:

1. Chief General Manager (SO), Grid India (NLDC), Email: vivek.pandey@grid-india.in
2. SE (O), NRPC, Katwaria Sarai, Delhi.Email: seo-nrpc@nic.in

Annexure-II

Annexure-A.VI

Zimbra **hod-om-co@nhpc.nic.in**

[LIKELY_SPAM]RE: Status of OPGW implementation in Parbati-Banala Corridor regarding.

From : Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>

Wed, Jan 08, 2025 11:08 AM

5 attachments

Subject : [LIKELY_SPAM]RE: Status of OPGW implementation in Parbati-Banala Corridor regarding.

To : O&M <hod-om-co@nhpc.nic.in>

Cc : seo-nrpc <seo-nrpc@nic.in>, vivek pandey <vivek.pandey@grid-india.in>, Vijay Kumar, SM-O&M <vijayk@nhpc.nic.in>, surendra kumar mishra <surendramishra@nhpc.nic.in>

General

Dear Sir,

This has reference to the trailing email, please note that CTUIL vide its letter dated 15.07.2023 awarded PrKTCL laying of OPGW (24 F) on below mentioned Transmission Line sections:

- Parbati-II – Parbati-III – **9.643 km**
- Parbati-III – Parbati Pooling (Banala) – **3.518 km**
- Parbati Pooling (Banala) – Koldam (NTPC) – **62.636 km**
- Parbati-II - Parbati Pooling (Banala) – **12.838 km**

The implementation time frame for the above scope is 18 months from 15.07.2024. This is for your information please.

Note: Terminal equipment to be installed by PGCIL for these lines.

Regards,

Lokendra Singh Ranawat
Head Regulatory | IndiGrid

M: 9311279183
lokendra.ranawat@indigrid.com

10th Floor, Berger Delhi One Towers,
Sector-16 B, Noida, Uttar Pradesh

www.indigrid.co.in

From: O&M <hod-om-co@nhpc.nic.in>
Sent: 03 January 2025 14:26
To: Lokendra Singh Ranawat <Lokendra.Ranawat@indigrid.com>
Cc: seo-nrpc <seo-nrpc@nic.in>; vivek.pandey@grid-india.in; Vijay Kumar, SM-O&M <vijayk@nhpc.nic.in>; surendra kumar mishra <surendramishra@nhpc.nic.in>
Subject: Status of OPGW implementation in Parbati-Banala Corridor regarding.

Sir

Please find attached the letter on subject cited above.

O&M Division, CO
NHPC Limited, Faridabad

Annexure_2_MoM_20 NCT.pdf
2 MB

Annexure_I_NCT letter dated 13.07.2024 for ISTS schemes approved in 20th NCT meeting held on 25.06.2024.pdf
288 KB

Broad TS for OPGW on PKTCL Line.docx
190 KB

CTU letter dated 15.07.2024 forwarding recommendations of 20th NCT meeting.pdf
2 MB

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref. No.: CTUIL/OM/15/20th NCT

15th July 2024

As per distribution list

Sub: Implementation of ISTS Transmission/Communication Schemes approved by NCT in its 20th meeting held on 25th June 2024 under Regulated Tariff Mechanism (RTM).

NCT vide letter dated 13.07.2024 has awarded various ISTS Transmission/Communication schemes for its implementation under RTM mode by the respective implementing agencies as indicated in the table below:

Sl. No.	Transmission Schemes	Implementing Agency
I. ISTS Transmission schemes approved by NCT		
1.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW): **Part B**	POWERGRID
II. Communication schemes approved by NCT		
1.	A: Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pooling (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations.	PKTCL
	B: Supply and installation of 24 Fibre OPGW & FOTE to providing redundant communication for Parbati Pooling (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations.	POWERGRID
2.	Redundant Communication for Chamera-III (NHPC) & Budhil (GreenCo) using 3 pairs of fibers sharing from HPPTCL network	POWERGRID
3.	Additional FOTE requirements at AGC locations in Western Region	POWERGRID
4.	Redundant OPGW communication path for Solapur STPP under AGC	POWERGRID
5.	Redundant OPGW communication path for 500 MW plant of NSPCL, Chhattisgarh.	POWERGRID

NCT approved the modification in the earlier approved/notified transmission schemes as follows:

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

Sl. No.	Earlier Scope (as per MoP OM dated 01.12.21)	Revised Scope	Implementing Agency
1.	Augmentation with 400/220 kV, 1x500 MVA Transformer (**10th**) at Fatehgarh-II PS	Augmentation with 400/220 kV, 1x500 MVA Transformer (**11th**) at Fatehgarh-II PS (5th ICT in Fatehgarh-II section-II)	POWERGRID

Sl. No.	Earlier Scope (as per MoP OM dated 01.12.21)	Revised Scope	Implementing Agency
	• 400/220 kV 500 MVA ICT:1 No. • 400 kV ICT bay – 1 No. • 220 kV ICT bay - 1 No. **Implementation Timeframe- 15 months from MOP OM or evacuation requirement beyond 4490 MW at 220 kV level of Fatehgarh-2, whichever is later.**	• 400/220 kV 500 MVA ICT:1 No • 400 kV ICT bay – 1 No. • 220 kV ICT bay -.1 No. **Implementation Timeframe- 18 months [for N-1 compliance in Fatehgarh-II PS (Section-II)]**	

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

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

Additional works due to rearrangement / revised scope

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

Copy of NCT letter dated 13.07.2024 and further clarification mail received from CEA dated 15.07.2024, in this regard, are enclosed at **Annexure-I & II respectively**. The detailed scope of work along with implementation time frame for the above Transmission/Communication Schemes shall be as per the enclosed letter of NCT.

The implementing agency shall enter into a concession agreement with CTUIL for implementation of the aforementioned Transmission Schemes. However, pending finalization of Concession Agreement, it is requested to initiate necessary actions for implementation of the aforementioned Transmission Schemes.

This is for your kind information and necessary action, please.

Thanking you.

Yours faithfully,

(Partha Sarathi Das)
Sr. General Manager

Encl.: as stated.

Distribution List:

1. **The Chairman & Managing Director** Power Grid Corporation of India Ltd., Saudamini, Plot No. 2, Sector-29, Gurgaon- 122 001	2. **Shri. Lokendra Singh Ranawat,** **Head Regulatory** Parabati Koldam Transmission Co. Ltd. C/o Indigrid, 10th Floor, Berger Delhi One Towers, Sector-16B, Noida, Uttar Pradesh - 201301

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग-II
Power System Planning & Appraisal Division-II

सेवा में / To

Chief Operating Officer, CTUIL
Saudamini, Plot No. 2,
Sector-29, Gurgaon-122001

विषय/Subject: Implementation of ISTS Transmission/Communication Schemes approved by NCT in its 20th meeting held on 25.06.2024- regarding

महोदय/Sir,

The undersigned is directed to inform that NCT has approved implementation of the following ISTS Transmission and Communication Schemes in its 20th meeting held on 25.06.2024, in line with MoP office order dated 28.10.2021 and MoP Guidelines dated 09th March, 2022, to be implemented through Regulated Tariff Mechanism (RTM) route by agency as indicated below:

I. ISTS schemes costing between Rs. 100 Crs. To Rs. 500 Crs. Approved by NCT:

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

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

Sl.	Name of Transmission	Broad Scope

No.	Scheme	
1.	Transmission scheme for evacuation of power from Ratle HEP (850 MW) & Kiru HEP (624 MW) : Part B	i. Reconductoring of 400 kV Kishenpur-Kishtwar section (up to LILO point) with Twin HTLS (minimum 2100 MVA capacity) (formed after LILO of Kishenpur-Dulhasti line at Kishtwar S/s) along with bay upgradation works (2000 A to 3150 A) at Kishenpur end for above line. ii. Bypassing both ckts of 400 kV Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin) at Samba and connecting them together to form 400 kV Kishenpur– Jalandhar D/c direct line (Twin) (4 Nos. of vacated 400 kV line bays at Samba S/s will be utilized for 400 kV Kishenpur-Samba D/c line (Quad) & 400 kV Samba- Jalandhar D/c line(Quad), iii. Bays upgradation works (2000A to 3150A) at Samba end (4 Nos. bays vacated after bypassing of Kishenpur – Samba D/c line (Twin) & 400 kV Samba – Jalandhar D/c line (Twin)) iv. Redundant Communication System for Dulhasti (NHPC) & Kishtwar (Sterlite) stations by installing OPGW on 400 kV Kishenpur-Kishtwar S/c line alongwith reconductoring work and FOTE at Dulhasti & Kishenpur.

II. Communication schemes approved by NCT:

Sl. No.	Name of Transmission Scheme	Implementation Mode	Tentative Implementation timeframe	Implementing Agency	Estimated Cost (Rs. Crs)
1.	A: Supply and installation of 24 Fibre OPGW on PKTCL lines for providing redundant communication for Parbati Pooling (Banala) (PG) S/s, Parbati-II (NHPC) & Parbati-III (NHPC) stations.	RTM	18 months from the date of allocation	PKTCL	5.31
	B: Supply and installation of 24 Fibre OPGW & FOTE to	RTM	18 months from the date of allocation	POWERGRID	1.24

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

The above schemes are awarded to CTUIL for implementation under RTM mode. CTUIL is requested to take necessary action for entering into a concession agreement with the respective agency for implementation of the above schemes.

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

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

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

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

Additional works due to rearrangement / revised scope:

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

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

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

Earlier (as per MOP OM dated 01.12.21)	Amendment
Augmentation with 400/220 kV, 1x500 MVA Transformer **(10th)** at Fatehgarh-2 PS • 400/220 kV 500 MVA ICT:1 no • 400 kV ICT bays – 1 Nos. • 220 kV ICT bays - 1 Nos.	Augmentation with 400/220 kV, 1x500 MVA Transformer **(11th)** at Fatehgarh-II PS (5th ICT in Fatehgarh-II section-II) • 400/220 kV 500 MVA ICT:1 no • 400 kV ICT bays – 1 no. • 220 kV ICT bays - 1 no.

Implementation Timeframe- 15 months from MOP OM or evacuation requirement beyond 4490 MW at 220 kV level of Fatehgarh-2, whichever is later.	**Implementation Timeframe- 18 months** **[for N-1 compliance in Fatehgarh-II PS (Section-II)]**

CTU is requested to intimate the implementing Agency. Detailed scope of the schemes are as per minutes of the meeting. Copy of the minutes are enclosed.

Encl.: As above.

भवदीय / Yours faithfully,

Signed by Bhagwan Sahay Bairwa
Date: 13-07-2024 19:11:35

(बी.एस.बैरवा/ B.S.Bairwa)
मुख्य अभियन्ता (इंचार्ज) एवं सदस्य सचिव,एन.सी.टी./
Chief Engineer (I/C) & Member Secretary (NCT)

Copy to:

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

SPECIFIC TECHNICAL REQUIREMENTS FOR COMMUNICATION

The communication requirement shall be in accordance to CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020, CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, CERC (Communication System for inter-State transmission of electricity) Regulations, 2017, and CEA (Cyber Security in Power Sector) Guidelines, 2021, all above documents as amended from time to time.

The complete ISTS communication system commissioned by TSP under the RFP shall be the asset of ISTS and shall be available for usage of ISTS requirements as suggested by CTU from time to time.

The communication services viz. SCADA, VoIP, PMU, AGC & AMR (wherever applicable) have been identified as critical services and therefore shall be provisioned with 2+2 redundancy i.e. 2 channels for Main Control Centre and 2 channels for Backup Control Centre. In order to meet this requirement, suitable redundancy at port and card level need to be ensured by the TSP to avoid any single point of failure which may lead to interruption in real-time grid operation.

PMU to PDC communication (wherever required) shall be through 2 channels to the PDC (main) as there is no backup PDC at present.

Accordingly, all the hardware for communication services of station as stated above shall support dual redundancy for data transmission of station to respective main and backup RLDCs.

In order to meet the requirement for grid management and operation of substations, Transmission Service Provider (TSP) shall shall provide the following:

A. Supply and installation of 24 Fibre OPGW

(i) TSP shall supply, install & commission One (1) no. OPGW cable containing 24 Fibres (24F) by replacing one (1) number Earthwire or Two (2) no. OPGW cable containing 24 Fibres (24F) (depending on the common D/c line portion of 2 S/c transmission lines wherever applicable) in live line condition on the following lines:

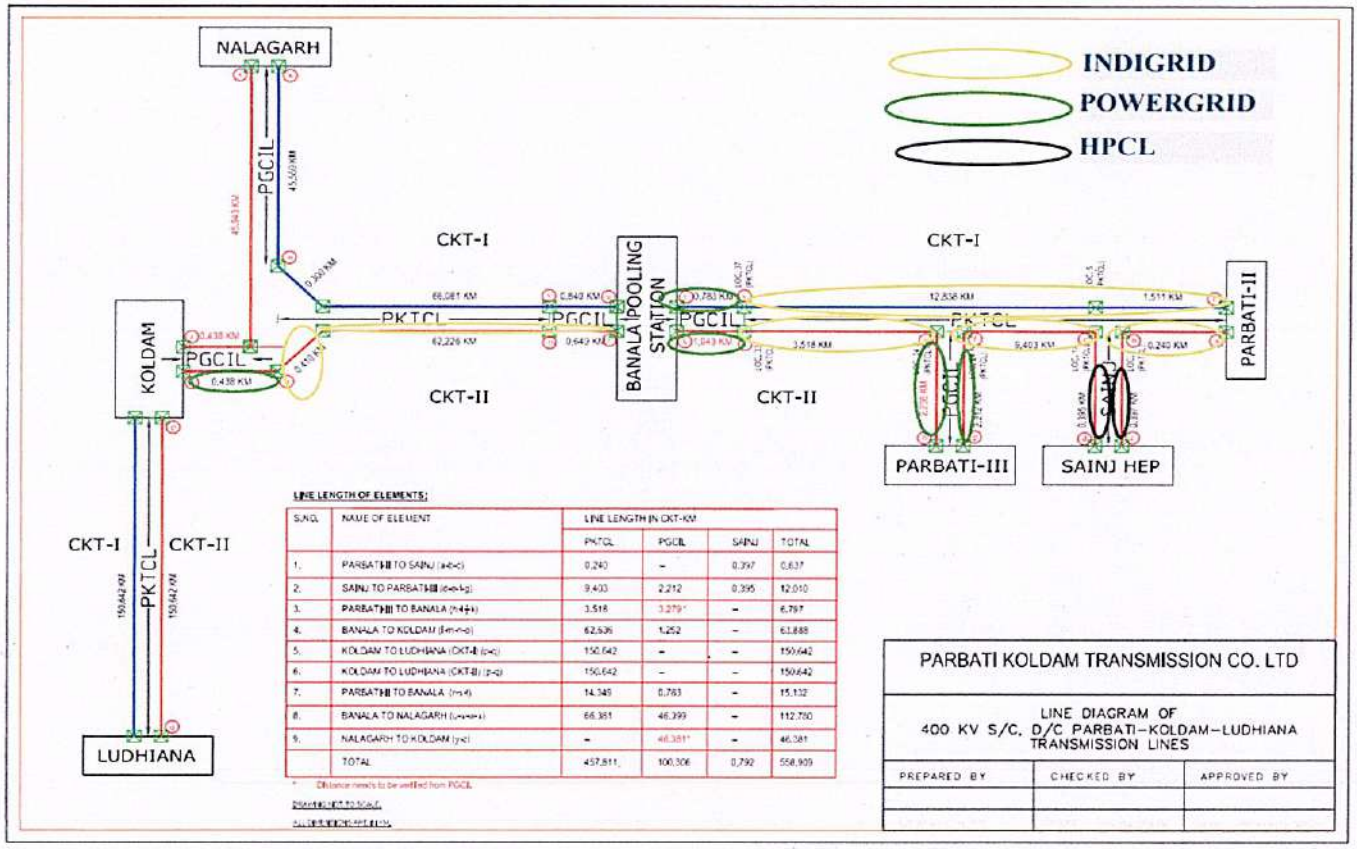
(a) Parbati-II – Parbati-III – **9.643 km** (approx.)
(b) Parbati-III – Parbati Pooling (Banala) – **3.518 km** (approx.)
(c) Parbati Pooling (Banala) – Koldam (NTPC) – **62.636 km** (approx.)
(d) Parbati-II - Parbati Pooling (Banala) – **12.838 km** (approx.)

Total - **88.635 kms** (approx.)

(ii) The TSP shall install this OPGW as per the diagram attached at Fig-1 for PKTCL section of transmission lines as mentioned on (i) above. OPGW shall be installed including all associated hardware including Vibration Dampers, mid-way & gantry Joint Boxes (called OPGW Hardware hereafter) and finally terminate in Joint Boxes at end Substations/Other OPGW Junction Towers.

(iii) Maintenance of OPGW Cable & OPGW Hardware shall be the responsibility of TSP.

(iv) PKTCL shall coordinate with POWERGRID & HPPTCL to make complete fiber links between Koldam - Banala Pooling, Banala Pooling – Parbati -III, Parbati-III - Sainj, Sainj – Parbati-II & Parbati-II – Banala Pooling by patching fibers of these links having different ownerships.



LINE LENGTH OF ELEMENTS:

S.NO.	NAME OF ELEMENT	LINE LENGTH IN CKT-KM			
		PKTCL	PGCIL	SAINJ	TOTAL
1.	PARBATI-III TO SAINJ (a+c)	0.240	–	0.397	0.637
2.	SAINJ TO PARBATI-III (d+e+b)	9.403	2.212	0.395	12.010
3.	PARBATI-III TO BANALA (n+k)	3.518	3.279*	–	6.797
4.	BANALA TO KOLDAM (f+n+o)	62.636	1.252	–	63.888
5.	KOLDAM TO LUDHIANA (CKT-I) (o+q)	150.642	–	–	150.642
6.	KOLDAM TO LUDHIANA (CKT-II) (p+q)	150.642	–	–	150.642
7.	PARBATI-III TO BANALA (m+k)	14.349	0.783	–	15.132
8.	BANALA TO NALAGARH (i+m+l)	66.381	46.399	–	112.780
9.	NALAGARH TO KOLDAM (j+k)	–	46.381*	–	46.381
	TOTAL	457.811	100.306	0.792	558.909

* Distance needs to be verified from PGCIL

PARBATI KOLDAM TRANSMISSION CO. LTD

LINE DIAGRAM OF
400 KV S/C, D/C PARBATI–KOLDAM–LUDHIANA
TRANSMISSION LINES

PREPARED BY	CHECKED BY	APPROVED BY

Figure-I

Clause No.	Responsible Entity	Compliance Assignment
5.2(i)	Each distribution licensee within a State	Estimate the demand in its control area including the demand of open access consumers and factoring in captive generating plants, energy efficiency measures, distributed generation, demand response, in different time horizons, namely long-term, medium term and short-term.
5.2(ii)	STU (on behanlf of distribution licensee)/other designated agency	Estimate the demand for the entire State duly considering the diversity in different time horizons, namely long-term, medium term and short-term.
5.3(a)	Each distribution licensee	(i) assess the existing generation resources and identify the additional generation resource requirement to meet the estimated demand in different time horizons, (ii) prepare generation resource procurement plan.
5.3(c)	Each distribution licensee	Generation resource procurement planning (specifying procurement from resources under State control area and regional control area) shall be undertaken in different time horizons, namely long-term, medium term and short-term to ensure (i) adequacy of generation resources and (ii) planning reserve margin (PRM) taking into account loss of load probability and energy not served as specified by CEA.
5.3(d)	STU (on behalf of distribution licensee)/other designated agency	STU or other designated agency by state comission shall provide to NLDC, •the details regarding demand forecasting, •assessment of existing generation resources •such other details as may be required for carrying out a national level simulation for generation resource adequacy for States.
5.3(e)	NLDC	Based on the information received, NLDC shall carry out a simulation to assist the States in drawing their optimal generation resource adequacy plan.
5.3(f)	Each distribution licensee	Each distribution licensee shall ensure demonstrable generation resource adequacy for such period as specified by the respective SERC
31.1(a)	NLDC/RLDC/SLDC	Operational planning in advance by NLDC, RLDCs and SLDCs within their respective control areas: Monthly and Yearly time horizons in co-ordination with CTU, RPCs or STUs, as applicable.
31.1(b)	NLDC/RLDC/SLDC	Operational planning shall be carried out in advance by NLDC, RLDCs and SLDCs within their respective control areas on Intra-day, Day Ahead, Weekly time horizons.

