



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

**विषय: प्रचालन समन्वय उप-समिति की 231<sup>वीं</sup> बैठक की कार्यसूची।**

**Subject: Agenda of the 231<sup>st</sup> OCC meeting.**

प्रचालन समन्वय उप-समिति की 231<sup>वीं</sup> बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **14.05.2025** 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 द्वारा प्रदान किया जाएगा।

कृपया बैठक में उपस्थित होने की सुविधा प्रदान करें।

The **231<sup>st</sup>** meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **14.05.2025** 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 Omkishor**

**Date: 09-05-2025 16:58:59**

(ओमकिशोर)

कार्यपालक अभियंता (प्रचालन)

**सेवा में : प्रचालन समन्वय उप समिति के सभी सदस्य।**

**To : All Members of OCC**

## List of addressee (via mail)

OCC Members for FY 2025-26			
S. No.	OCC Member	Category	E-mail
1	NLDC	National Load Despatch Centre	<a href="mailto:nomination_awaited@susha@grid-india.in">nomination awaited (susha@grid-india.in)</a>
2	NRLDC	Northern Regional Load Despatch Centre	<a href="mailto:somara.lakra@grid-india.in">somara.lakra@grid-india.in</a>
3	CTUIL	Central Transmission Utility	<a href="mailto:sandeepk@powergrid.in">sandeepk@powergrid.in</a>
4	PGCIL	Central Government owned Transmission Company	<a href="mailto:rtamc.nr1@powergrid.in">rtamc.nr1@powergrid.in</a> <a href="mailto:rtamcjammu@powergrid.in">rtamcjammu@powergrid.in</a> <a href="mailto:cpcc.nr3@powergrid.in">cpcc.nr3@powergrid.in</a>
5	NTPC	Central Generating Company	<a href="mailto:RAMESHSINGH@NTPC.CO.IN">RAMESHSINGH@NTPC.CO.IN</a>
6	BBMB		<a href="mailto:powerc@bbmb.nic.in">powerc@bbmb.nic.in</a>
7	THDC		<a href="mailto:ravindrassrana@thdc.co.in">ravindrassrana@thdc.co.in</a>
8	SJVN		<a href="mailto:sjvn.cso@sjvn.nic.in">sjvn.cso@sjvn.nic.in</a>
9	NHPC		<a href="mailto:surendramishra@nhpc.nic.in">surendramishra@nhpc.nic.in</a>
10	NPCIL		<a href="mailto:df@npcil.co.in">df@npcil.co.in</a>
11	Delhi SLDC	State Load Despatch Centre	<a href="mailto:gmsldc@delhisldc.org">gmsldc@delhisldc.org</a>
12	Haryana SLDC		<a href="mailto:cesocomml@hvpn.org.in">cesocomml@hvpn.org.in</a>
13	Rajasthan SLDC		<a href="mailto:ce.ld@rvpn.co.in">ce.ld@rvpn.co.in</a>
14	Uttar Pradesh SLDC		<a href="mailto:cepso@upslc.org">cepso@upslc.org</a>
15	Uttarakhand SLDC		<a href="mailto:se_sldc@ptcul.org">se_sldc@ptcul.org</a>
16	Punjab SLDC		<a href="mailto:ce-sldc@pstcl.org">ce-sldc@pstcl.org</a>
17	Himachal Pradesh SLDC		<a href="mailto:cehpsldc@gmail.com">cehpsldc@gmail.com</a>
18	DTL	State Transmission Utility	<a href="mailto:bl.gujar@dtl.gov.in">bl.gujar@dtl.gov.in</a>
19	HVPNL		<a href="mailto:cetspkl@hvpn.org.in">cetspkl@hvpn.org.in</a>
20	RRVNL		<a href="mailto:ce.ppm@rvpn.co.in">ce.ppm@rvpn.co.in</a>
21	UPPTCL		<a href="mailto:smart.saxena@gmail.com">smart.saxena@gmail.com</a>
22	PTCUL		<a href="mailto:ce_oandmk@ptcul.org">ce_oandmk@ptcul.org</a>
23	PSTCL		<a href="mailto:ce-tl@pstcl.org">ce-tl@pstcl.org</a>
24	HPPTCL		<a href="mailto:gmprojects.tcl@hpmail.in">gmprojects.tcl@hpmail.in</a>
25	IPGCL	State Generating Company	<a href="mailto:ncsharma@ipgcl-ppcl.nic.in">ncsharma@ipgcl-ppcl.nic.in</a>
26	HPGCL		<a href="mailto:seom2.rgtpp@hpgcl.org.in">seom2.rgtpp@hpgcl.org.in</a>
27	RRVUNL		<a href="mailto:ce.ppmcit@rrvun.com">ce.ppmcit@rrvun.com</a>
28	UPRVUNL		<a href="mailto:cgm.to@uprvunl.org">cgm.to@uprvunl.org</a>
29	UJVNL		<a href="mailto:gm_engg_ujvn@yahoo.co.in">gm_engg_ujvn@yahoo.co.in</a>
30	HPPCL		<a href="mailto:gm_generation@hppcl.in">gm_generation@hppcl.in</a>
31	PSPCL	State Generating Company & State owned Distribution Company	<a href="mailto:ce-ppr@pspcl.in">ce-ppr@pspcl.in</a>
32	DHBVN	State owned Distribution Company (alphabetical rotational basis/nominated by state govt.)	<a href="mailto:nomination_awaited(md@dhbvn.org.in)">nomination awaited (md@dhbvn.org.in)</a>
33	Ajmer Vidyut Vitran Nigam Ltd.		<a href="mailto:nomination_awaited(md.avvnl@rajasthan.gov.in)">nomination awaited (md.avvnl@rajasthan.gov.in)</a>
34	Purvanchal Vidyut Vitaran Nigam Ltd.		<a href="mailto:nomination_awaited(mdpurvanchalvnl@gmail.com)">nomination awaited (mdpurvanchalvnl@gmail.com)</a>

35	UPCL		<a href="mailto:cgmupcl@yahoo.com">cgmupcl@yahoo.com</a>
36	HPSEB		<a href="mailto:cesysophpsebl@gmail.com">cesysophpsebl@gmail.com</a>
37	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	<a href="mailto:sanjay.bhargava@tatapower.com">sanjay.bhargava@tatapower.com</a>
38	Aravali Power Company Pvt. Ltd		<a href="mailto:amit.hooda01@apcpl.co.in">amit.hooda01@apcpl.co.in</a>
39	Apraave Energy Ltd.,		<a href="mailto:niraj.gupta@apraava.com">niraj.gupta@apraava.com</a>
40	Talwandi Sabo Power Ltd.		<a href="mailto:ravinder.thakur@vedanta.co.in">ravinder.thakur@vedanta.co.in</a>
41	Nabha Power Limited		<a href="mailto:Durvesh.Yadav@larsentoubro.com">Durvesh.Yadav@larsentoubro.com</a>
42	MEIL Anpara Energy Limited		<a href="mailto:arun.tholia@meilanparapower.com">arun.tholia@meilanparapower.com</a>
43	Rosa Power Supply Company Ltd		<a href="mailto:Suvendu.Dey@relianceada.com">Suvendu.Dey@relianceada.com</a>
44	Lalitpur Power Generation Company Ltd		<a href="mailto:avinashkumar.ltp@lpgcl.com">avinashkumar.ltp@lpgcl.com</a>
45	MEJA Urja Nigam Ltd.		<a href="mailto:rsjuneja@ntpc.co.in">rsjuneja@ntpc.co.in</a>
46	Adani Power Rajasthan Limited		<a href="mailto:manoj.taunk@adani.com">manoj.taunk@adani.com</a>
47	JSW Energy Ltd. (KWHEP)		<a href="mailto:roshan.zipta@jsw.in">roshan.zipta@jsw.in</a>
48	Transition Cleantech Services Private Limited	IPP having less than 1000 MW installed capacity (alphabetical rotational basis)	<b>nomination awaited</b> ( <a href="mailto:kswamidoss@evrenenergy.com">kswamidoss@evrenenergy.com</a> )
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.	<a href="mailto:sojpdd@gmail.com">sojpdd@gmail.com</a>
50	UT of Ladakh		<a href="mailto:cepdladakh@gmail.com">cepdladakh@gmail.com</a>
51	UT of Chandigarh		<a href="mailto:seelo-chd@nic.in">seelo-chd@nic.in</a>
52	Tata Power Delhi Distribution Limited	Private Distribution Company in region (alphabetical rotational basis)	<b>nomination awaited</b> ( <a href="mailto:sandeep.k@tatapower-ddl.com">sandeep.k@tatapower-ddl.com</a> )
53	Gurgaon Palwal Transmission Limited	Private transmission licensee (nominated by central govt.)	<b>nomination awaited</b> ( <a href="mailto:Lokendra.Ranawat@indigrid.com">Lokendra.Ranawat@indigrid.com</a> )
54	PTC India Limited	Electricity Trader (nominated by central govt.)	<b>nomination awaited</b> ( <a href="mailto:bibhuti.prakash@ptcindia.com">bibhuti.prakash@ptcindia.com</a> )