31.1(c)	NLDC/RLDC	Procedure and data format by NLDC/RLDC for following activity •Operational planning analysis •Real-time monitoring, •Real-time assessments. Format is available at *https://posoco.in/wp-content/uploads/2024/03/Final-NLDC-Operating-Procedure_as-submitted-to-CERC-dated-290923.pdf*
31.1(d)	SLDC	SLDC may also issue procedures and formats for data collection for the above purposes.
31.2(a)	SLDC	Each SLDC shall carry out demand estimation (active & reactive) as part of operational planning after duly factoring in the demand estimation done by STU as part of resource adequacy planning referred to in Chapter 2 of these regulations.
31.2(b)	SLDC	Each SLDC shall develop methodology for daily, weekly, monthly, yearly demand estimation in MW and MWh for operational analysis as well as resource adequacy purposes
31.2(c)	SLDC	The demand estimation by each SLDC shall be done on day ahead basis with time block wise granularity for the daily operation and scheduling . Revision in real-time demand estimate by SLDC if major change is observed and sharing with RLDC
31.2(d)	SLDC	Each SLDC shall submit node-wise morning peak, evening peak, day shoulder and night off-peak estimated demand in MW and MVA on a monthly and quarterly basis for the nodes 110 kV and above
31.2(e)	SLDC	SLDC shall also estimate peak and off-peak demand (active as well as reactive power) on a weekly and monthly basis for load -generation balance planning as well as for operational planning analysis
31.2(f)	ISTS connected bulk consumers or distribution licensees	The entities such as bulk consumers or distribution licensees that are directly connected to ISTS shall estimate and furnish such a demand estimate to the concerned RLDC
31.2(g)	RLDC/NLDC	Based on the demand estimate furnished by the SLDCs and other entities directly connected to ISTS, each RLDC shall prepare the regional demand estimate and submit it to the NLDC. NLDC, based on regional demand estimates furnished by RLDCs, shall prepare national demand estimate
31.2(h)	SLDC	Submission of demand estimate data by SLDCs or other entities directly connected to ISTS, as applicable, to the respective RLDC and RPC as per below timeline : - Daily: 10:00 hrs of previous day - Weekly: First workinh day of previus week - Monhtly: Fifth day of previous month - Yearly: 30th September of the previous year

31.2(i)	SLDC/RLDC/NLDC	Compute forecasting error for intra-day, dayahead, weekly, monthly and yearly forecasts and analyse the same in order to reduce forecasting error in the future. The computed forecasting errors shall be made available by SLDCs, RLDCs and NLDC on their respective websites.
31.3(a)	SLDC	The generation estimation by each SLDC shall be done on day ahead basis with time block wise granularity for the daily operation and scheduling . Revision in real-time generation estimate by SLDC if major change is observed and sharing with RLDC
31.3(b)	RLDC	RLDC shall forecast generation from wind, solar, ESS and Renewable Energy hybrid generating stations that are regional entities and SLDC shall forecast generation from such sources that are intra-state entities, for different time horizons as referred to in clause (1) of Regulation 31 of these regulations for the purpose of operational planning
31.4(a)	SLDC	SLDCs estimate and ensure the adequacy of resources, identify generation reserves, demand response capacity and generation flexibility requirements with due regard to the resource adequacy framework as specified under Chapter 2 of these regulations
31.4(b)	SLDC	Furnishing time block-wise information for the following day in SLDC respect of all intra-state entities to the concerned RLDC who shall validate the adequacy of resources with due regard to the following: (i) Demand forecast aggregated for the control area; (ii) Renewable energy generation forecast for the control area; (iii) Injection schedule for intra-State entity generating station; (iv) Requisition from regional entity generating stations (v) Secondary and planned procurement through Tertiary reserve requirement; (vi) Planned procurement of power through other bilateral or collective transactions, if any.
33.1	NLDC, RLDC, SLDC & (RPC: Monthly & Yearly)	Based on the operational planning analysis data, operational planning study shall be carried out by various agencies for time horizons such as Real time, Intra Day , Weekly , Monthly & Yearly
33.2	SLDC, RLDCs and NLDC	SLDCs, RLDCs and NLDC shall utilize network estimation tool integrated in their EMS and SCADA systems for the real time operational planning study.

33.3	SLDC	SLDCs shall perform day-ahead, weekly, monthly and yearly operational studies for the concerned State for: (a) assessment and declaration of total transfer capability (TTC) and available transfer capability (ATC) for the import or export of electricity by the State. TTC and ATC shall be revised from time to time based on the commissioning of new elements and other grid conditions and shall be published on SLDC website with all the assumptions and limiting constraints; (b) planned outage assessment; (c) special scenario assessment; (d) system protection scheme assessment; (e) natural disaster assessment; and (f) any other study relevant in operational scenario.
33.4	RLDCs and NLDC	RLDCs and NLDC shall perform day-ahead, weekly, monthly and yearly operational studies for: (a) assessment of TTC and ATC at inter-regional, intra-regional, and inter-state levels; (b) planned outage assessment; (c) special scenario assessment; (d) system protection scheme assessment; (e) natural disaster assessment; and (f) any other study relevant to operational scenarios
33.5	RLDCs	RLDC shall assess intra-regional and inter-state level TTC and ATC and submit them to NLDC. NLDC shall declare TTC and ATC for import or export of electricity between regions including simultaneous import or export capability for a region, and crossborder interconnections 11 (Eleven) months in advance for each month on a rolling basis.
33.6	RLDCs	Operational planning study shall be done to assess whether the planned operations shall result in deviations from any of the system operational limits defined under these regulations and applicable CEA Standards. The deviations, if any, shall be reviewed in the monthly operational meeting of RPC and significant deviations shall be monitored by RPC for early resolution.
33.7	NLDC, RLDCs, RPCs and SLDCs	NLDC, RLDCs, RPCs and SLDCs shall maintain records of the completed operational planning study, including date specific power flow study results, the operational plan and minutes of meetings on operational study.
33.8	NLDC, RLDCs, RPCs and SLDCs	NLDC, RLDCs, RPCs and SLDCs shall have operating plans to address potential deviations from system operational limit identified as a result of the operational planning study.
33.9	SLDCs	Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC

33.10	RLDCs	Each RLDC shall undertake a study on the impact of new elements to be commissioned in the next six (6) months in (a) the ISTS of the region and (b) the intrastate system on the inter-state system and share the results of the studies with NLDC
33.11	NLDC	NLDC shall undertake study on the impact of new elements to be commissioned in the next six (6) months in (a) inter-regional system, (b) cross-border link and (c) intraregional system on the inter-regional system.
33.12	NLDC, RLDCs and SLDCs	NLDC, RLDCs and SLDCs shall compare the results of the studies of the impact of new elements on the system and transfer capability addition with those of the interconnection and planning studies by CTU and STUs
33.13	concerned user or SLDC or RLDC or NLDC	Defense mechanisms like system protection scheme, load-rejection scheme, generation run-back, islanding scheme or any other scheme for system security shall be proposed by the concerned user or SLDC or RLDC or NLDC and shall be deployed as finalized by the respective RPC

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Ref: NRLDC /RA/2024-25/01 **Date: 09-01-2025**

To,
As per the distribution list

Subject: Implementation of Resource Adequacy (RA) Framework as per IEGC and CEA Guidelines

Respected Ma'am/Sir,

Maintaining an adequate power supply is essential for grid reliability and stability. The Indian Electricity Grid Code (IEGC), 2023, and Resource Adequacy (RA) guidelines issued by the Central Electricity Authority (CEA) in June 2023 (**Annexure-I**) highlight the importance of comprehensive RA planning to meet future electricity needs efficiently.

The IEGC, in Clauses 5.2 and 5.3, mandates demand estimation and generation adequacy across different time horizons. Additionally, Section 31 of IEGC emphasizes operational planning by NLDC, RLDCs, and SLDCs in advance for various time horizons, where SLDCs are specifically required to submit demand estimation and generation adequacy data to the respective RLDCs in the prescribed format. While day-ahead demand estimation with generation adequacy is being received from most utilities, submissions for week-ahead, month-ahead, and year-ahead timeframes remain intermittent. The status of data submission is enclosed at **Annexure-II** for your necessary action to ensure timely and consistent submissions.

Furthermore, the Resource Adequacy guidelines issued by the CEA outline the roles and responsibilities of all stakeholders and provide a framework for RA planning in India. This matter was discussed during the 52nd NRPC TCC meeting under Agenda Item A.12 to sensitize stakeholders on the importance of RA activities as per the approved CEA guidelines and IEGC provisions to enhance grid reliability (**MoM copy enclosed at Annexure-III**). The RA framework and the status of submissions are also being reviewed regularly in OCC meetings.

The format for data submission for ST-NRAP is provided in Annexure-II of the NLDC operating procedure (**Link:** https://posoco.in/wp-content/uploads/2024/08/NLDC-Operating-Procedure_2024.pdf).

In this regard, SLDCs are requested to ensure timely submission and validation of data from DISCOMs to support effective RA monitoring and the preparation of ST-NRAP and LT-NRAP. Your cooperation is crucial for the preparation and monitoring of RA plans, which are essential for ensuring a reliable and resilient power supply across the country.

With Regards,

09/01/2025

(Somara Lakra)
CGM(SO), NRLDC

For kind information:

1. Director (SO), GRID-INDIA
2. Member Secretary, NRPC
3. Executive Director, NRLDC

Distribution List: State Load Despatch Centres

1. **Director,**
   SLDC UPPTCL, Phase II, Vibhuti Khand, Lucknow-226010

   Chief Engineer (PSO),
   SLDC UPPTCL, Phase II, Vibhuti Khand, Lucknow-226010

2. **Chief Engineer,**
   Rajasthan SLDC
   State Load Despatch Centre, Heerapura, Jaipur, Rajasthan-302024

3. **Chief Engineer**,
   Punjab SLDC
   Punjab State Load Despatch Centre, Ablowal, Patiala-147001

4. **Director (Technical)**,
   SLDC Complex, HVPNL, Sewah (Panipat)-132108

   Chief Engineer (SO/Comml),
   SLDC Complex, HVPNL, Sewah (Panipat)-132108

5. **General Manager,**
   Delhi SLDC
   Delhi Transco Limited, 33 KV Substation Building, Minto Road, New Delhi-110002

6. **Chief Engineer,**
   Jammu & Kashmir SLDC
   SLDC Building, Gladni Complex, Narwal, Jammu-180006

7. **Chief Engineer,**
   Uttarakhand SLDC
   Vidyut Bhawan, Saharanpur Road, Majra, Near ISBT, Dehradun-248001

8. **Chief Engineer,**
   Himachal Pradesh SLDC
   HP State Load Despatch Centre, SLDC Complex, Totu, Shimla-171011

9. **Power Controller,**
   Chandigarh SLDC
   5th Floor, UT Secretariat (Deluxe) Building, Sector 9D, Chandigarh-160009

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31.4(a)	SLDC	SLDCs estimate and ensure the adequacy of resources, identify generation reserves, demand response capacity and generation flexibility requirements with due regard to the resource adequacy framework as specified under Chapter 2 of these regulations
31.4(b)	SLDC	Furnishing time block-wise information for the following day in SLDC respect of all intra-state entities to the concerned RLDC who shall validate the adequacy of resources with due regard to the following: (i) Demand forecast aggregated for the control area; (ii) Renewable energy generation forecast for the control area; (iii) Injection schedule for intra-State entity generating station; (iv) Requisition from regional entity generating stations (v) Secondary and planned procurement through Tertiary reserve requirement; (vi) Planned procurement of power through other bilateral or collective transactions, if any.
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33.2	SLDC, RLDCs and NLDC	SLDCs, RLDCs and NLDC shall utilize network estimation tool integrated in their EMS and SCADA systems for the real time operational planning study.

33.3	SLDC	SLDCs shall perform day-ahead, weekly, monthly and yearly operational studies for the concerned State for: (a) assessment and declaration of total transfer capability (TTC) and available transfer capability (ATC) for the import or export of electricity by the State. TTC and ATC shall be revised from time to time based on the commissioning of new elements and other grid conditions and shall be published on SLDC website with all the assumptions and limiting constraints; (b) planned outage assessment; (c) special scenario assessment; (d) system protection scheme assessment; (e) natural disaster assessment; and (f) any other study relevant in operational scenario.
33.4	RLDCs and NLDC	RLDCs and NLDC shall perform day-ahead, weekly, monthly and yearly operational studies for: (a) assessment of TTC and ATC at inter-regional, intra-regional, and inter-state levels; (b) planned outage assessment; (c) special scenario assessment; (d) system protection scheme assessment; (e) natural disaster assessment; and (f) any other study relevant to operational scenarios
33.5	RLDCs	RLDC shall assess intra-regional and inter-state level TTC and ATC and submit them to NLDC. NLDC shall declare TTC and ATC for import or export of electricity between regions including simultaneous import or export capability for a region, and crossborder interconnections 11 (Eleven) months in advance for each month on a rolling basis.
33.6	RLDCs	Operational planning study shall be done to assess whether the planned operations shall result in deviations from any of the system operational limits defined under these regulations and applicable CEA Standards. The deviations, if any, shall be reviewed in the monthly operational meeting of RPC and significant deviations shall be monitored by RPC for early resolution.
33.7	NLDC, RLDCs, RPCs and SLDCs	NLDC, RLDCs, RPCs and SLDCs shall maintain records of the completed operational planning study, including date specific power flow study results, the operational plan and minutes of meetings on operational study.
33.8	NLDC, RLDCs, RPCs and SLDCs	NLDC, RLDCs, RPCs and SLDCs shall have operating plans to address potential deviations from system operational limit identified as a result of the operational planning study.
33.9	SLDCs	Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC

33.10	RLDCs	Each RLDC shall undertake a study on the impact of new elements to be commissioned in the next six (6) months in (a) the ISTS of the region and (b) the intrastate system on the inter-state system and share the results of the studies with NLDC
33.11	NLDC	NLDC shall undertake study on the impact of new elements to be commissioned in the next six (6) months in (a) inter-regional system, (b) cross-border link and (c) intraregional system on the inter-regional system.
33.12	NLDC, RLDCs and SLDCs	NLDC, RLDCs and SLDCs shall compare the results of the studies of the impact of new elements on the system and transfer capability addition with those of the interconnection and planning studies by CTU and STUs
33.13	concerned user or SLDC or RLDC or NLDC	Defense mechanisms like system protection scheme, load-rejection scheme, generation run-back, islanding scheme or any other scheme for system security shall be proposed by the concerned user or SLDC or RLDC or NLDC and shall be deployed as finalized by the respective RPC

Annexure-I

F. No.09/01/2021-RCM
Government of India
Ministry of Power
(RCM Division)
***

Shram Shakti Bhawan, Rafi Marg,
New Delhi, the 28th June, 2023

To

1. ACS/Principal Secretaries/Secretaries (Power/Energy) of all State Governments/UTs.
2. CMD/MDs of State Gencos/ Discoms
3. All Central Power Sector Utilities

Sub: Guidelines for Resource Adequacy Planning Framework for India-reg.

Sir/Madam,

The Ministry of Power has issued Electricity (Amendment) Rules, 2022 on 29th December, 2022.

2. In exercise of the powers conferred under the Rule 16 of Electricity (Amendment) Rules, 2022, the Guidelines for Resource Adequacy Planning Framework for India, framed in consultation with Central Electricity Authority (CEA), are hereby issued. The guidelines are placed at **Annexure**.

3. These guidelines shall be followed by all the institutions and stakeholders, who shall ensure sufficient tie up of capacities to meet resource adequacy requirements on different time horizons.

4. This issues with the approval of **Hon'ble Minister of Power and New & Renewable Energy.**

Yours sincerely,

Hemant
28/06/23

(Hemant Kumar Pandey)
Chief Engineer (R&R)
Tel. No. 011-23710389

Encl: As above

Copy to:

1. Secretary, Ministry of New & Renewable Energy, New Delhi
2. The Chairperson, CEA, New Delhi
3. The Secretary, CERC, Chanderlok Building, Janpath, New Delhi
4. Secretaries of All State Electricity Regulatory Commissions/JERCs

Copy for information to:

1. PS to Hon'ble Minister of Power and NRE
2. APS to Hon'ble Minister of State for Power & Heavy Industries
3. Sr. PPS to Secretary(P)/ PPS to SS&FA/ PPS to AS (EC&ET/Hydro)/ PPS to JS (Thermal/Distribution)/ PPS to JS (Trans)/ PPS to JS (Hydro) / PPS to EA/ PPS to CE (OM)
4. All DS/Directors, Ministry of Power
5. Technical Director, NIC (with the request to publish it on Ministry of Power's website)

ANNEXURE

GUIDELINES

FOR

RESOURCE ADEQUACY PLANNING

FRAMEWORK FOR INDIA

(Framed under the Rule 16 of Electricity (Amendments) Rules, 2022)

JUNE 2023

INDEX

In exercise of the powers conferred under the Rule 16 of Electricity (Amendment) Rules, 2022, the Ministry of Power, Government of India, in consultation with Central Electricity Authority (CEA) hereby issues the guidelines for Resource Adequacy for the Indian electricity sector. These guidelines shall be followed by all institutions and stakeholders, as provided in these guidelines.

SECTION – 1

Introduction

1.1. For the past few years, India has been the fastest growing large economy in the World; and the growth will continue. Currently, it is the fifth largest economy in the World; and it is poised to become the third largest economy by 2030. This will only be possible if there is sufficient electricity to power this growth. It is essential that generation capacity is added at a pace matching the growth in demand- and in fact slightly ahead of the demand; so that the shortage of electricity does not slow down growth. Resource Adequacy planning is designed to ensure this. The guidelines aim to achieve the following key objectives:

1.1.1. Energy for growth: It is necessary to timely add adequate generation capacity to meet the projected demand while maintaining necessary reserves.

1.1.2. It is incumbent upon the DISCOMs to supply 24 X 7 reliable power to its consumers. All DISCOMs are duty bound to tie up sufficient capacity to meet the demand of its consumers. If any DISCOM does not do so, it is failing in its duty. Compliance to the Resource adequacy norms and Guidelines shall ensure that DISCOMs tie up sufficient capacity to meet the demand of the area they are licensed to serve. Rights of Electricity Consumers Rules, 2020 prescribe payment of compensation to consumers for avoidable load shedding.

1.1.3. The capacity which the DISCOMs tie up shall be a judicious mix of long/medium and short term contracts to ensure security of supply to their consumers at least cost. Over reliance on the electricity market is to be avoided.

1.1.4. As a part of its Nationally Determined Contributions (NDCs) to combat climate change, India has pledged that by 2030 it will have 50 percent of its power generation capacity coming from non-fossil sources. Accordingly, all obligated entities must fulfil their Renewable Purchase Obligation (RPO). Compliance with RPO will also include compliance with targets for Roof top solar and other Distributed Renewable Energy segments.

1.2. Resource Adequacy means tying up sufficient capacity to reliably serve expected demand of the consumers in the DISCOMs license area in a cost effective manner. Reliability is measured through the instances/probability of system peak exceeding the contracted capacity that is effectively available at a National/State level. The guidelines aim to establish a Resource Adequacy framework for power procurement by distribution licensees, ensuring a reliable operation of the power system across all timeframes. The Resource Adequacy exercise will assess the required capacity to be contracted on long term, medium term, and short-term basis. A key aspect of resource adequacy planning is to ensure that adequate generation capacities are available, round-the-clock, to reliably serve demand, under various scenarios. This translates into requirement of an adequate reserve to cater to varying levels of demand and supply conditions prevailing in the grid.

1.3. The resource adequacy framework lays down the optimal capacity mix required to meet the projected demand at minimum cost. New generation capacities, energy storage and other flexible resources needed to reliably meet future demand growth at optimal cost to the system will be timely assessed. It must also incorporate likely retirement of existing capacity on account of completion of economic life.

1.4. Procurement actions according to Resource Adequacy framework must be taken up timely by DISCOMs so that generation capacity becomes available well before its requirement to meet projected growth.

1.5. The implementation of these guidelines shall be ensured by the Appropriate Commission.

SECTION – 2

Resource Adequacy Plan to arrive at optimal capacities in the long-term and fulfil Resource Adequacy

2.1 The DISCOM will draw up the demand profile; the demand growth rate; the present contracted capacity and the quantity being procured from the Power Exchanges. The plan shall be drawn up keeping in view the fact that gratuitous load shedding entails penalties as per the present Rules-therefore load shedding is not an option.

2.2 The plan will undertake a least cost generation optimization to meet the demand such that it minimizes the overall system cost - including operations and maintenance costs, costs to procure spinning reserves, fuel costs, start-up, and shut-down costs of generating units. The optimization includes all constraints related to power plant operations like ramp-up / ramp-down limits, start-up/ shut-down limits and their costs, generation limits, energy storage operations, interconnection limits (import/export), renewable addition(RPO) targets, Solar Rooftop/ distributed generation capacities, retirement schedules of existing generation plants, planning reserve margin etc. The Resource Adequacy exercise shall have a planning horizon of 10 years on a rolling basis.

2.3 A consideration to include energy storage and other flexible resources, which is necessary in balancing out the variability and intermittency of RE, should be included for increasing reliability and reducing system costs.

2.4 Resource adequacy shall be determined based on the resource availability and accessibility after taking into account the possibility of sharing of resources from other utilities/ states.

2.5 The Resource Adequacy Plan will lay down the **quantum and type of resources** required in the portfolio of a distribution licensee to meet the demand in an optimal (least cost and secure) manner. The plan shall give the **year-on-year optimal generation** (conventional plus Renewable) and **storage capacities required to meet the system demand** and the **planning reserve margin** securely and at least cost.

2.6 The data requirements and methodology for preparation of Resource Adequacy Plan have been provided as Annexure E.

SECTION – 3

Institutional mechanism for Resource Adequacy and Compliance Monitoring

3.1 The Central Electricity Authority shall publish Long-term National Resource Adequacy Plan (LT-NRAP) which shall determine the optimal Planning Reserve Margin (PRM) requirement at the All-India level conforming to the reliable supply targets.

a) The report shall publish the national-level PRM as a guidance for all the States/UTs to consider while undertaking their RA exercises.

b) The report shall also publish the Optimal Generation mix for the next 10 years required to ensure that the national-level system is RA compliant while meeting the All-India demand at least-cost. This shall guide capacity buildout investments in the country.

c) The report shall also publish the capacity credits for different resource types on a regional basis.

d) The report shall specify the State/UT's contribution towards national peak.

e) The LT-NRAP shall be updated annually.

3.2 NLDC shall annually publish a one-year look-ahead Short-term National Resource Adequacy Plan (ST-NRAP) which shall include parameters such as demand forecasts, resource availability based on under-construction status of new projects, planned maintenance schedules of existing stations, station-wise historic forced outage rates and decommissioning plans.

3.3 The hourly demand forecasts used by CEA and NLDC shall be aligned with the projections furnished by individual Distribution Licensees to CEA and NLDC. The STU / SLDC, on behalf of the distribution licensees in the State shall provide to CEA and NLDC by the month of May every year, the details regarding demand forecasts (peak and energy requirement) for the next 10 years, assessment of existing generation resources and such other details as may be required for the LT-NRAP and ST-NRAP.

3.4 The LT-NRAP and ST-NRAP shall be published by the month of July for the period starting from the month of April in the subsequent year.

3.5 The LT-NRAP shall allocate the share in national peak for each state. In States/UTs where there are multiple distribution licensees, the respective STU / SLDC shall allocate each

distribution licensee's share in the national peak within 15 days of the publication of LT-NRAP.

3.6 Based on the share in national peak provided in LT-NRAP, each distribution licensee shall plan to contract the capacities (peak contribution * (1 + National level PRM)) prescribed by LT-NRAP or higher to be procured to meet their Resource Adequacy Requirement (RAR) at the time of national peak. The distribution licensees shall demonstrate to the SERC/JERC 100% tie-up for the first year and a minimum 90% tie-up for the second year to meet the requirement of their contribution towards meeting national peak. Only resources with long / medium / short-term contracts shall be considered to contribute to the RAR.

The share of long-term contracts is suggested to be in the range of 75-80%[1] of the total supply side RAR, or as specified by the respective SERC/JERC. The medium–term contracts are suggested to be in the range of 10% - 20% of the total supply side RAR while the rest can be met through short-term contracts. Power procurement through the power exchanges, such as the Day-Ahead Market segment, shall not be considered to contribute to RAR. However, these ratios of long, medium and short term contracts may be reviewed periodically based on further experience.

For subsequent three years, the distribution licensees shall furnish a plan to meet estimated requirement of their contribution to meet national peak for SERC/JERC approval.

3.7 Each Distribution licensee shall undertake a Resource Adequacy Plan (RAP) for a 10-year horizon (Long-term Distribution Licensee Resource Adequacy Plan (LT-DRAP)) to meet their own peak and electrical energy requirement. The plan shall be vetted/validated by Central Electricity Authority for leveraging the benefit of national level optimization for the Distribution licensees. The LT-DRAP shall be undertaken as per the methodology outlined in Annexure-E of these guidelines.

3.7.1 The distribution licensees shall take inputs if required from the LT-NRAP like PRM, capacity credits, etc., while formulating their LT-DRAP and submit their plans to CEA by the month of September for the period starting from the month of April in the subsequent year.

[1] This value is subject to change from time to time, as guided by CEA

3.7.2 After being vetted by CEA, the plan LT-DRAP along with details for meeting the RAR of national peak for the utility may be submitted to SERC/JERC by the month of November for the period starting from the month of April in the subsequent year for their approval.

3.7.3 Distribution licensees are free to consider higher planning reserve margins, subject to approval from the SERC/JERC.

3.7.4 The LT-DRAP shall be carried out by the distribution licensees on an annual rolling basis considering the contracted capacity as a part of the system and shall optimize for additional capacity required.

3.8 Distribution licensees, through the LT-DRAP, shall also demonstrate to the SERC/JERC, their plan to meet their Peak demand and energy requirement with a mix of long-term, medium-term and short-term contracts, including power exchanges. The composition of the contracts will depend upon the load curve of each distribution utility. The share of long-term contracts is suggested to be atleast 75% of the required capacities as per LT-DRAP or as specified by the respective SERC/JERC. The medium–term contracts are suggested to be in range of 10-20% while the rest can be met through short-term contracts. Distribution licensees shall also demonstrate their plans to contract existing capacities and plans to build or contract future capacity for the planning horizon.

3.9 The share of long-term contracts in the entire mix of the contracts of the utility shall be atleast the maximum of the quantum of long term contracts determined for meeting RAR of national peak and quantum obtained from LT-DRAP for fulfilling own energy and peak requirement.

3.10 The Distribution Licensee shall submit the details of the contracted capacities for the ensuing year for meeting RAR of national peak to the respective STU / SLDC after approval of respective SERC/JERC by the month of January. The STUs / SLDCs shall aggregate the total contracted capacities at the state level and submit the information to the respective RLDC. The RLDCs shall aggregate the capacities at the regional level and submit the information to the NLDC by the month of February. NLDC shall aggregate the capacities at the national level and check compliance with ST-NRAP and identify shortfall for the ensuing year, if any. In case of shortfall, NLDC shall either communicate the shortfall to the SERC/JERC for compliance or facilitate a national-level auction for the balance capacity[2] with participation from distribution licensees with capacity shortfall[3]. The

[2] $balance\ capacity = (1 + National\ PRM) \times NationalPeak\ - sum\ of\ contracted\ capacities$

contracting for the balance capacity shortfall shall be completed by the month of March prior to the start of the delivery year (1st April). NLDC shall come out with a methodology to carry out national level auction for the procurement of the balance capacity.

3.11 The STUs/SLDC shall prepare one-year look ahead ST-DRAP (Short term Distribution Resource Adequacy Plan), on an annual basis for operational planning, at the state level based on the LT-DRAP study results. The SLDC shall review the ST-DRAP on a daily, monthly and quarterly basis based on actual availability of generation resources.

3.12 In terms of Section 86(1)(b) of the Electricity Act, 2003, the Appropriate Commission may ensure the compliance of Resource Adequacy Planning by the distribution licensees. The Appropriate Commission may also specify the non-compliance charges."

3.13 The CERC in consultation with the Forum of Regulators (FOR) may come out with model regulations for implementing the resource adequacy process in the States/UTs and the distribution utilities.

3.14 A schematic illustrating the Resource Adequacy implementation timelines is given in **Annexure F**.

[3] $capacity\ shortfall = (1 + National\ PRM) \times Licensee\ Demand\ during\ National\ Peak - sum\ of\ contracted\ capacities\ by\ the\ licensee$

Section 4

Guidelines for Procurement of Required Resources

4.1 The outcome of the Resource Adequacy Studies would provide the **quantum and type of generation resources** required in the portfolio of a distribution licensee to meet the demand in an optimal (least cost and secure) manner. The future capacity mix may comprise of existing capacities, planned capacities and capacity addition required to meet the increasing demand of the utility considering appropriate gestation period of the generation resource.

4.2 The distribution licensee shall contract the optimal portfolio of resources to meet its future demand and Resource Adequacy Requirement (RAR) obligations, based on the output derived from the LT-NRAP study results. Long / medium / short-term firm contracts of generation resources shall be considered to contribute to the RAR. Power procurement through the power exchanges, such as the Day-Ahead Market segment, shall not be considered to contribute to RAR.

4.3 The distribution licensee shall contract additional resources source-wise if required based on the LT-DRAP to meet its own peak demand.

4.4 The states can either put up their own generation capacities for meeting their future demand or the respective state distribution licensee shall procure the required resources through the tariff based competitive bidding guidelines for procurement of power notified under the provisions of section 63 of the Electricity Act 2003.

4.5 The power capacity procurement from renewable energy sources for fulfilling the RPO targets shall be carried out taking into account the RE potential in that State and fungibility within the RE resources as per the latest RPO order. The power procurement corresponding to wind, solar PV, Wind solar Hybrid, Round the Clock (RTC) power shall be carried out as per the guidelines for tariff based competitive bidding process for procurement of power from respective grid connected wind, solar PV, Wind solar Hybrid, Round the Clock (RTC) power projects.

4.6 The Distribution Licensee can contract storage capacity corresponding to the results of LT-DRAP capacity addition requirement for future years as per the guidelines issued under the provisions of Section 63 of the Electricity Act, 2003 for procurement of energy from BESS through competitive bidding, from grid connected Projects.

4.7 The Distribution Licensee can contract power through Central Agencies / Intermediaries / Traders / Aggregators / Power Exchanges or through bilateral agreements / Banking arrangement with other distribution licensees. The Distribution Licensee can carry out power procurement on short-term and medium term basis through DEEP and PUShP portal.

4.8 The distribution licensee must ensure that procurement process for the projected demand is undertaken and completed sufficiently in advance so that the procured capacity becomes available when it is required to serve the projected load. The following table gives the number of years before which procurement process must be completed in advance as compared to the year of projected requirement for various types of generation and types of procurement:

Resource	**Long Term**	**Medium Term**
Coal/Lignite Based Capacity	7	2
Hydro	9	2
Solar	2	1
Wind	3	1
PSP	5	3
Other Storage	2	1
Nuclear	9	3

ANNEXURE A

Key design parameters for RA framework

- **Reliability** is key to power systems operations and hence adequacy of supply needs to be maintained at all points in time. There could be unavoidable outages, due to unforeseen circumstances and reasons, but the resource adequacy planning should be such that these outages (loss of load events) are minimized..
- **Loss of Load Probability (LOLP)** is a measure of the probability that a system's load may exceed the generation and firm power contracts available to meet that load in a year

Parameter	Definition
Loss of Load Probability (LOLP)	Measure of the ***probability that a system's load may exceed the generation*** and firm power contracts available to meet that load in a year. E.g., 0.0274 % probability of load being lost.

- Additionally, another metric which could be utilized in conjunction with LOLP is the **Expected Energy Not Served (EENS).**

Parameter	Definition
Expected Energy Not Served (EENS)	Expected amount of energy (MWh) that may not be served for each year within the planning period under study. It is a summation of the expected number of megawatt hours of demand that may not be served for the year. This is an energy-centric metric that considers the magnitude and duration of energy being not served, calculated in MegaWatt hours (MWh). The metric can be normalized (i.e., divided by total system load) to create a Normalized Energy Not Served (NENS) metric.

- "Normalized ENS(NENS)" is the total expected load shed due to supply shortages (MWh) as a percent (%) of the total system energy, and therefore represents an overall percentage of system load that cannot be served.
- Most systems in advanced electricity markets use LOLP / NENS as the RA planning criteria.
- To meet the prescribed standard of LOLP / NENS conditions, sufficient reserve margins need to be maintained in the system for adequately addressing the demand and supply variations. **Planning Reserve Margin (PRM)** is the predominant metric used to ensure adequacy of

generation resources in the system. PRM in a power system is expressed as a certain % of peak load forecast of the system.

- CEA, from time to time, publishes the desired values for reliability indices such as LOLP and NENS required for resource adequacy in India and accordingly estimate the PRM required to be maintained optimally at the national level. The LOLP and NENS values adopted by CEA for the purposes of the National Electricity Plan (NEP) are 0.2% and 0.05%, respectively.

  Similarly, system studies can be undertaken by the utilities to determine the PRM through any scientific method, provided the reliability criteria (LoLP and NENS) are more stringent or as guided by CEA from time to time[4]. The methodology for conducting the Optimal Reserve Margin study is highlighted in **ANNEXURE B.**

[4] In future amendments, once the RA process is established, utilities can conduct their own reliability studies to determine the optimal level of reliability (LoLP and NENS) of supply side portfolio as per the methodology prescribed in ANNEXURE A and ANNEXURE C. In case of any shortfall, NLDC can communicate to RLDCs/SLDCs the shortfall or facilitate a national-level auction for the balance capacity with participation from distribution licensees with capacity shortfall.

ANNEXURE B

Determination of LOLP / NENS, Optimal Planning Reserve Margin (PRM) and Resource adequacy targets

- The optimal level of "target" or "planning" reserve margins should be arrived at through measures such as "Loss of Load Probability (LoLP)" and Normalized Energy Not Served (NENS). Loss of load can happen due to various factors such as:
    - Forced outages/planned maintenance of conventional generation
    - Real time unforeseen excursion in demand/demand forecast errors
    - Generation forecast errors /RE intermittency
- A loss of load occurs when the system load exceeds available in a particular time. Appropriate LOLP / NENS metrics should be considered based on consultation with stakeholders and international best practices.
- The first step in determining the Resource Adequacy targets would be to determine the target generation capacities at a nominal Planning Reserve Margin using a **generation planning** model.
- Once the generation capacities are estimated, it becomes important to estimate the several demand-supply patterns and then determine if the required generation capacity in the system can always meet demand reliably by calculating the loss of load and energy not served. A natural outcome of the above objective is to construct many possible future scenarios based on the uncertainty surrounding the demand for power, intermittency of RE sources, availability of power plants, tie-lines, inter-state and inter-regional transmission constraints etc. These future scenarios shall be constructed based on following indicative parameters viz:
    - Demand variations / forecast errors
    - Hydro conditions (normal, wet, or dry years)
    - Planned and forced outages of power plants and interconnectors
    - RE Generation forecast errors, etc.
- **Multiple future scenarios** should be created using stochastic models to account for **uncertainty** and analyse any occurrence of lost load. Each such future scenario is

established based on historical data. The key inputs for generating future possible states are as follows:

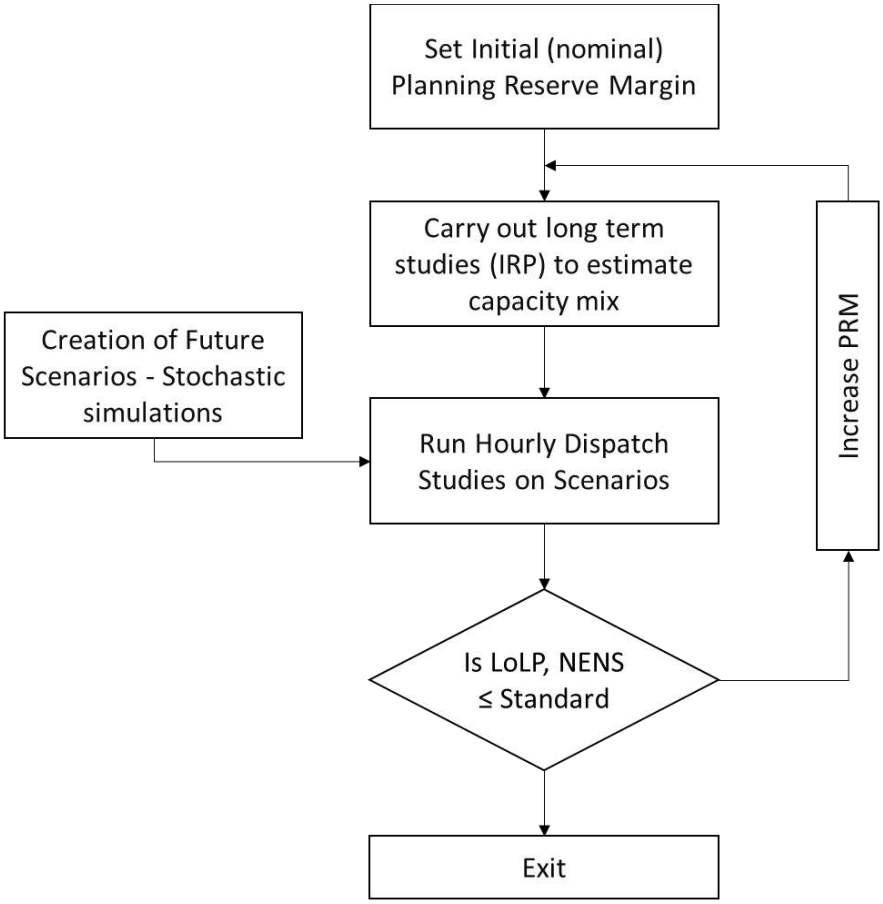
- **Demand volatility:** Uncertainty in demand can be built into the model through two categories, long-term uncertainty driven by underlying factors such as load growth forecasting errors, unanticipated economic growth, etc., and short-term uncertainty which may be defined as the sum of a typical (or mean) monthly load pattern for the day and the historical deviation observed from the mean load.
- **Conventional generator outages:** Planned outages and scheduled maintenance for thermal generators may be scheduled either based on historic patterns or during low demand periods based on a uniform probability distribution. For forced outages, Monte Carlo draws for each unit based on historical outage rates may be simulated.
- **Variable Renewable Generation Intermittency:** To capture the intermittency of solar and wind plants, PV, and wind generation data of past several years can be analysed and multiple scenarios which match the projected CUF levels may be created. Annual CUF projections may also be generated through Monte Carlo Draws based on the annual CUFs observed in the historical profiles.
- **Availability of ATC for short-term import:** In the distribution licensee-level / State-level planning, short-term import is limited to the available transfer capability. However, as there is no visibility about the power generation profile of other States, unpredictability in the availability of tie line power form other utilities and regions must be factored in. To incorporate the above-mentioned unpredictability, availability of each tie line for each hour can be derated by a factor drawn from a probability distribution using Monte Carlo Simulations. Details on the appropriate probability distribution to be considered may be provided by NLDC / CEA from time to time.

- Once the demand-supply projections / scenarios are established and the possible future states are predicted, a demand-supply matching simulation with the estimated capacities should be performed. The objective of such a simulation would be to use the capacities obtained from the Resource Adequacy Plan to meet the demand and assess the duration of the loss of load events and energy not served for each scenario and for the specified planning margin/capacity mix.
- The above process needs to be then iterated by **incrementing** the **planning reserve margin levels** until the **desired levels of LOLP / NENS** is achieved in the system. This iterative

model would enable identification of a target PRM level as per the desired LOLP figures. An illustrative flowchart of the process is shown in Figure 1.

- While arriving at the target LOLP / NENS figures, consideration should be given to system costs. The objective should be to have an optimal level of Reserve margins which would represent the optimal trade-off between system costs and reliability. For this purpose, an evaluation of the marginal cost of reducing load shed is required. The PRM at which the marginal cost of reducing load shed is equal to the Value of Lost Load as defined by the distribution licensee is the economically optimal PRM. The procedure of calculation of marginal cost of reducing load shed is given in Annexure **D**.

Figure 1: Flowchart of the Optimal Reserve Margin Study



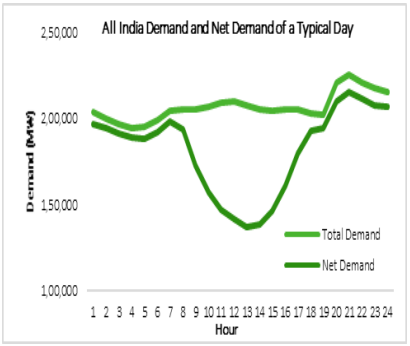
ANNEXURE C

Determination of capacity credits for Renewable resources

- This step is important for determining how much of energy-limited resources (hydro, wind, solar, storage) may count toward resource adequacy requirements. Generation planning is set to become more complex as larger amounts of weather-based, variable renewable generation are added to the system. This is because resources such as wind and solar PV are intermittent, and their generation may not coincide with periods of peak demand.
- Each generator can provide a "firm capacity," which represents the amount of power the generator can reliably provide. Capacity credit expresses firm capacity as a percentage of the installed nameplate capacity.
- Following are the various methodologies to determine capacity credits of Renewable energy adopted internationally. These methodologies can also be extended to demand response resources.

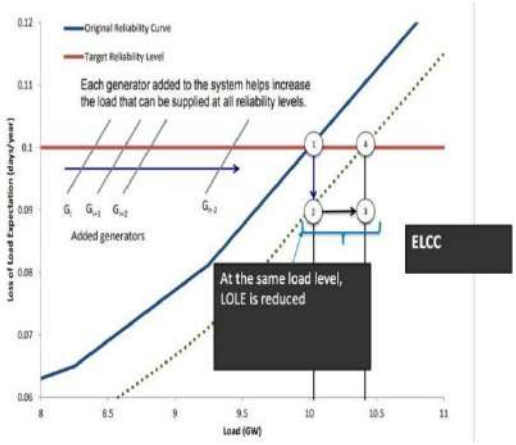
a) **Capacity credit approximation with Top Demand Hours**: In this case, a basic approximation of capacity credit can be obtained by averaging the historical contribution of a generator / generator class during peak demand hours. The selection of how many peak demand hours to include, however, often varies across geographies.

b) **Capacity credit approximation with Top Net Load Hours:** In this case, consideration is given to the fact that periods of system stress occur when high demand coincides with low renewable energy generation. A metric called 'net load' is defined as 'total renewable energy generation subtracted from overall demand', which must be met from dispatchable resources like thermal plants, hydro plants, etc. Due to system stress caused by the duck curve, net load is a better proxy for system stress for new capacities than peak demand. In this method, capacity credit can be obtained by averaging the contribution of a generator / generator class during top net load hours.



c) **Expected Load carrying capability:** In this method, a model uses an hourly time-series demand data for a particular period. The model also uses the availability of different generation resources in each hour of the year. Random outages of generators

are also applied considering the historical and expected outage conditions. Determine supply matching is used to determine the LOLP of the system.



- To calculate capacity credit, the model first removes a generator from the system and calculates the system LOLP. This represents Point 1 in the system reliability curve, as shown alongside.
- The model then adds the generator back to the system and repeats the LOLP calculation. The additional generator increases system-wide firm capacity and resource adequacy, so the curve shifts right to Point 2 (system reliability is higher), and so it can accommodate more load at the previous LOLP (Point 4). The additional load that can be accommodated represents the generator's ELCC.

- The Capacity Factor Approximation with Top Net Load Hours can be considered to determine the capacity credits for new resources and the Top Demand Hours methodology can be considered to determine the capacity credits for existing resources. The ELCC method can be adopted later, once the required capabilities and data are available with the state utilities.
- The utilities may plan their firm capacity as per their contribution in the national peak which implies that the capacity credits of all resource types are to be calculated on the national-level load profile.
- The calculation of firm capacity to meet the Resource Adequacy Requirement (RAR) is shown below:

$$RAR = \sum_{i=1}^{num\_solar} Solar\_Capacity * Solar\_Capacity\_Credit + \sum_{i=1}^{num\_wind} Wind\_Capacity * Wind\_Capacity\_Credit + \sum_{i=1}^{num\_hydro} Hydro\_Capacity * Hydro\_Capacity\_Credit + \sum_{i=1}^{num\_thermal} Thermal\_Capacity * Thermal\_Capacity\_Credit + \sum_{i=1}^{num\_nuclear} Nuclear\_Capacity * Nuclear\_Capacity\_Credit + \sum_{i=1}^{num\_storage} Storage\_Capacity * Storage\_Capacity\_Credit + \sum_{i=1}^{num\_other} OtherResource\_Capacity * OtherResource\_Capacity\_Credit + \sum_{i=1}^{num\_other} Import\_limit * capacity\_credit$$

ANNEXURE D

Marginal Cost of Reducing Load Shed

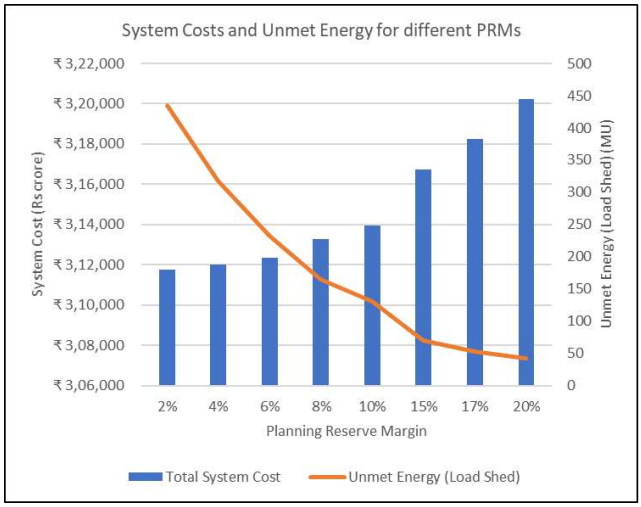
- The marginal cost of reducing load shed is the effective increase in cost for every unit of load shed reduced. It is calculated as the increase in system costs by the reduction in load shed:

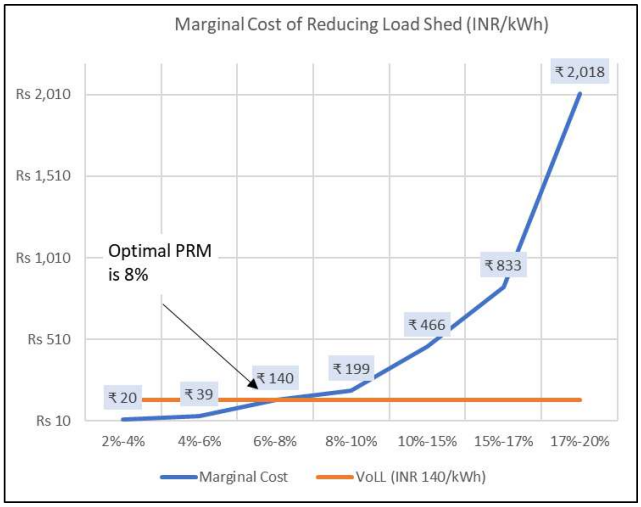
$$Marginal\ Cost = \frac{System\ Cost_{PRM_{i+1}} - System\ Cost_{PRM_i}}{ENS_{PRM_i} - ENS_{PRM_{i+1}}}$$

- The economic optimal planning reserve margin is the planning reserve margin at which the marginal cost of reducing load shed is equal to the value of lost load. Utilities can rely on this planning reserve margin in case they decide to plan beyond the minimum PRM as determined by CEA.

Illustration: An illustration of the calculation of marginal costs of reducing load shed is shown in Figure 2. The capacity expansion planning model is run for different PRMs between 2% and 20%. Based on the capacities obtained, the system costs are calculated. Demand-supply matching using these capacities on future scenarios created using stochastic simulations are used to obtain the total load shed (unmet energy). Based on the system costs and unmet energy (graph on the left), the marginal cost of reducing load shed (graph on the right) is calculated using the formula in C1. Assuming a Value of Lost Load (VoLL) of INR 140/kWh, the optimal PRM would be around 8%.

Figure 2: Illustration of Calculation of Marginal Cost of Reducing Load Shed





ANNEXURE E

Methodology of Preparation of Resource Adequacy Plan

- For preparation of Resource Adequacy Plans, data on the following needs to be obtained but not limited to:
    a) Planning Reserve Margin as prescribed by CEA or as determined by the distribution licensee and approved by the SERC/JERCs.
    b) Actual demand met by the state / distribution licensee in granular time block resolutions (hourly) for last 5 years
    c) Estimated load growth during the planning period
    d) Technical parameters of conventional generation plants viz. Name of plant, location (State/Region), Capacity (MW) (for existing and planned capacities), Auxiliary Consumption (MW), Maximum and Minimum Generation Limits (MW), Ramp Up and Ramp Down Rate (MW/min), Minimum up and down time, Plant Availability Factor (% of time), etc.
    e) Under-construction capacity/retirement of generation capacity/contracted capacity/bilateral contracts.
    f) Potential investment options, technologies, gestation periods and lifetime of different assets.
    g) Capacities and generation profile of renewable generation
    h) Capital costs, variable costs, O&M costs, reserve offers, start up and shut down Cost of generators, etc.
    i) Historical forced outage rates and planned maintenance rates of generation capacities
    j) Tie line details and transmission expansion plans
    k) Spinning reserve requirements
    l) Renewable Purchase Obligation (RPO) and Energy Storage Obligation targets, etc.
- The hourly demand profile for the distribution licensee shall be projected over the planning horizon, based on the forecasted values of annual energy requirement and peak demand trajectory. The annual energy requirement and peak demand shall be forecasted using trend

method, time series, econometric methods, or any state-of-the-art methods. The projected hourly demand for the future years shall be used as inputs into the model. It shall be ensured that the generation expansion planning model chosen is capable of simulating on an hourly chronological resolution[5]. This is necessary to capture the behaviour of the system with respect to ramping of conventional generation, profiles of RE generation, behaviour of energy storage, etc.

- After establishment of demand profile for all future years, the model would undertake an optimization exercise to minimize the total system cost to meet the future demand adhering to all power system parameters. Following constraints should be considered while modelling:
    - **Planning Reserve Margin / Resource Adequacy Requirement:** The Resource Adequacy Requirement (RAR) constraint shall ensure that the total Resource Adequacy (Generation capacity) of the distribution licensee fulfils the Planning Reserve Margin as determined by CEA or by the distribution licensee's own studies and approved by the SERC/JERC. The resource adequacy requirement for each distribution licensee is computed as:

$$RAR = contribution^{6}\ to\ forecasted\ national\ peak\ demand\ in\ GW \times (1 + PRM)$$

From the supply side, the RAR is the sum of the "firm capacity" or "capacity credits" of contracted / planned capacities (including renewables, storage, other resources such as demand response) along with derated interconnection limits (imports)[7].

Both, supply side and demand side RAR shall match. The Thermal capacity credit is calculated by reducing the auxiliary consumption and the forced outage rate from the installed capacity. Planned outage rate is generally not considered, as planned maintenance may be carried out during low net-demand periods and thus may not affect reliability.

The capacity credits for generating resources and demand response resources to meet the national peak shall be estimated by CEA[8]. The capacity credits published by CEA for each resource type may differ between existing and new resources and between resources in different regions. For example, a solar based power plant in the southern

[5] It is preferred to simulate all 8760 hours on a chronological resolution in a year. However, if computational challenges are faced, the States/UTs can select the representative periods which may be different for each state. The representative periods chosen are reflective of various projected demand and supply profiles for the base year and future years. Initially, hourly simulation is planned based on hourly data availability, however, the time granularity may be increased to sub-hourly provided there is availability of sub-hourly demand and RE generation data.

[6] This is calculated as distribution licensee's demand at the time of national peak demand.

[7] The calculation of firm capacity is provided in Annexure C

[8] The methodologies that can be used to determine capacity credits for generating resources and demand response resources are outlined in **Annexure C.**

region will have a capacity credit which could be different compared to a solar plant in the northern region. Similarly, an upcoming wind-based power plant could have a different capacity credit compared to an already commissioned wind plant in the same region. Utilities shall use these capacity credits while planning to meet their RAR. For example, a distribution licensee having a PPA with an existing solar based power plant located in a southern state would use the capacity credit of existing solar based power plants in the southern region.

Portfolio balance constraints: The portfolio balance constraints shall ensure that the total generation within a control area of region/State/Distribution licensee and the import of power to the control area of region/State/Distribution licensee is equal to the sum of the demand, the exports from the control area of region/State/Distribution licensee, any energy not served and curtailment, for each hour.

RE Generation constraints: For renewable resources, such as solar and wind, the generation is constrained as per the hourly profile of the resource. Historic profiles of renewable sources shall be used to generate the hourly profiles. Additional constraints to ensure that the distribution licensee's overall renewable generation targets are met, shall also be included.

- **Conventional Generation constraints:**
  - Unlike solar and wind, thermal resources are dispatchable. However, the thermal resources are bound by constraints such maximum and minimum generation limits, ramp rates, spinning reserve offers, plant availability and unit commitment decisions.
  - The dispatch (energy offer) plus the reserve offer (specified through regulations) for each generator is constrained to be within the maximum and minimum generation limits. Generation between two consecutive time blocks also must be within the ramping capabilities of the resources. Unit commitment decisions, such as start-up/shut-down, minimum up and down times, etc., require binary variables to implement and are to be included. Additionally, generation units may have periods of outages which may need to be captured by using an availability factor.
  - The capacity for each year needs to be tracked by a constraint which shall ensure that the capacity in a particular year is equal to the capacity last year plus any new capacity investment minus capacity retirement, if any.

- **RPO constraints:** Fulfilment of Renewable purchase obligation should be considered as one of the objectives of Resource Adequacy. Technology options like renewable generation for round the clock energy supply backed with storage (Battery and PSP), standalone renewable capacity along with hydro capacity for balancing renewable generation may be considered while carrying out resource adequacy exercise for distribution licensees.
- **Storage constraints:** Due to the intermittent nature of renewable generation, the need for resources which can store surplus energy and despatch the stored energy during low RE periods becomes vital. Storage charge and discharge at any instant are constrained by the storage level or the state of charge (SoC) of the storage resource, and the maximum charge / discharge limit. The resource can only discharge if there is sufficient energy present due to prior charging of the resource. To implement this, considering the chronological sequence of time is also important. Since storage resources convert electricity to other forms of energy, there are also some efficiency losses (round-trip efficiency) which shall be accounted for. Different technologies may have different discharge periods (energy limits), power outputs (maximum charge / discharge) and levels of efficiency.
- **Operating (Spinning) Reserve constraints:** Operating reserve constraints ensure that sufficient resources are in the system and kept online or on standby each hour to account for load forecast errors, intermittency of renewables or meeting contingencies in the real time. The thumb rule for operating reserve requirement shall be defined based on discussions with the state SLDC and shall be considered as an input parameter to the model.
- **Demand Response:** Potential for demand side management such as shifting of load or demand response can be considered while undertaking the Resource Adequacy Plan(RAP). The constraints such as periods when load shifting can occur, and the maximum quantum of load which can be shifted over a period shall be included.

ANNEXURE F

Resource Adequacy Implementation Timeline

Entity	Description	May'xx	Jun'xx	Jul'xx	Aug'xx	Sep 'xx	Oct'xx	Nov'xx	Dec'xx	Jan'(xx+1)	Feb'(xx+1)	Mar'(xx+1)
STU/SLDC	STU/SLDC, on behalf of distrubution licensees shall provide to CEA and NLDC the details regarding demand forecasts for the next 5 years, assessment of exisiting generation resources and other details required for LT-NRAP and ST-NRAP											
CEA	To publish LT-NRAP containing National PRM, Reliabillity Metrics, Coincident peak, capacity credits and Optimal Generation mix for 10 years horizon.											
NLDC	To publish ST-NRAP.											
Discoms	LT-DRAP exercise for long term horizon(10 years) which is RA compliant as per coincident peak to be submitted to CEA											
CEA	Vetting of discom's contracting plan for coincident peak contribution and to meet their own energy and peak											
SERC	SERC to approve of discom's contracting plan for coincident peak contribution and to meet their own energy and peak											
Discoms	To contract capacities as per approved plans.											
	Submit contract capacities to STU/SLDC											
STU/SLDC	STU/SLDC to submit state-level aggregated capacities to RLDC											
RLDC	RLDC submit regional-level aggregated capacities to national level											
POSOCO/NLDC	POSOCO/NLDS to check RA compliance at national level											
	Any Shortfall shall be communicated to the SERC for comliance or is balanced through a national level auction mechanism											

Delivery Period(Apr'(xx+1) - Mar'(xx+2))

******

Annexure-II

Status of RA data submission as on 09-01-2025

Region	State	Day ahead	Weeky	Monthly	Yearly	Generation Adequacy	ST-NRAP Data Submission
		Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)	Data submission (Y/N)
NR	Punjab	Y	Y	Y	N	N	N
	Haryana	Y	N	N	N	N	N
	Rajasthan	Y	N	N	N	N	N
	Delhi	Y	N	Y	Y	N	N
	UP	Y	Y	Y	Y	N	N
	Uttarakhand	Y	Y	Y	N	N	N
	HP	Y	Y	Y	Y	N	N
	J&K	Y	N	N	N	N	N
	Chandigarh	Y	Y	N	N	N	N

A.11.7 The Implementation time frame of the scheme shall be 12 months from date of allocation. After Review in NRPC, the Scheme shall be put up in NCT for approval under RTM mode to POWERGRID

A.11.8 CTUIL also suggested that since the cost of the scheme is very nominal, same may be carried out under O&M by POWERGRID or may be clubbed with any ongoing project.

A.11.9 MS, NRPC stressed that Fiber sharing needs to be done firstly for Grid Operation, monetary issues may be considered secondary by the utilities.

A.11.10 EE (C), NRPC added that CTU to ensure healthiness checking and implementation of fiber sharing on said line by Indigrid.

NRPC Deliberation

A.11.11 Forum concurred the discussion held in the TCC meeting and approved the proposal of CTUIL on technical ground.

Decision of Forum

Forum gave technical concurrence to the Scheme for Establishment of Samba-Jallandhar link for strengthening of ISTS communication system to be implemented by POWERGRID and decided that POWERGRID may include the cost under O&M. Further, CTU was requested to ensure healthiness checking and implementation of fiber sharing on said line by Indigrid.

A.12 Year-wise demand estimation and planned capacity for Resource Adequacy (agenda by CEA)

TCC Deliberation

A.12.1 CE, IRP Division, CEA apprised that Ministry of Power had notified Electricity (Amendment) Rules in December, 2022. As per Rule 16 of the Electricity (Amendment) Rules, Ministry of Power has to issue guidelines for assessment of resource adequacy during the generation planning stage and operational planning stage. Accordingly, the Resource Adequacy guidelines have been notified by the Ministry of Power in June 2023.

A.12.2 Distribution Utility needs to carry out LTDRAP (Long term Distribution Licensee Resource Adequacy Plan) to meet the utility peak and energy requirement reliably. CEA will guide & hand hold the states in data collection, power system modelling and analysis of result for carrying out state specific resource adequacy studies in order to prepare the respective LT-DRAP within stipulated time frame.

A.12.3 During the Review, Planning & Monitoring Meeting held on 11th April 2023 under the chairmanship of the Honorable Minister of Power & NRE, Central Electricity Authority was instructed to handhold the States and help them to prepare Resource Adequacy plan for them.

A.12.4 Accordingly, state-resource adequacy studies for all the States of the Northern Region have already been carried out, and respective reports have been shared with the states.

A.12.5 The success of the Resource Adequacy studies and the subsequent power procurement hinges on active state participation. The results of the completed states, various assumptions taken and methodology adopted while carrying out studies need to be discussed with state officials so that states can prepare their power procurement plan based on the studies.

A.12.6 The LT-DRAP studies, being carried out for a period of 10 years on a rolling basis, require urgent revision. The states whose studies have been carried out till 2029-30 or 2031-32 need to be revised till 2034-35. To revise studies, the contracted capacity of states till March 2024, the Demand profile for the year 2023-24, year-wise demand estimation and planned capacity are required till 2034-35.

A.12.7 As per the Resource Adequacy (RA) Guidelines, the Central Electricity Authority is entrusted to prepare a Long Term-National Resource Adequacy Plan (LT-NRAP) RA study for the period of 10 years (up to 2034-35) and to revise annually on a rolling basis. Therefore, year-wise demand estimation and planned capacity are required till 2034-35.

A.12.8 The presentation delivered to the members is attached as **Annexure-XX** for further reference.

A.12.9 MS, NRPC conveyed that this agenda was for information of the Forum and very important to focus on resource adequacy. All states were requested to share the resources if feasible.

A.12.10 Director (SO), GRID-INDIA emphasized that all states must do this exercise in order to have grid parameters in range always. All the information desired by RLDCs may be provided by the utilities so that proper planning may also be done by Grid-India.

NRPC Deliberation

A.12.11 Forum noted the deliberation held in the TCC meeting.

Decision of Forum:

Forum sensitized the utilities regarding Year-wise demand estimation and planned capacity to be submitted for Resource Adequacy. NR states were requested to submit the data for long term plan (2034-35) to CEA with a copy to NRPC Secretariate.

A.13 Progress of transmission augmentation in RVPN control area (agenda by NRLDC)

TCC Deliberation

A.13.1 NRLDC representative highlighted that serious concerns have been raised on the transmission related issues being observed in RVPN control area in various forums including NRPC and OCC forum (recently discussed in detail in 224 & 225 OCC meeting). Apart from this, separate meeting was organized on 19.11.2024 in Rajasthan wherein members from NRPC, RRVPNL, RRVUNL, Rajasthan SLDC, DISCOM & NRLDC participated. For majority of the issues highlighted by NRLDC, it is observed that although actions have been initiated by Rajasthan, their actual implementation will take some time even more than two years for some cases. Situation with present transmission network is expected to remain worse during this winter season.

A.13.2 The major issues which have already been highlighted by NRLDC side along with present status as discussed in sub-committee meetings of NRPC are listed below:

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

Annexure-B.III

संदर्भ सं.: उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/590 **दिनांक : 07.01.2025**

सेवा मे,

Executive Director
Power Grid Corporation of India Limited, NR-III
Plot No. 2A/INS02, Awadh Vihar Yojna, Amar Shaheed Path, Lucknow- 226002 (U.P.)

विषय : Fog related frequent trippings of EHV lines during fog conditions in the Northern Region-20th December 2024-07th January 2025 – Reg.

महोदय,

This is to bring to your notice that the frequent tripping of EHV transmission lines is being observed in the past few weeks (20th December 2024-07th January 2025) during dense fog conditions in the Northern Region.

Frequent trippings of inter-regional, intra-regional transmission lines including the high capacity HVDC Balia-Bhiwadi have been observed in the recent past. 400 KV transmission lines associated with 400 KV Sahupuri(UP) have also tripped frequently reportedly in the foggy weather conditions and may lead to loss of inter-regional link (NR-ER) consequently limiting the transfer capability between regions.

Trippings have also been observed in 765 KV Agra-Gwalior (WR-NR link) transmission lines during the Night and early morning hours. As reported insulators have been found to be broken in HVDC Balia-Bhiwadi after DC Earth fault and de-capping of insulators have also been reported in AC lines after tripping on phase-to-earth faults. **List of EHV transmission lines tripped from 20.12.2024-07.01.2025 is enclosed as Annexure-I**. Please also note that in spite of regular pursuance at OCC forum the status of insulators of many EHV lines has still not been updated.

As you would be aware that NRLDC has been regularly highlighting the necessity for preparedness to tackle fog related tripping of EHV transmission lines and also the importance of insulator replacement with polymer insulator and cleaning works in view of trippings observed in the past years during the dense fog conditions in the winter months. Several letters have also been issued from NRLDC to timely plan for insulator cleaning and replacement work and the same has also been deliberated in the recently concluded 51st TCC & 76th NRPC meeting and in the OCC 225 & OCC 224 meetings w.r.t. the winter preparedness for 2024-25.

Considering the peak winter season where Northern Region demand also meeting its winter peak demand of ~ 70 GW, the recurrence of fog related line trippings of the transmission system may adversely impact grid stability. It is requested to advise the concerned officials to meticulously carry out the insulator cleaning and replacement work to prevent multiple outages and any untoward incident and also update the status of type of insulators as enclosed in Annexure-I.

Matter may please be treated on priority.

धन्यवाद।

भवदीय
(सोमारा लाकरा)
मुख्य महाप्रबंधक,उ॰क्षे॰भा॰प्रे॰के

विनम्र सूचनार्थ :

1. सदस्य सचिव, उत्तरी क्षेत्र विद्युत् समिति, नई दिल्ली
2. निदेशक, सिस्टम ऑपरेशन, ग्रिड-इंडिया, नई दिल्ली
3. कार्यकारी निदेशक, उत्तरी क्षेत्र भार प्रेषण केंद्र, नई दिल्ली
4. कार्यकारी निदेशक, राष्ट्रीय भार प्रेषण केंद्र, नई दिल्ली

Transmission Element Outage Report from 20-12-2024 to 07-01-2025

Details of Transmission Elements Tripped:-

S.No	Element Name	Type	Voltage Level	Owner	Outage		Revival		Reason / Remarks	Replacement with polymer insulator as % of total line (as per Annexure-B II of OCC 226 Agenda)
					Date	Time	Date	Time		
1	400 KV Sahupuri(UP)-Biharshariff(PG) (PG) Ckt-1	Line	400KV	POWERGRID, UPPTCL	20-12-2024	04:23	20-12-2024	05:55	Phase to earth fault Y-N , Zone-1, Fault current 2.517kA from Sahupuri(UP).	Not Available
2	220 KV Sitarganj(PG)-CBGanj(UP) (PG) Ckt-1	Line	220KV	POWERGRID	22-12-2024	08:51	22-12-2024	09:55	Phase to Phase Fault R-Y , Dist. 98.2km, Fault current 1.8kA from Sitarganj(PG).	Not Available
3	220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1	Line	220KV	POWERGRID, UPPTCL	22-12-2024	12:06	22-12-2024	13:19	Phase to earth fault Y-N , Dist. 26.227km, Fault current 6.919kA from Meerut & Dist. 24km, Fault current 4.4kA from Simbholi. Fault under UP jurisdiction.	Not Available
4	132 KV Mahendra Nagar(PG)-Tanakpur(NH) (PG) Ckt-1	Line	132KV	POWERGRID	22-12-2024	14:46	22-12-2024	15:35	Over current protection operated at Tanakpur.	Not Available
5	400 KV Kanpur-Kanpur (PG) Ckt-1	Line	400KV	POWERGRID	23-12-2024	03:21	23-12-2024	03:55	Phase to earth fault R-N , Zone-1 from Kanpur(GIS) end.	Polymer Insulator
6	765 KV Agra-Gwalior (PG) Ckt-1	Line	765KV	POWERGRID	23-12-2024	04:11	23-12-2024	04:58	Phase to earth fault Y-N , Dist. 106km, Fault current 8.2kA from Gwalior.	Not Available
7	500 KV HVDC Balia-Bhiwadi (PG) Ckt-1	HVDC Line	500KV	POWERGRID	23-12-2024	16:13	23-12-2024	19:51	External protection trip and ESOF from Balia end.	Partial (15%)
8	400 KV Varanasi(PG)-Sahupuri(UP) (PG) Ckt-1	Line	400KV	POWERGRID, UPPTCL	24-12-2024	09:34	24-12-2024	11:13	Phase to earth fault R-N , Zone-1 from Varanasi (PG).	Not Available
9	765 KV Gr.Noida_2(UPC)-Meerut(PG) (PG) Ckt-1	Line	765KV	POWERGRID	27-12-2024	17:57	28-12-2024	17:26	Phase to earth fault R-N , Zone-2, Fault current 6.575kA, Dist. 112.3km from Gr.Noida_2(UP).	Polymer Insulator
10	765 KV Agra-Gwalior (PG) Ckt-1	Line	765KV	POWERGRID	27-12-2024	21:25	27-12-2024	22:36	Phase to earth fault Y-N , Dist. 36.7km, Fault current 11.9kA from Gwalior. Fault in WR-2 jurisdiction.	Not Available
11	765 KV Agra-Gwalior (PG) Ckt-2	Line	765KV	POWERGRID	27-12-2024	21:25	27-12-2024	23:20	Phase to earth fault Y-N , Dist. 89.572km, Fault current 7.68kA from Gwalior. Fault is in WR-2 jurisdiction.	Not Available
12	765 KV Agra-Fatehpur (PG) Ckt-2	Line	765KV	POWERGRID	28-12-2024	00:31	28-12-2024	01:20	Phase to earth fault B-N , Dist. 89.6km, Fault current 7.25kA from Agra.	Conventional
13	400 KV Fatehpur-Mainpuri (PG) Ckt-2	Line	400KV	POWERGRID	28-12-2024	02:17	28-12-2024	12:29	Phase to earth fault R-N , Dist. 243.4km, Fault current 2.53kA from Fatehpur.	Conventional
14	400 KV Sahupuri(UP)-Biharshariff(PG) (PG) Ckt-2	Line	400KV	POWERGRID, UPPTCL	29-12-2024	03:28	29-12-2024	05:50	Phase to earth fault B-N , Zone-1, Dist. 2.4km, Fault current 5.943kA from Sahupuri(UP).	Not Available
15	500 KV HVDC Balia-Bhiwadi (PG) Ckt-2	HVDC Line	500KV	POWERGRID	29-12-2024	05:01	29-12-2024	17:51	Insulator broken at Loc no. 161.	Partial (15%)
16	500 KV HVDC Balia-Bhiwadi (PG) Ckt-1	HVDC Line	500KV	POWERGRID	29-12-2024	07:18	30-12-2024	02:09	Insulator broken at Loc no. 160.	Partial (15%)
17	220 KV Sitarganj(PG)-CBGanj(UP) (PG) Ckt-1	Line	220KV	POWERGRID	29-12-2024	14:01	29-12-2024	14:48	Phase to Phase Fault R-Y , Fault current 1.666kA, Dist. 99.076km from Sitarganj.	Not Available
18	400 KV Balia-Sohawal (PG) Ckt-1	Line	400KV	POWERGRID	29-12-2024	15:16	29-12-2024	15:35	Phase to earth fault B-N , Dist. 32.213km, Fault current 9.875kA from Sohawal.	Conventional
19	220 KV Tanakpur(NH)-CBGanj(UP) (PG) Ckt-1	Line	220KV	POWERGRID	29-12-2024	15:56	29-12-2024	18:10	Transient fault . Line tripped on Zone-4 from CBGanj(UP).	Not Available
20	220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt-1	Line	220KV	POWERGRID, POWERGRID	29-12-2024	15:56	29-12-2024	16:54	Phase to Phase Fault Y-B , Fault current Iy1.14kA, Ib 0.91kA from Sitarganj.	Not Available
21	500 KV HVDC Balia-Bhiwadi (PG) Ckt-1	HVDC Line	500KV	POWERGRID	30-12-2024	02:21	31-12-2024	05:08	Tripped due to external protection received at Ballia end.	Partial (15%)
22	500 KV HVDC Balia-Bhiwadi (PG) Ckt-2	HVDC Line	500KV	POWERGRID	30-12-2024	03:58	30-12-2024	06:16	Trip due to operation of DC electrode line protection.	Partial (15%)
23	400 KV Balia(PG)-Naubatpur (BS) (PG) Ckt-2	Line	400KV	POWERGRID	31-12-2024	10:21	31-12-2024	14:01	Relay maloperation . Tripped due to maloperation of line reactor Buccholz relay at Ballia end.	Not Available
24	765 KV Koteshwar-Meerut (PG) Ckt-1	Line	765KV	POWERGRID	01-01-2025	20:57	02-01-2025	19:07	Phase to earth fault Y-N , Dist. 132.712km, Fault current 5.401kA from Meerut & Dist. 45.987km, Fault current 4.629kA from Koteshwar.	Not Available
25	500 KV HVDC Balia-Bhiwadi (PG) Ckt-2	HVDC Line	500KV	POWERGRID	03-01-2025	01:56	04-01-2025	04:50	Earth fault . Tripped due to DC earth fault. Dist. 189.847km from Balia & Dist. 599.943km from Bhiwadi.	Partial (15%)
26	400 KV Lucknow_1(PG)-Mohanlalganj (PGYTL) (PGYTL) Ckt-1	Line	400KV	POWERGRID	04-01-2025	05:51	04-01-2025	15:56	Phase to earth fault Y-N , Dist. 35.794km, Fault current 4kA from Lucknow.	Conventional
27	400 KV Baghpat-Saharanpur (PG) Ckt-1	Line	400KV	POWERGRID	06-01-2025	08:47	06-01-2025	11:03	Phase to earth fault Y-N , Fault current 17.930kA, Dist. 3.238km from Baghpat & Fault current 4.125kA, Dist. 119.107km from Saharanpur.	Partial (41%)
28	400 KV Allahabad-Sasaram (PG) Ckt-1	Line	400KV	POWERGRID	07-01-2025	00:32	*	*	Phase to earth fault B-N , Dist. 155.0km, Fault current 1.40kA from Allahabad.line was not hold at 05:33hrs (During patrolling At Loc.no-530 o Porcelain insulator found de-capped.)	Not Available

EHV Transmission Lines	No. of Trippings
220 KV Sitarganj(PG)-CBGanj(UP) (PG) Ckt-1	2
500 KV HVDC Balia-Bhiwadi (PG) Ckt-1	3
500 KV HVDC Balia-Bhiwadi (PG) Ckt-2	3
765 KV Agra-Gwalior (PG) Ckt-1	2

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली–110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

संदर्भ सं.: उ0क्षे0भा0प्रे0के0/प्र0सं0/151/589 **दिनांक : 07.01.2025**

सेवा मे,

Chief Engineer
U P SLDC LIMITED
Phase II, Vibhuti Khand, Lucknow- 226010 (U.P.)

विषय : Fog related frequent trippings of EHV lines during fog conditions in the Northern Region-20th December 2024- 07th January 2025 – Reg.

महोदय,

This is to bring to your notice about the frequent tripping of EHV transmission lines being observed in the past few weeks (20" December 2024-07'h January 2025) during dense fog conditions in the Northern Region.

Further, frequent trippings of transmission lines associated with Anpara Thermal Generation complex have also been observed recently during the Night and early morning hours. It is to be noted that frequent tripping on fault may also jeopardise the safe evacuation of generation of the - 4000 MW generation complex. As reported trippings have occurred mostly due to phase to earth fault, indicating the need of insulator cleaning/washing and exploring replacement of porcelain insulators with polymer insulators. List of EHV transmission lines tripped from **20.12.2024•07.01.2025 is enclosed as Annexure-I.** Please also note that in spite of regular pursuance at OCC forum the status of insulators of many EHV lines has still not been updated.

As you would be aware that NRLDC has been regularly highlighting the necessity for preparedness to tackle fog related tripping of EHV transmission lines and also the importance of insulator replacement with polymer insulator and cleaning works in view of trippings observed in the past years during the dense fog conditions in the winter months. Several letters have also been issued from NRLDC to timely plan for insulator cleaning and replacement work and the same has also been deliberated in the recently concluded 51st TCC & 76th NRPC meeting and in the OCC 225 & OCC 224 meetings w.r.t. the winter preparedness for 2024-25.

Considering the peak winter season where UP is also meeting a high demand of around 21000 MW, the recurrence of fog related line trippings of the transmission system may adversely impact grid stability. It is requested to advise the concerned officials to meticulously carry out the insulator cleaning and replacement work to prevent multiple outages and any untoward incident and also update the status of type of insulators as enclosed in Annexure-I.

Matter may please be treated on priority.

धन्यवाद।

भवदीय

(सोमारा लाकरा)
मुख्य महाप्रबंधक,उ॰क्षे॰भा॰प्रे॰के

Transmission Element Outage Report from 20-12-2024 to 07-01-2025

Annexure-I

Details of Transmission Elements Tripped:-

S.No	Element Name	Type	Voltage Level	Owner	Outage Date	Outage Time	Revival Date	Revival Time	Reason / Remarks	Replacement with polymer insulator as % of total line (as per Annexure-B II
1	400 KV Sahupuri(UP)-Biharshariff(PG) (PG) Ckt-1	Line	400KV	POWERGRID,UPPTCL	20-12-2024	04:23	20-12-2024	05:55	Phase to earth fault Y-N , Zone-1, Fault current 2.517kA from Sahupuri(UP).	Not Available
2	400 KV Anpara-Obra_B (UP) Ckt-1	Line	400KV	UPPTCL	21-12-2024	01:53	21-12-2024	03:54	Phase to earth fault Y-N , Zone-1, Dist. 22.90km, Fault current 9.93kA from Anpara(UP).	Partial
3	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	Line	400KV	UPPTCL	22-12-2024	06:28	22-12-2024	08:12	Phase to earth fault R-N , Zone-1, Fault current 4kA from Mau(UP).	Partial (13%)
4	220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1	Line	220KV	POWERGRID,UPPTCL	22-12-2024	11:06	22-12-2024	13:19	Phase to earth fault Y-N , Dist. 26.227km, Fault current 6.919kA from Meerut & Dist. 24km, Fault current 4.4kA from Simbholi. Fault under UP jurisdiction.	Not Available
5	400 KV Aligarh-Sikandrabad (UP) Ckt-1	Line	400KV	UPPTCL	22-12-2024	19:11	22-12-2024	21:35	Phase to earth fault R-N , Zone-1, Dist. 26km, Fault current 8kA from Aligarh.	Not Available
6	400 KV Bareilly-Unnao (UP) Ckt-2	Line	400KV	UPPTCL	23-12-2024	19:47	23-12-2024	20:10	Phase to Phase Fault Y-B , Dist. 230.98km, Fault current 1.56kA from Bareilly & Zone-1, Dist. 32.7km, Fault current 8.76kA from Unnao(UP).	Partial (15%)
7	220 KV Malwan (UP)-Unchahar(NT) (UP) Ckt-1	Line	220KV	UPPTCL	24-12-2024	02:14	24-12-2024	03:36	Phase to earth fault R-N , Zone-1 from Unchahar end.	Not Available
8	400 KV Varanasi(PG)-Sahupuri(UP) (PG) Ckt-1	Line	400KV	POWERGRID,UPPTCL	24-12-2024	09:34	24-12-2024	11:13	Phase to earth fault R-N , Zone-1 from Varanasi (PG).	Not Available
9	400 KV Anpara-Anpara_D (UP) Ckt-1	Line	400KV	UPPTCL	24-12-2024	14:16	24-12-2024	16:35	Phase to earth fault R-N , Fault current 4.75kA, Dist. 15.23km from Anpara_D (UP).	Not Available
10	400 KV Anpara-Anpara_D (UP) Ckt-2	Line	400KV	UPPTCL	24-12-2024	14:16	24-12-2024	16:22	Phase to earth fault B-N , Fault current 3.923kA from Anpara_D (UP).	Not Available
11	400 KV Bareilly-Unnao (UP) Ckt-2	Line	400KV	UPPTCL	24-12-2024	20:27	24-12-2024	22:54	Phase to earth fault B-N , Zone-1, Dist. 154.8km, Fault current 3.06kA from Bareilly & Zone-1, Dist. 123.6km, Fault current 3.07kA from Unnao.	Partial (15%)
12	765 KV Anpara_C(LAN)-Unnao(UP) (UP) Ckt-1	Line	765KV	UPPTCL	25-12-2024	04:58	25-12-2024	07:28	Phase to earth fault R-N , Zone-1, Dist. 87.10km, Fault current 4.568kA from Unnao.	Conventional
13	220 KV Mainpuri(PG)-Farrukhabad (UP) (UP) Ckt-1	Line	220KV	UPPTCL	26-12-2024	03:50	26-12-2024	07:48	Phase to earth fault R-N , Dist. 24.22km, Fault current 5.435kA from Mainpuri(PG).	Not Available
14	400 KV Agra Fatehbad-Agra South (UP) Ckt-1	Line	400KV	UPPTCL	26-12-2024	07:43	26-12-2024	08:49	Phase to earth fault B-N , Fault current 4.046kA, Dist. 12km from Agra South (UP).	Not Available

Details of Transmission Elements Tripped:-

S.No	Element Name	Type	Voltage Level	Owner	Outage Date	Outage Time	Revival Date	Revival Time	Reason / Remarks	Replacement with polymer insulator as % of total line (as per Annexure-B II of OCC 226 Agenda)
15	400 KV Muradnagar_2-Mathura (UP) Ckt-1	Line	400KV	UPPTCL	26-12-2024	12:52	26-12-2024	14:30	Phase to earth fault B-N , Zone-1, Fault current 1.544kA, Dist. 96km from Mathura (UP).	Not Available
16	400 KV Muradnagar_2-Mathura (UP) Ckt-1	Line	400KV	UPPTCL	26-12-2024	23:05	27-12-2024	01:05	Phase to earth fault R-N , Zone-1, Dist. 58km, Fault current 4.258kA from Mathura (UP).	Not Available
17	400 KV Agra-Unnao (UP) Ckt-1	Line	400KV	UPPTCL	28-12-2024	04:01	28-12-2024	05:08	Phase to earth fault B-N , Dist. 118.5 km, Fault current 3.18kA from Unnao & Zone-1, Dist. 134 km, Fault current 2.713kA from Agra.	Partial (25%)
18	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	Line	400KV	UPPTCL	28-12-2024	23:43	29-12-2024	00:41	Phase to earth fault B-N , Dist. 138km, Fault current 2.8kA from Anpara.	Partial
19	400 KV Sahupuri(UP)-Biharsharif(PG) (PG) Ckt-2	Line	400KV	POWERGRID,UPPTCL	29-12-2024	03:28	29-12-2024	05:50	Phase to earth fault B-N , Zone-1, Dist. 2.4km, Fault current 5.941kA from Sahupuri(UP).	Not Available
20	400 KV Anpara_B(UPUN)-Mau (UP) (UP) Ckt-1	Line	400KV	UPPTCL	29-12-2024	21:40	29-12-2024	23:14	Phase to earth fault B-N Zone-1, Fault current 18.7kA, Distance 3.28km from Mau end.	Partial (13%)
21	400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	Line	400KV	UPPTCL	30-12-2024	03:52	30-12-2024	05:00	Phase to earth fault B-N , Fault current 0.11kA, PSB trip. Tripped from Unnao end only.	Partial (13%) earlier-status after LILO not known
22	765/400 kV 1000 MVA ICT 3 at Unnao(UP)	ICT	765/400KV	UPPTCL	30-12-2024	04:45	30-12-2024	21:48	Operation of transformer protection . Tripped on Earth Fault.	
23	400 KV Orai-Mainpuri (UP) Ckt-2	Line	400KV	UPPTCL	31-12-2024	06:48	31-12-2024	09:27	Phase to earth fault R-N , Zone-1, Fault current 2.855kA, Dist. 128km from Mainpuri (UP).	Not Available
24	400/220 kV 315 MVA ICT 1 at Harduaganj (UP)	ICT	400/220KV	UPRVUNL	31-12-2024	22:47	01-01-2025	13:53	Earth fault . LV side (220kV) CB ICT-1 tripped on Group-B due to fault in control cable.	
25	400 KV Agra-Unnao (UP) Ckt-1	Line	400KV	UPPTCL	01-01-2025	00:18	01-01-2025	01:46	Phase to earth fault R-N , Zone-1, Dist. 201.6km, Fault current 1.93kA from Unnao (UP).	Partial (25%)
26	400 KV Bareilly-Unnao (UP) Ckt-1	Line	400KV	UPPTCL	01-01-2025	22:15	01-01-2025	23:41	Phase to earth fault Y-N , Dist. 21km, Fault current 11.91kA from Bareilly.	Partial (15%)
27	400 KV Banda-Orai (UP) Ckt-2	Line	400KV	UPPTCL	02-01-2025	07:13	03-01-2025	17:20	Phase to earth fault B-N , Zone-1, Fault current 8.4339kA, Dist. 24.79km from Orai & Dist. 63.159km, Fault current 3.59kA from Banda.	Not Available
28	702 TIE BAY - 765KV ANPARA_C(LAN)-UNNAO(UP) (UP) CKT-1 AND 765/400KV 1000 MVA ICT 1 AT ANPARA_C(LAN)	BAY	765KV	UPPTCL	03-01-2025	06:06	03-01-2025	11:21	Phase to earth fault R-N , Zone-1, Dist. 357.84km from Anpara-C.	

Details of Transmission Elements Tripped:-

S.No	Element Name	Type	Voltage Level	Owner	Outage Date	Outage Time	Revival Date	Revival Time	Reason / Remarks	Replacement with polymer insulator as % of total line (as per Annexure-B II of OCC 226 Agenda)
29	132 KV Chandoli(UP)-Karamnasa(BS) (UP) Ckt-1	Line	132KV	UPPTCL	03-01-2025	06:30	04-01-2025	14:13	Phase to earth fault R-N , Zone-1, Dist. 1.410km, Fault current 6.305kA from Chandoli(UP).	Not Available
30	80 MVAR Bus Reactor No 1 at 400KV Bareilly(UP)	BR	400KV	UPPTCL,UPPTCL	03-01-2025	16:36	03-01-2025	17:33	Operation of Reactor protection , PRV Trip.	
31	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	Line	400KV	UPPTCL	03-01-2025	21:16	03-01-2025	22:45	Phase to earth fault B-N , Fault current 1.8kA, Dist. 214.1km from Anpara.	Partial (13%)
32	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	Line	400KV	UPPTCL	03-01-2025	23:14	05-01-2025	01:58	Phase to earth fault Y-N , Zone-1, Fault current 15.5846kA, Dist. 9.20km from Mau & Fault current 1.82kA, Dist. 209.7km from Anpara.	Partial (13%)
33	400 KV Aligarh-Sikandrabad (UP) Ckt-1	Line	400KV	UPPTCL	04-01-2025	01:14	04-01-2025	02:18	Phase to earth fault R-N , Zone-1, Dist. 24km, Fault current 9kA from Sikandrabad(UP).	Not Available
34	400 KV Sultanpur(UP)-Mohanlalganj (PGYTL) (PGYTL) Ckt-1	Line	400KV	UPPTCL	04-01-2025	01:47	04-01-2025	19:39	Phase to earth fault B-N , Zone-2 from Sultanpur(UP).	Conventional
35	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	Line	132KV	UPPTCL	05-01-2025	00:09	05-01-2025	01:12	Phase to earth fault Y-N , Zone-1, Dist. 43.7km, Fault current 1.952kA from Rihand(UP).	Not Available
36	400 KV Bareilly-Unnao (UP) Ckt-1	Line	400KV	UPPTCL	05-01-2025	01:36	05-01-2025	12:40	Phase to Phase Fault R-B , Zone-1, Dist. 160.7km, Fault current Ir 2.55kA, Ib 1.667kA from Unnao (UP).	Partial (15%)
37	220 KV Gorakhpur(PG)-Gola(UP) (UP) Ckt-2	Line	220KV	UPPTCL	05-01-2025	06:01	05-01-2025	07:31	Phase to earth fault B-N , Zone-1, Dist. 30.58km from Gola(UP).	Not Available
38	400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	Line	400KV	UPPTCL	06-01-2025	02:02	06-01-2025	03:08	Phase to earth fault R-N , Zone-1 from Unnao(UP).	Partial (13%) earlier-status after LILO not known
39	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	Line	400KV	UPPTCL	06-01-2025	02:37	06-01-2025	03:43	Phase to earth fault R-N , Fault current 16.5kA, Dist. 146 km from Sarnath.	Partial
40	220 KV Sohawal(PG)-Barabanki(UP) (UP) Ckt-1	Line	220KV	UPPTCL	06-01-2025	08:37	06-01-2025	10:45	Phase to earth fault B-N , Dist. 77km from Barabanki(UP).	Not Available
41	400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	Line	400KV	UPPTCL	06-01-2025	03:49	06-01-2025	05:25	Phase to earth fault B-N , Zone-1 from Unnao(UP).	Partial (13%) earlier-status after LILO not known
42	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	Line	400KV	UPPTCL	06-01-2025	06:25	06-01-2025	07:41	Phase to Phase Fault R-Y , Zone-1, Dist. 18km, Fault current Ir 11kA, Iy 11kA from Sarnath(UP).	Partial
43	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	Line	400KV	UPPTCL	06-01-2025	21:25	*	*	Phase to earth fault B-N , Zone-1, Dist. 9km, Fault current 9kA from Noida Sec-148.	Not Available

EHV Transmission Lines	No. of Trippings
400 KV Agra-Unnao (UP) Ckt-1	2
400 KV Aligarh-Sikandrabad (UP) Ckt-1	2
400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	4
400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	3
400 KV Bareilly-Unnao (UP) Ckt-1	2
400 KV Bareilly-Unnao (UP) Ckt-2	2
400 KV Mohanlalganj (PGYTL)-Unnao(UP) (PGYTL) Ckt-1	3
400 KV Muradnagar_2-Mathura (UP) Ckt-1	2

National Load Despatch Centre
Import Capability of Punjab for February 2025

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Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	10300	500	9800	5497	4303		https://www.punjabsldc.org/ATC_TTC.aspx
Limiting Constraints		N-1 contigency of 400/220KV ICT at Rajpura, Ludhiana, Jalandhar, Muktsar Loading close to N-1 contingency limits of 400/220kV Patran, Malerkotla and Patiala ICTs 220 kV underlying network at Jalandhar, Ludhiana and Amritsar						

National Load Despatch Centre
Import Capability of Uttar Pradesh for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	17300	600	16700	10165	6535		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints	N-1 contingency of 400/220kV Obra, Allahabad(PG), Gorakhpur (UP), Agra(PG), Lucknow (PG) ICTs							

National Load Despatch Centre
Import Capability of Haryana for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	10300	300	10000	5418	4582		https://hvpn.org.in/#/atcttc
Limiting Constraints	N-1 contingency of 400/220kV ICT at Deepalpur, Hisar, Kabulpur and Panipat(BBMB)							

National Load Despatch Centre
Import Capability of Rajasthan for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	7600	600	7000	5755	1245		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Heerapura, Jodhpur, Bikaner, Ajmer, Merta, Hindaun and Ratangarh ICTs. Low voltage issues at Hindaun, Alwar, Bhinmal, Bikaner etc.						

National Load Despatch Centre
Import Capability of Delhi for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	7300	300	7000	4810	2190		https://www.delhisldc.org/resources/atcttcreport.pdf
Limiting Constraints	N-1 contingency of 400/220kV Mundka, HarshVihar and Bawana (bus-split) ICTs.							

National Load Despatch Centre
Import Capability of Uttarakhand for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	1810	100	1710	1402	308		https://uksldc.in/ttc-atc
Limiting Constraints		N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Roorkee-Roorkee and 220kV CBGanj-Pantnagar lines						

National Load Despatch Centre
Import Capability of HP for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	2386	100	2286	1130	1156		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		Overloading of 2*100MVA Giri transformers						

National Load Despatch Centre
Import Capability of J&K for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-09 & 14-24	3500	100	3400	1977	1423		
	09-14	2800	100	2700	1977	723		
Limiting Constraints		N-1 contigency of 400/220KV ICTs at Amargarh 220 kV underlying network at Amargarh, Wagoora Low voltages in J&K control area due to high MVAR drawl						

National Load Despatch Centre
Import Capability of Chandigarh for February 2025

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2025 to 28th February 2025	00-24	400	20	380	342	38		
Limiting Constraints		N-1 contigency of 220kV Nallagarh-Kishengarh						

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली–110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

संदर्भ सं॰ : उ0क्षे0भा0प्रे0कें0/प्र0सं0/151/587 दिनांक : 07 जनवरी, 2025

सेवा मे,

कार्यपालक निदेशक उत्तरी क्षेत्र–2 मुख्यालय, पॉवरग्रिड, जम्मू (J&K)	कार्यपालक निदेशक (ओ एंड एम), एन0एच0पी0सी0 लिमिटेड, सेक्टर-33, फरीदाबाद, हरियाणा-121003

विषय : Regarding restoration of 220kV Chamera-III(NHPC)-Chamba(PG) Ckt-1 & 2.

महोदय / महोदया,

This is to bring to your kind notice that the following transmission lines are under long outage due tower collapse :

Sr. No.	Name of transmission element	Outage Time/ Date	Restoration Time/ Date	Ownership	Reason
1	220kV Chamera_3(NHPC)-Chamba(PG) Ckt-1	10:28Hrs/ 09.07.2023	Still Out	Powergrid	Collapse of Tower no. 1 and gantry at Chamera-III HEP (due to heavy landslide)
2	220kV Chamera_3(NHPC)-Chamba(PG) Ckt-2	10:28Hrs/ 09.07.2023	Still Out	Powergrid	

The matter has been discussed in various OCC meetings. An interim arrangement was worked out after discussion in separate meeting among NRPC, PGCIL(NR2), Chamera-III(NHPC), Budhil, HPPTCL and NRLDC for safe evacuation of hydropower during the peak hydro season. The new circuits (the alternative mechanism) are in service as follows :

a) 220 kV Budhil - Chamba transmission line
b) 220 kV Chamera-III - Chamba line.

The above said interim arrangement was done to facilitate safe evacuation of hydropower during the peak hydro season. However, the restoration works on collapsed tower have not been completed till date.

Presently, Budhil HEP and Chamera-III HEP are radially connected to Chamba(PG) through single circuit lines. Any tripping of these lines may lead to generation loss at the said hydro plants.

Therefore, it is once again requested that the restoration works may be expedited on the collapsed tower to restore the transmission lines to their normal configuration for safe evacuation of hydropower from Budhil HEP and Chamera-III HEP.

POWERGRID and NHPC are requested to provide updates regarding restoration of the above-mentioned transmission lines.

सादर धन्यवाद

27/01/2025

सोमारा लाकरा
मुख्य महाप्रबंधक (प्रणाली संचालन)
उत्तरी क्षेत्र भार प्रेषण केंद्र, नई दिल्ली

विनम्र सूचनार्थ :

1. सदस्य सचिव, उत्तरी क्षेत्र विद्युत् समिति, नई दिल्ली
2. निदेशक (प्रणाली संचालन), ग्रिड-इंडिया, नई दिल्ली
3. निदेशक (प्रचालन), पॉवरग्रिड, केंद्रीय कार्यालय, गुरुग्राम, हरियाणा
4. कार्यपालक निदेशक, उत्तरी क्षेत्र भार प्रेषण केंद्र, नई दिल्ली
5. कार्यपालक निदेशक, राष्ट्रीय भार प्रेषण केंद्र, नई दिल्ली
6. कार्यपालक निदेशक(ए0म0), पॉवरग्रिड, केंद्रीय कार्यालय, गुरुग्राम, हरियाणा

Grid Event summary for December 2024

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Compliance of Protection Protocol/Standard		
	(GI-1 to GD-V)				Date	Time		Generation Loss(MW)	Load Loss (MW)		Flash Report Submission (Y/N)	DR/EL Submission (Y/N)	Detail Tripping Report Submission (Y/N)
1	GI-1	i)220KV/132KV 100 MVA ICT-1 at Haldwani(UK) ii)220KV/132KV 100 MVA ICT-2 at Haldwani(UK) iii)132KV Haldwani-Bazpur(UK) ckt-1	Uttarakhand	PTCUL	2-Dec-24	10:09	i)As reported, at 10:09 hrs, B-N fault occurred in 132KV Haldwani – Bazpur Ckt-1 with fault distance of 7.8km from Haldwani end. As per DR, fault current was approx. 5.72 kA from Haldwani end and the fault clearing time was approx. 210msec (exact reason of fault yet to be shared). ii)Due to delay in fault clearance, directional overcurrent protection of 220/132 KV 100 MVA ICT-1 and 2 at Haldwani(UK) operated tripping both ICT-1 & 2. iii)As per PMU, B-N phase to earth fault with delayed fault clearing time of 240ms was observed in the system. iv)As per SCADA, change in demand of approx. 176 MW in Uttarakhand control area was observed. But, as reported, load loss of approx. 72MW occurred at Uttarakhand.	0	72	240	Y(d)	Y(d)	Y(d)
2	GI-1	i)220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 ii)220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt-1 iii)220 KV Khodri - Chhibro (UK) Ckt-1 iv)30 MW Khodri - UNIT 2 v)60MW Chhibro – UNIT 2 vi)60MW Chhibro – UNIT 3	Uttarakhand	PTCUL	5-Dec-24	20:02	i)During antecedent condition, three 30MW units of Khodri (Unit 1,2 & 4) and three 60 MW units of Chhibro (Unit 2,3 & 4) were running and total active power generation of Khodri and Chhibro was approx. 75 MW and 123 MW (as per SCADA). ii)As reported, at 20:02 hrs, while stopping of 30MW Khodri Unit-2, its 220kV CB malfunctioned and pole discrepancy operated. This led to LBB protection operation resulting in tripping of 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 and 220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt, 220 KV Khodri-Chhibro (UK) Ckt-1 and 30MW Khodri Unit-2. iii)As per SCADA, two 60 MW units of Chhibro Unit 2 & 3 also tripped at the same time which caused generation loss of 103 MW (exact reason yet to be shared). iv)As per PMU, no fault was observed in the system. v)As per SCADA, change in demand and generation of approx. 83 MW and 223 MW respectively in Uttarakhand control area were observed. vi)As remedial action taken, over hauling & testing of generator CB has been performed and found satisfactory.	223	83	NA	Y(d)	Y	N (Partial details received)
3	GI-1	i)220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 ii)220 KV Khodri-Chhibro (UK) Ckt-1 iii)220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt iv)30 MW Khodri - UNIT 2	Uttarakhand	PTCUL	6-Dec-24	21:01	i)During antecedent condition, only one 30MW unit of Khodri (Unit 2) and one 60 MW unit of Chhibro (Unit 4) were running and total active power generation of Khodri and Chhibro was approx. 21 MW and 49 MW (as per SCADA). ii)As reported, at 21:01 hrs, while stopping of 30MW Khodri Unit-2, its 220kV CB malfunctioned and pole discrepancy operated. This led to LBB protection operation resulting in tripping of 220 KV Khodri(UK)-Majri(HP) (UK) Ckt-2 and 220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt, 220 KV Khodri-Chhibro (UK) Ckt-1 and 30MW Khodri Unit-2 . iii)As per SCADA, change in demand and generation of approx. 74 MW and 21 MW respectively in Uttarakhand control area were observed. iv)As reported by SLDC-UK, testing of Generator CB of Unit -2 by expert service engineer is under progress.	21	74	NA	Y(d)	Y	N (Partial detail received)
4	GI-2	i)400/220 kV 500 MVA ICT 1 at Jaisalmer(RS) ii)400/220 kV 500 MVA ICT 3 at Jaisalmer(RS) iii)400 KV Jaisalmer-Barmer (RS) Ckt-2 iv)220KV Jaisalmer(RS)-Renew Solar Ckt v)220KV Jaisalmer(RS)-Fortum Solar Ckt vi)220kV Jaisalmer(RS)-Akal Ckt-1 vii)220kV Jaisalmer(RS)-Akal Ckt-2	Rajasthan	RVPNL	11-Dec-24	12:13	i)400/220kV Jaisalmer(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, Renew Solar, Fortum Solar, ACME Aklera and Clean solar was injecting approx. 109 MW, 236 MW, 267 MW and 245 MW respectively to Jaisalmer(RS) at 220kV level. Active power was going out to Akal(RS) through 220kV Jaisalmer(RS)-Akal Ckt-1 & 2 carrying approx. 253 MW each. 400/220 kV 500 MVA ICT 1 & 3 at Jaisalmer(RS) were carrying approx. 261 MW and 248 MW respectively from 220kV level to 400kV level. iii)As reported, at 12:13 hrs, 400/220 kV 500 MVA ICT 1 & 3 tripped along with 220KV lines of Renew Solar, Fortum Solar, ACME Aklera and Clean solar connected from 220KV Jaisalmer(Exact reason for tripping needs to be shared). iv)As per PMU at Fatehgarh3(PG), no fault is observed. v)During this event, as per SCADA, solar generation loss of approx. 835 MW is observed in Rajasthan control area. vi)As per SCADA, no change in demand is observed in Rajasthan control area.	835	0	NA	N	N	N (Partial detail received)
5	GD-1	i)220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt	Rajasthan	Azure, Powergrid	12-Dec-24	12:25	i)Generation of 220kV Azure 41(IP) station evacuates through 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt. During antecedent condition, Azure 41(IP) station was generating approx. 294 MW (as per PMU). ii)As reported, at 12:25hrs, 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt tripped on B-N phase to earth fault due to differential protection operation (exact reason and location of fault yet to be shared). iii)Due to tripping of 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt, Azure 41(IP) S/s lost its connectivity from grid and blackout occurred at 220kV Azure 41(IP) S/s. iv)As per PMU at Bhadla(PG), B-N phase to earth fault (voltage dipped upto 0.716 p.u.) followed by Y-N phase to earth fault (voltage dipped upto 0.678 p.u.) is observed with fault clearing time of 80ms. After the fault clearance voltage increased upto 1.076 p.u. v)As per PMU at Bassi(PG), a sharp drop in frequency is observed from 49.995 Hz to 49.750 Hz and frequency recovered to 49.988 Hz within 1 min. vi)As per PMU, solar generation loss of approx. 294 MW, 150 MW, 68 MW, 89 MW and 167 MW are observed respectively at Azure 41(IP), Avaada Pooling(IP), ABCRL(IP), ESURL(IP) and ASEPL(IP). vii)As per SCADA, dip in NR total solar generation of approx. 1860 MW is observed with change in Rajasthan solar generation of approx. 170 MW.	1860	0	80	Y(d)	Y(d)	N (Partial detail received)
6	GI-2	i)400 KV Gorakhpur (PG)-Basti(UP) (PG) Ckt-1 ii)400/220 kV 500 MVA ICT 1 at Basti(UP) iii)400 KV Tanda(NT)-Basti(UP) (UP) Ckt-2 iv)400 KV Lucknow_1(PG)-Basti(UP) (PG) Ckt-1 v)400/220 kV 500 MVA ICT 2 at Basti(UP) vi)400 KV Tanda(NT)-Basti(UP) (UP) Ckt-1 vii)125 MVAR BUS REACTOR NO 1 AT 400 KV BASTI(UP)	Uttar Pradesh	UPPTCL	12-Dec-24	12:02	i)During antecedent condition, 400/220 kV 500 MVA ICT 1 and ICT 2 at Basti was carrying approx. 97 MW each. 400KV Gorakhpur (PG)-Basti(UP) (PG) Ckt-2 and 400 KV LUCKNOW_1(PG)-BASTI(UP) (PG) CKT-2 was in open condition and site engineers were checking wiring of LBB and carrying out Circuit Breaker at Basti end . ii)As reported, at 12:02 hrs, during CB timing testing of 400 KV LUCKNOW_1(PG)-BASTI(UP) (PG) CKT-2 (Z1) Bus-Bar protection operated due to malfunction of 89A Gas density Monitor. iii)This led to the tripping of both 400KV Bus-I & II and the elements connected with them. iv)As per PMU at 400KV Lucknow(PG), no fault in system is observed. v)SCADA data of 400/220 kV 500 MVA ICT 3 was in suspected condition before and tripping the tripping incident. vi)As per SCADA, change in demand of approx. 140MW is observed in UP control area.	0	140	NA	Y	N	Y (Partial details received)
7	GI-1	i)220 KV Bhiwani-Charkhi Dadri (BB) Ckt-4 ii)220 KV Bhiwani-Charkhi Dadri (BB) Ckt-2 iii)220 KV Bhiwani (HV)-Bhiwani (BB) (HVPNL) Ckt-2 iv)220 KV Bhiwani(HV)-Bhiwani(BB) (HVPNL) Ckt-2 v)220 KV Bhiwani(HV)-Bhiwani(BB) (HVPNL) Ckt-1	Haryana	HVPNL, BBMB	13-Dec-24	10:41	i)During antecedent condition, 220 KV Bhiwani-Charkhi Dadri (BB) Ckt-4, 220 KV Bhiwani-Charkhi Dadri (BB) Ckt-2 and 220 KV Bhiwani (HV)-Bhiwani (BB) (HVPNL) Ckt-2 were carrying appx. 18MW, 17MW and 186 MW respectively . ii)As reported, at 10:41 hrs, load shifting from 220KV Bus-2 to Bus-1 at 400/220KV Bhiwani was being done to avail shutdown of 220KV Bus-2 under annual maintenance. During load shifting Bus Bar protection operated causing tripping of 220KV Bus-2 and all the elements connected to it. iii)At the same time, 220 KV Bhiwani(HV)-Bhiwani(BB) (HVPNL) Ckt-1 also tripped which was connected to 220kV Bus-1 (exact nature of protection operated yet to be shared). Detailed report of the tripping is yet to be furnished from SLDC end. iv)As per PMU at Bhiwani (BBMB), Y-B phase to phase fault is observed with fault clearing time of ~120 ms. v) As per SCADA, 40MW loss occurred in Haryana control area.	0	40	120	N	N	N
8	GI-2	i)400/220 kV 315 MVA ICT 1 at Bikaner(RS) ii)400/220 kV 315 MVA ICT 2 at Bikaner(RS) iii)125 MVAR BUS REACTOR NO 2 AT 400KV BIKANER(RS)	Rajasthan	RVPNL	14-Dec-24	18:05	i)During antecedent condition, 400/220 kV 315 MVA ICT 1 and ICT 2 at Bikaner(RS) was carrying approx. 240MW each. 400KV Bikaner-Sikar(PG) Ckt-2 and 220kV Bikaner-Dungargarh (RS) line were in open condition. ii)As reported, at 18:35 hrs, Y phase isolator on 220KV side of 400/220 kV 315 MVA ICT 2 at Bikaner(RS) burnt and tripped. iii)As per PMU at Bhadla(PG), R-Y fault in system is observed with delayed fault clearance of 760ms . iv)Due to tripping of ICT-2, SPS implemented at Bikaner(RS) S/s related to overloading of remaining ICTs after tripping of any ICT operated. As per SPS scheme, 220kV Bikaner-Nokha (RS) line and 220kV Bikaner-Dungargarh (RS) line should open. However, 220KV Bikaner-Dungargarh (RS) line was already in open condition. v)During the event, both 400/220kV 315MVA ICT-1&2 tripped. At the same time, 125 MVAR BUS REACTOR NO 2 AT 400KV BIKANER(RS) also tripped due to Backup Impedance protection operation. vi)As per SCADA, change in demand of approx. 400MW is observed in Rajasthan control area. vii)As observed, the SCADA data remained frozen upto 18:10 hrs and subsequently became unavailable after 18:10hrs.	0	400	760	Y(d)	Y(d)	N
9	GD-1	i)220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt ii)130 MVA 220/33KV ICT at 220kV Azure 34	Rajasthan	Azure, Powergrid	15-Dec-24	11:35	i)Generation of 220kV Azure 41(IP) station evacuates through 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt. which was generating approx. 294 MW (as per PMU). Similarly, 220kV Azure 34(IP) station evacuates through 220 KV BHADLA(PG)-AZURE POWER 34 SOLAR(APTFL) (APTFL) CKT-1 which was generating 121MW (as per PMU). ii)As reported, at 11:35hrs, 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt tripped on B-N phase to earth fault due to differential protection operation on account of broken jumper at tower location 50. At the same time 130 MVA 220/33KV ICT at 220kv Azure 34 also tripped on account of Differential relay protection (exact reason yet to be shared) iii)Due to tripping of 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt and 130 MVA 220/33KV ICT, Azure 41(IP) and Azure 34 S/s lost its connectivity from grid and blackout occurred at 220kV Azure 41(IP) and 220kV Azure 34(IP) S/s. iv)As per PMU at Bhadla(PG), B-N phase to earth fault (voltage dipped upto 0.63 p.u.) is observed with fault clearing time of 120ms. After the fault clearance voltage increased upto 1.08 p.u. v)As per PMU at Bassi(PG), a sharp drop in frequency is observed from 49.995 Hz to 49.803 Hz and frequency recovered to 49.97 Hz within 1 min. vi)As per PMU, solar generation loss of approx. 294 MW, 160 MW, 131 MW, 24 MW and 181 MW are observed respectively at Azure 41(IP), ESURL(IP), DVKOT_NT, ASHPL(IP) and ASEPL(IP). vii)As per SCADA, dip in NR total solar generation of approx. 1066 MW is observed with change in Rajasthan solar generation of approx. 126 MW. Demand change of 436 MW was observed in Punjab. viii)As reported by SLDC-Punjab, reduction in demand was due to operation of df/dt stage-1 operation. (Exact feeder wise details of df/dt operation is yet to be received from Punjab) ix)As per DR (Bhadla end) of 220 KV AzurePSS41 SL_BHD_PG (APFOL)-Bhadla(PG) (Azure) Ckt, A/R closing attempt was not observed after dead time. POWERGRID has been communicated to resolve the issue related to A/R operation.	1066	0	120	YPartial details received)	YPartial details received)	N
10	GD-1	i)220 KV MOGA(PG)-MEHAL- KALAN(PS) (PSTCL) CKT-1 ii)220 KV MOGA(PG)-MEHAL- KALAN(PS) (PSTCL) CKT-2 iii)220 KV PAKHOWAL(PSTCL)- MEHAL- KALAN(PS) (PSTCL) CKT-1 iv)220 KV PAKHOWAL(PSTCL)- MEHAL- KALAN(PS) (PSTCL) CKT-2	Punjab	PSTCL	27-Dec-24	13:48	i)220/66kV Mehal_Kalan has double main bus scheme at 220kV level. ii)As reported at 13:48 hrs, Bus Bar protection operated due to the damage in B-phase Circuit Breaker limb of 220 KV PAKHOWAL(PSTCL)- MEHAL- KALAN(PS) (PSTCL) CKT-1 (details yet to be furnished). iii)Due to the operation of Bus Bar protection all the elements connected in the 220KV system tripped. Complete blackout occurred at 220kV Mehal_Kalan S/s. iv)As per PMU at Moga (PG), R-N phase to earth fault with fault clearing time of 120ms is observed. v)As per SCADA, change in demand of approx. 20 MW is observed in Punjab control area.	0	25	120	N	N	N

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Compliance of Protection Protocol/Standard		
	(GI-I to GD-V)				Date	Time		Generation Loss(MW)	Load Loss (MW)		Flash Report Submission (Y/N)	DR/EL Submission (Y/N)	Detail Tripping Report Submission (Y/N)
11	GD-1	i)220 KV TANAKPUR(NH)-CBGANJ(UP) (PG) CKT-1 ii)31.4 MW TANAKPUR HPS - UNIT 3 iii)31.4 MW TANAKPUR HPS - UNIT 2 iv)220 KV TANAKPUR(NH)-SITARGANJ(PG) (PG) CKT-1 v)220 kv Bareilly-CB Ganj (UP) ckt-1 vi)220 kv Bareilly-CB Ganj (UP) ckt-2 vii)220 KV CB Ganj-Dohna viii)132kV Tanakpur- Mahindernagar ckt	Uttar Pradesh	UPPTCL, NHPC,POWERGRID	29-Dec-24	15:56	i)220/132kV CB Ganj(UP) has double main and transfer bus scheme at 220kV level. 220KV Rosa – CB Ganj line was not in service. ii)During the antecedent condition, 2 generators at Tanakpur were generating 19MW (Unit-2) and 16MW (Unit-3). iii)As reported at 15:56 hrs, 220kV CB Ganj-Dohna ckt tripped on Y-B phase to phase fault, fault distance was ~7.23km (Z-1) from CB Ganj end. At the same time, all the other lines connected to 220 CB Ganj (except 220kV CB Ganj-Sitarganj) and 220kV Tanakpur-Sitarganj ckt also tripped. 220 KV TANAKPUR(NH)-SITARGANJ(PG) (PG) CKT tripped due to Y-B phase to phase fault with fault current of 1.14KA. The fault was in Zone-3. i)Further, 132kV Tanakpur-Mahindernagar ckt was hand tripped for safety purpose leading to tripping of 31.4 MW Unit-2&3 at Tanakpur HEP due to loss of evacuation path. ii)As per PMU at Bareilly(PG), Y-B phase to phase fault with delayed fault clearing time of 920ms is observed. iii)As per SCADA, change in demand of approx. 27 MW is observed in Uttar Pradesh control area.	35	27	920	Y(d)	Y(d)	N (Partial detail received)
12	GD-1	i)220 KV BASSI(PG)-DAUSA(RS) (PG) CKT-1 ii)220 KV BASSI(PG)-DAUSA(RS) (PG) CKT-2 iii)220 KV SAWAIMADHOPUR(RS)- DAUSA(RS) (PG) CKT-1 iv)220 KV Sikarai - Dausa(RS) Ckt	Rajasthan	RVPNL and POWERGRID	29-Dec-24	11:30	i)220/132kV Dausa(RS) has double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 220 kV Alwar(RS)-Dausa(RS) Ckt and 220 kV Lalsot(RS)-Dausa(RS) Ckt were not in service. iii)As reported, at 11:30 hrs, heavy sparking in the isolator of the 220 KV BASSI(PG)-DAUSA(RS) (PG) CKT-1 resulted into snapping of conductor and line tripped. iv)At the same time, all the elements connected to both the 220kV buses tripped and there was no source of supply at 132kV level, complete blackout occurred at 220/132kV Dausa(RS) S/s. v)As per PMU at Bassi(PG), R-B phase to phase fault with delayed fault clearing time of 480ms is observed. vi)As per SCADA, change in demand of approx. 308 MW is observed in Rajasthan control area.	0	305	480	Y(PG) N(Raj)	Y(PG) N(Raj)	N
13	GI-1	i)220 KV Amargarh(NRSS XXIX)-Delina(PDD) (PDD JK) Ckt-1 ii)220 KV Amargarh(NRSS XXIX)-Delina(PDD) (PDD JK) Ckt-2	Jammu & Kashmir	INDIGRID and JKPDD	31-Dec-24	05:57	i)400/220kV Amargarh S/s have two bus at 220kV side i.e., main bus & reserve bus. ii)During antecedent condition, 220 KV Amargarh (NRSS XXIX)-Delina(PDD) (PDD JK) Ckt-1 and Ckt-2 were carrying 105 and 107 MW respectively and feeding Delina load. iii)As reported, at 05:57 hrs, 220 KV Amargarh (NRSS XXIX)-Delina(PDD) (PDD JK) D/C tripped from both ends on B-N phase to earth fault. iv)As per PMU at Amargarh(PG), two successive B-N phase to earth fault which cleared within 120 msec is observed. v)As per SCADA, change in demand of approx. 225MW is observed in J&K control area.	0	225	120	Y(INDIGRID) N(Raj)	Y(INDIGRID) N(J&K)	N
14	GI-1	i)220 KV SAMBA(PG)-BISHNAH(JK) (PDD JK) CKT-1 ii)132KV/33KV 50MVA ICT-1 BISHNAH	Jammu & Kashmir	JKPDD	31-Dec-24	13:33	i)220/132/33kV Bisnah S/s have two bus at 220kV side i.e., main bus & reserve bus. ii)During antecedent condition, 220 KV SAMBA(PG)-BISHNAH(JK) (PDD JK) CKT-1 was carrying 76 MW load and feeding Bisnah load. iii)As reported, at 13:33 hrs, 132KV/33KV 50MVA ICT-1 BISHNAH tripped on account of fire incident. At the same time 220 KV SAMBA(PG)-BISHNAH(JK) (PDD JK) CKT-1 also tripped. The tripping details are still awaited. iv)As per PMU at Amargarh(INDIGRID), Y-N phase to earth fault with delayed fault clearing time of 880 msec is observed. v)As per SCADA, change in demand of approx. 78 MW is observed in J&K control area.	0	78	880	Y(PG) N(J&K)	Y(PG) N(J&K)	N
15	GI-1	i)220 KV Amargarh (INDIGRID)-Ziankote(JK) (PDD JK) Ckt-1 ii)220 KV Amargarh (INDIGRID)-Ziankote(JK) (PDD JK) Ckt-2	Jammu & Kashmir	INDIGRID and JKPDD	31-Dec-24	19:47	i)220/132kV Ziankote S/s have two bus at 220kV side i.e., main bus & reserve bus. 220kV Amargarh-Ziankote ckt-1&2 are on the same tower (D/C tower) and line length is ~21.4km. ii)During antecedent condition, 220kV Amargarh (INDIGRID) –Ziankote(JK) D/C was carrying 157 MW each and feeding Ziankote load. iii)As reported, at 19:47 hrs, 220 KV Amargarh (INDIGRID)-Ziankote(JK) (PDD JK) Ckt-1 tripped on R-N phase to earth fault with fault distance of 13.18 km and fault current of Ir=~1.199 kA from Ziankote end. Fault sensed in zone-1 at Ziankote end. iv)This led to overloading of 220 KV Amargarh (INDIGRID)-Ziankote(JK) (PDD JK) Ckt-2 and this line tripped from Ziankote end only on over-current protection operation. v)As per PMU at Amargarh(INDIGRID), R-N phase to earth fault with fault clearing time of 80 msec is observed. vi)As per SCADA, change in demand of approx. 235 MW is observed in J&K control area.	0	235	80	Y(INDIGRID) N(Raj)	Y(INDIGRID) N(J&K)	N

Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal

Time Period: 1st December 2024 - 31st December 2024

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	ABC RENEWABLE_RJ01	1	1	100	1	0	100	1	0	100	1	0	100	
2	ADANI GREEN ENERGY TWENTY FOUR LI	1	1	100	1	0	100	1	0	100	1	0	100	
3	ADANI SOLAR ENRGY RJ TWO PRIVATE LI	2	2	100	2	0	100	2	0	100	2	0	100	
4	ALTRA XERGI POWER PVT LTD	1	1	100	1	0	100	1	0	100	1	0	100	
5	ANTA-NT	1	1	100	1	0	100	1	0	100	1	0	100	
6	APFOL	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report not submitted
7	ARP1PL	1	1	100	1	0	100	1	0	100	1	0	100	
8	ASEJOL	1	1	100	1	0	100	1	0	100	1	0	100	
9	AURAIYA-NT	2	1	50	1	0	50	2	0	100	1	0	50	
10	BAIRASUIL-NH	1	1	100	1	0	100	1	0	100	1	0	100	
11	BBMB	24	9	38	9	9	60	9	11	69	9	3	43	
12	CPCC1	56	2	4	2	7	4	3	8	6	3	1	5	
13	CPCC2	26	0	0	0	8	0	0	6	0	0	0	0	
14	CPCC3	42	2	5	11	4	29	11	4	29	6	0	14	
15	DADRI-NT	1	0	0	0	0	0	1	0	100	1	0	100	
16	DULHASTI-NH	2	2	100	2	0	100	2	0	100	2	0	100	
17	INDIGRID	1	1	100	1	0	100	1	0	100	1	0	100	
18	KARCHAM	3	3	100	3	0	100	3	0	100	3	0	100	
19	KOLDAM-NT	2	2	100	2	0	100	2	0	100	2	0	100	
20	NJPC	2	0	0	0	0	0	0	0	0	0	0	0	
21	RAMPUR	2	0	0	0	0	0	0	0	0	0	0	0	
22	RAPPA	16	16	100	16	0	100	16	0	100	16	0	100	
23	RAPPB	2	0	0	2	0	100	2	0	100	2	0	100	
24	RAPPC	1	1	100	1	0	100	1	0	100	1	0	100	

Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal

Time Period: 1st December 2024 - 31st December 2024

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
25	RIHAND-NT	1	1	100	1	0	100	1	0	100	1	0	100	
26	RSDCL	1	1	100	1	0	100	1	0	100	1	0	100	
27	SHREE CEMENT	4	4	100	4	0	100	4	0	100	4	0	100	
28	SINGRAULI-NT	1	1	100	1	0	100	1	0	100	1	0	100	
29	SLDC-DV	7	0	0	0	0	0	0	0	0	0	0	0	Details received
30	SLDC-HP	15	0	0	5	10	100	5	10	100	5	10	100	DR, EL & Tripping report not submitted
31	SLDC-HR	15	4	27	4	6	44	4	6	44	5	2	38	
32	SLDC-JK	11	1	9	11	0	100	11	0	100	8	0	73	
33	SLDC-PS	20	3	15	17	2	94	17	2	94	18	0	90	
34	SLDC-RS	122	77	63	88	1	73	89	1	74	89	0	73	
35	SLDC-UK	17	2	12	3	3	21	5	5	42	4	0	24	
36	SLDC-UP	95	9	9	14	12	17	14	11	17	10	0	11	
37	STERLITE	12	2	17	2	3	22	3	3	33	3	7	60	
38	TANAKPUR-NH	3	0	0	0	0	0	0	0	0	0	0	0	Details received
39	TANDA-NT	2	0	0	0	2	0	0	0	0	0	0	0	
40	UNCHAHAR-NT	2	1	50	1	0	50	1	0	50	1	0	50	DR, EL & Tripping report not submitted
41	URI-I-NH	2	0	0	0	1	0	0	0	0	0	1	0	Details received
42	UNCHAHAR-NT	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
Total in NR Region		**524**	**157**	**30**	**214**	**68**	**47**	**221**	**67**	**48**	**209**	**24**	**42**	

As per the IEGC provision under clause 37.2 (c), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event

Annexure-B.VIII

Mock trial run/black start schedule plan for 2024-25

S.No.	Name of Generatiing Station	Fuel Type	Installed Capacity (in MW)	Whether Generating station has black start capability (Yes/ No)	Type of Black Start Source (DG set etc.)	Capacity of DG Set / Small Generator / Battery	Source of power supply to Communication and Telemetry during black start.	Compliance to 34.3 of IEGC for mock trial runs (Last date on which mock drill carried out)	Tentaive schedule plan for mock trial run		Remarks
									Black start exercise of generating unit (dead bus charging)	Mock black start of subsytem (black start of generating unit / island operation / synchronidation)	
NTPC											
1	Dadri GPS	Gas	4*130.19 + 2*154.51	Yes				16-Dec-23	31-Oct-24	NA	
2	Anta GPS	Gas	3*88.71 + 1*153.2	Yes				29-Feb-24			
3	Auraiya GPS	Gas	4*111.19 + 2*109.3	Yes					09-Jul-24	09-Jul-24	
4	Faridabad GPS	Gas	2*137.75 + 1* 156.07	Yes							
5	Koldam HEP	Hydro	4*200	Yes				14-Mar-24	12-Mar-25	12-Mar-25	
NHPC											
6	Bairasuil	Hydro	3*60	Yes				30-Nov-22	2nd week of November	2nd week of November	
7	Salal Stage-I	Hydro	3*115	Yes				02-Nov-18	3rd week of October	3rd week of October	
8	Salal Stage-II	Hydro	3*115	Yes					3rd week of October	3rd week of October	
9	Tanakpur HPS	Hydro	3*31.4	Yes					4th week of December	4th week of December	
10	Chamera HPS-I	Hydro	3*180	Yes				02-Dec-22	1st week of December	1st week of December	
11	Chamera HPS-II	Hydro	3*100	Yes				02-Dec-22	1st week of December	1st week of December	
12	Chamera HPS-III	Hydro	3*77	Yes				04-Dec-17	1st week of December	1st week of December	
13	URI-I	Hydro	4*120	Yes				20-Dec-16	1st week of December	1st week of December	
14	URI-II	Hydro	4*60	Yes				20-Dec-16	1st week of December	1st week of December	
15	Dhauliganga	Hydro	4*70	Yes				28-Dec-21	4th week of December	4th week of December	
16	Dulhasti	Hydro	3*130						4th week of November	4th week of November	
17	Sewa-II	Hydro	3*40	Yes				29-May-22	3rd week of November	3rd week of November	
18	Parbati-3	Hydro	4*130	Yes				22-Dec-20	4th week of December	4th week of December	
19	Kishanganga	Hydro	3*110	Yes					4th week of October	4th week of October	Conducted on 09.11.2024 (dead bus charging)
SJVNL											
20	Nathpa-Jhakri	Hydro	6*250	Yes				09-Dec-22	20-Nov-24	20-Nov-24	Conducted on 08.12.2024 (island operation)
21	Rampur	Hydro	6*68.67	Yes				09-Dec-22	20-Nov-24	20-Nov-24	
THDC											
22	Tehri	Hydro	4*250	Yes				07-Nov-23	06-Nov-24	06-Nov-24	Conducted on 13.11.2024 (dead bus charging)
23	Koteshwar	Hydro	4*100	Yes				14-Mar-24	Dec-24	Dec-24	Conducted on 13.11.2024 (dead bus charging)
BBMB											
24	Bhakra (L)	Hydro	3*108 + 2*126	Yes				31-Dec-22			
25	Bhakra (**R**)	Hydro	5*157	Yes				26-Dec-22			
26	Ganguwal	Hydro	1*27.99 + 2*24.2								
27	Kotla	Hydro	1*28.94 + 2*24.2								
28	Dehar	Hydro	6*165								
29	Pong	Hydro	6*66					08-Jun-14			
*: Rampur can be black started only after starting of Nathpa Jhakri units due to Tandem operation											
IPPGCL(Indraprashta power generating Corporation Ltd.)/ Delhi Gencos											
30	I.P. Gas Turbine (IPGCL G.T.)	Gas	6*30+ 3*34	Yes				20-Feb-19	10-Apr-24	10-Apr-24	Conducted
31	Pragati Gas Turbine (PPCL)	Gas	2*104.6 + 1*121.2								
32	Bawana GT	Gas	2*253+4*216								
33	Rithala(TPPDL)	Gas	3*36								Not in operation
Haryana											
34	Western Yamuna Canal (WYC-I & II)	Hydro	6*8+ 2*7.2								
Himachal Pradesh											

Mock trial run/black start schedule plan for 2024-25

S.No	Name of Generatiing	Fuel	Installed Capacity (in	Whether Generating station has black	Type of Black Start Source	Capacity of DG Set / Small	Source of power supply to Communication	Compliance to 34.3 of IEGC for mock trial runs (Last date on	Tentaive schedule plan for mock trial run		Remarks
35	Bhabha	Hydro	3*40								
36	Bassi	Hydro	4*16.5								
37	Ghanvi	Hydro	2*11.25								
38	Giri	Hydro	2*30								
39	Larji	Hydro	3*42								
40	Phojal	Hydro	24								
41	Sainj HEP	Hydro	2*50								
42	Swara Kuddu HEP	Hydro	3*37								
43	Bajoli Holi HEP	Hydro	3*60								
AD Hydro Power Ltd.											
44	AD Hydro	Hydro	2*96	Yes				27-Jan-23	24-Feb-25	24-Feb-25	
Greenco											
45	Budhil	Hydro	2*35	Yes							inability to carry out Mock Black start exercise keeping in view the Unit safety being installed capacity low and issue of Governing system. The Governing system of Budhil HEP is of M/S Dong Fong China make and we are not ge ng any support from OEM a er COVID-19.. The planning for changing the governing system is in Process.
46	Sorang HEP	Hydro	2*50								
Malana Power Company Ltd.											
47	Malana-I	Hydro	2*43	Yes				12-Mar-24			
Everest Power Company Ltd.											
48	Malana-II	Hydro	2*50	Yes				03-Jan-19			
Jaiprakash power Venture Ltd.											
49	Vishnu Prayag IPP	Hydro	4*100								
Jammu & Kashmir											
50	Baghlihar-I	Hydro	3*150								
51	Baghlihar-II	Hydro	3*150								
52	Lower Jhelum	Hydro	3*35					20-Dec-16			
53	Upper Sindh	Hydro	2*11.3+ 3*35	Yes				20-Dec-16			
Punjab											
54	Jogendernagar/ Shanan	Hydro	4*15+ 1*50								
55	UBDC	Hydro	3*15+ 3*15.45								
56	Mukerian	Hydro	6*15+ 6*19.5								
57	Anandpur Sahib (APS)	Hydro	4*33.5								
58	Ranjit Sagar (Thein Dam)	Hydro	4*150	Yes					04-May-24	04-May-24	Conducted on 07.05.2024
Rajasthan											
59	Ramgarh GT Extn.	Gas	1*3+1*35.5+2* 37.5+1*110+1* 50								
60	Dholpur CCPP	Gas	3*110								
61	Rana Pratap Sagar (RPS)	Hydro	4*43	Yes				16-Jan-11			
62	Jawahar Sagar	Hydro	3*33								
63	Mahi Bajaj Sagar I	Hydro	2*25	Yes				21-Jul-15			
64	Mahi Bajaj Sagar II	Hydro	2*45	Yes				24-Mar-16			
Uttar Pradesh											
65	Rihand (H) or Pipri	Hydro	6*50	Yes				16-Feb-24			
66	Obra(H)	Hydro	3*33	Yes				16-Feb-24			
67	Khara	Hydro	3*24								
68	Matatila	Hydro	3*10.2	Yes							
GVK											
69	Alaknanda HEP	Hydro	4*82.5								
Uttrakhand											

Mock trial run/black start schedule plan for 2024-25

S.No	Name of Generatiing	Fuel	Installed Capacity (in	Whether Generating station has black	Type of Black Start Source	Capacity of DG Set / Small	Source of power supply to Communication	Compliance to 34.3 of IEGC for mock trial runs (Last date on	Tentaive schedule plan for mock trial run		Remarks
70	Ramganga	Hydro	3*66								
71	Chibro	Hydro	4*60	Yes							
72	Dhalipur	Hydro	3*17								
73	Khodri	Hydro	4*30								
74	Khatima	Hydro	3*13.8								
75	Chilla	Hydro	4*36								
76	Maneri Bhali-I	Hydro	3*30								
77	Maneri Bhali-II	Hydro	4*76								
78	UJVNL IPP	Hydro	58.85								
L&T											
79	Singoli Bhatwari	Hydro	3*33					Not done yet	03-Dec-24	03-Dec-24	Consent did not given for mock drill by SLDC Dehradun due to constraint of partial power evacuation
JSW											
80	Karcham Wangtoo	Hydro	4*250	Yes				29-Dec-21			It is submitted that we shall perform black start Mock trial test after completion of M4 and M5 of GIS overhauling. In the meantime, Karcham Wangtoo HEP can carry out black start exercise of generating unit only at this point (dead bus charging).
81	Baspa	Hydro	3*100	Yes							

Sr. No.	Scheme Name	Responsible agency for conducting Mock Test exercise	Date of review of SPS	Last date on which Mock testing carried out	Tentaitve schedule of SPS Mock testing during 2024-25	Remarks
1	SPS for WR-NR corridor - 765kV Agra-Gwalior D/C	POWERGRID/NRLDC		12-03-2024		
2	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI/NRLDC				
3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID/NRLDC				
4	SPS for 1500 MW HVDC Rihand-Dadri Bipole related contingency	POWERGRID/NRLDC				
5	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID/NRLDC				
6	SPS for contingency due to tripping of multiple lines at Dadri(NTPC)	NTPC				
7	SPS for reliable evacuation of power from NJPS, Rampur, Sawra Kuddu, Baspa, Sorang, Naitwar Mori and Karcham Wangtoo HEP	SJVN/HPPTCL/JSW/NRLDC			counducted on 19-12-2024	
8	SPS for Reliable Evacuation of Ropar Generation	Punjab				
9	SPS for Reliable Evacuation of Rosa Generation	Uttar Pradesh		07-05-2022	counducted on 20-04-2024	
10	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS				
11	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan				
12	SPS for evacuation of Anpara Generation Complex	Uttar Pradesh		06-07-2020		
13	SPS for evacuation of Lalitpur TPS Generation	Uttar Pradesh		14-07-2018	counducted on 21.05.2024	
14	SPS for Reliable Evacuation of Bara TPS Generation	Uttar Pradesh				
15	SPS for Lahal Generation	Himachal Pradesh		08-07-2020		
16	SPS for Transformers at Ballabhgarh (PG) substation	POWERGRID				
17	SPS for Transformers at Maharanibagh (PG) substation	POWERGRID				
18	SPS for Transformers at Mandola (PG) substation	POWERGRID				
19	SPS for Transformers at Bamnauli (DTL) Substation	Delhi				
20	SPS for Transformers at Moradabad (UPPTCL) Substation	Uttar Pradesh			counducted on 20-04-2024	
21	SPS for Transformers at Muradnagar (UPPTCL) Substation	Uttar Pradesh		07-02-2023	counducted on 20-04-2024	
22	SPS for Transformers at Muzaffarnagar(UPPTCL) Substation	Uttar Pradesh			counducted on 20-04-2024	
23	SPS for Transformers at Greater Noida(UPPTCL) Substation	Uttar Pradesh			SPS Unhealthy	
24	SPS for Transformers at Agra (UPPTCL) Substation	Uttar Pradesh		12-07-2023		
25	SPS for Transformers at 400kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh		17-05-2023		
26	SPS for Transformers at 220kV Sarojininagar (UPPTCL) Substation	Uttar Pradesh		18-05-2022		
27	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh		19-05-2023	SPS Unhealthy	
28	SPS for Transformers at 220kV Unnao (UPPTCL) Substation	Uttar Pradesh				
29	SPS for Transformers at 400kV Sultanpur (UPPTCL) Substation	Uttar Pradesh			SPS Unhealthy	
30	SPS for Transformers at 400kV Bareilly (UPPTCL) Substation	Uttar Pradesh				
31	SPS for Transformers at 400kV Azamgarh (UPPTCL) Substation	Uttar Pradesh		14-05-2023	counducted on 06-05-2024	
32	SPS for Transformers at 400kV Mau (UPPTCL) Substation	Uttar Pradesh		17-01-2019	counducted on 27-04-2024	
33	SPS for Transformers at 400kV Gorakhpur (UPPTCL) Substation	Uttar Pradesh		14-05-2023	counducted on 27-04-2024	
34	SPS for Transformers at 400kV Sarnath (UPPTCL) Substation	Uttar Pradesh		19-05-2023	counducted on 23-05-2024	
35	SPS for Transformer at 400kV Rajpura (PSTCL) Substation	Punjab				
36	SPS for Transformers at 400kV Mundka (DTL) Substation	Delhi		19-06-2023		
37	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana				
38	SPS for Transformers at 400kV Ajmer (RVPN) Substation	Rajasthan			Condcuted on 10.09.2024	
39	SPS for Transformers at 400kV Merta (RVPN) Substation	Rajasthan			Condcuted on 12.09.2024	
40	SPS for Transformers at 400kV Chittorgarh (RVPN) Substation	Rajasthan			Condcuted on 31.08.2024 & 05.09.2024	
41	SPS for Transformers at 400kV Jodhpur (RVPN) Substation	Rajasthan			Condcuted on 24.09.2024	
42	SPS for Transformers at 400kV Bhadla (RVPN) Substation	Rajasthan			Condcuted on 27.09.2024	
43	SPS for Transformers at 400kV Ratangarh (RVPN) Substation	Rajasthan			Condcuted on 20.09.2024	
44	SPS for Transformers at 400kV Nehtaur(UPPTCL) Substation	Uttar Pradesh		05-07-2022		
45	SPS for Transformers at Obra TPS	Uttar Pradesh			counducted on 20-05-2024	
46	SPS for Transformers at 400KV Kashipur (PTCUL) substation	Uttarakhand		03-09-2023	Septemeber 2024	
47	SPS for Transformers at 400KV Fatehgarh Solar Park (AREPRL)	ADANI				
48	SPS to relive transmission congestion in RE complex (Bhadla2)	POWERGRID				
49	SPS for Transformers at 400kV Bikaner (RVPN) Substation	Rajasthan			Condcuted on 26.09.2024	
50	SPS for Transformers at 400kV Bawana (DTL) Substation	Delhi		06-09-2023		
51	SPS for Transformers at 400kV Bhilwara (RVPN) Substation	Rajasthan			Condcuted on 09.07.2024 & 10.07.2024	
52	SPS for Transformers at 400kV Hinduan (RVPN) Substation	Rajasthan			Condcuted on 26.09.2024	
53	SPS for Transformers at 400kV Suratgarh (RVPN) Substation	Rajasthan				During frequent actual operation of SPS scheme. All alarm & tripping status found OK