## Contents

A.1. Confirmation of Minutes.....	5
A.2. Status of action taken on decisions of 230 <sup>th</sup> OCC meeting of NRPC.....	5
A.3. Review of Grid operations.....	5
A.4. Maintenance Programme of Generating Units and Transmission Lines.....	6
A.5. Planning of Grid Operation.....	6
A.6. Follow-up of issues from previous OCC Meetings- Status update.....	7
A.7. NR Islanding scheme.....	7
A.8. Coal Supply Position of Thermal Plants in Northern Region.....	7
A.9. Updating outage Details by Generating Station/utilities (Agenda by CEA).....	9
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.).....	9
A.11. Periodic testing of generators and FACTS/HVDC Devices (Agenda by NRPC Sectt.)	11
A.12. Temporary Shifting of ICT-02 (RHS) to LHS to Mitigate Generation Loss due to ICT Failure (Agenda by Saurya Urja Company of Rajasthan Ltd.).....	13
A.13. Intraday Downward Schedule Revision Constraint in ISGS (Agenda by TPDDL).	13
A.14. Constraint in achieving the ram rate scheduled by UPSLDC (Agenda by Khurja STPP)	14
B.1. NR Grid Highlights for April 2025.....	14
B.2. State-wise transmission constraints anticipated in summer 2025.....	18
B.3. Expediting SPS implementation before summer 2025:.....	24
B.4. Actions taken based on committee recommendation report on 17th June load loss event	26
B.5. Shifting of Rihand-III to NR temporarily as agreed in 53 TCC and 78 NRPC meeting.	30
B.6. Grid Operation related issues in Northern region.....	33
B.7. Demand forecasting and resource adequacy related.....	37
B.8. Monitoring of Data center/Electrolysers and their compliances before connection to the grid	42
B.9. Mock testing of islanding scheme and simulation studies.....	44
B.10. Multiple element tripping events in Northern region in the month of April 2025...	48
B.11. Status of submission of DR/EL and tripping report of utilities for the month of April 2025	49
B.12. Mock testing of System Protection Schemes (SPS) in Northern Region.....	49
B.13. Confirmation of regarding implementation of proposed Overvoltage protection setting by committee.....	51
B.14. Long Outage of 400KV BUS-3 AT MOGA(PG).....	51
B.15. Long Outage due to Tower Collapse:.....	52
B.16. Detailed analysis of resource adequacy and peak demand scenarios in view of anticipated high demand in coming months:.....	52

**खण्ड-क: उ.क्षे.वि.स.****Part-A: NRPC****A.1. Confirmation of Minutes**

230<sup>th</sup> OCC meeting was held on 17.04.2025. Minutes of the meeting were issued vide letter dt. 08.05.2025. So far, no comments on above MoM received.

**Decision required from Forum:**

*Forum may approve the minutes of 230<sup>th</sup> OCC meeting.*

**A.2. Status of action taken on decisions of 230<sup>th</sup> OCC meeting of NRPC**

A.2.1. Status of action taken on decisions of 230<sup>th</sup> NRPC meeting is attached as **Annexure- A.I.**

**A.3. Review of Grid operations****A.3.1. Power Supply Position (Provisional) for April 2025**

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of April-2025 is as under:

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipate d	Actua l	% Variatio n	Anticipate d	Actual	% Variatio n
CHANDIGARH	(Avl)	150	150	-0.3%	390	322	-17.4%
	(Req )	140	150	6.9%	288	322	11.8%
DELHI	(Avl)	4122	3180	-22.8%	6448	6014	-6.7%
	(Req )	2950	3180	7.8%	5650	6014	6.4%
HARYANA	(Avl)	6360	5210	-18.1%	11141	9937	-10.8%
	(Req )	4889	5224	6.8%	9909	9937	0.3%
HIMACHAL PRADESH	(Avl)	1053	986	-6.3%	1925	1818	-5.6%
	(Req )	1057	990	-6.3%	1976	1818	-8.0%
J&K and LADAKH	(Avl)	1270	1624	27.8%	2510	2844	13.3%
	(Req )	1711	1625	-5.0%	3263	2844	-12.8%
PUNJAB	(Avl)	6910	5236	-24.2%	11230	11276	0.4%
	(Req )	4744	5256	10.8%	10410	11276	8.3%
RAJASTHAN	(Avl)	9220	8845	-4.1%	19210	15800	-17.8%
	(Req )	9300	8845	-4.9%	17000	15800	-7.1%
UTTAR PRADESH	(Avl)	13170	13042	-1.0%	27700	26278	-5.1%
	(Req )	12900	13043	1.1%	27700	26278	-5.1%
UTTARAKHAN D	(Avl)	1284	1320	2.8%	2320	2305	-0.6%
	(Req )	1305	1328	1.8%	2360	2460	4.2%

NORTHERN REGION	(Avl)	43539	39592	-9.1%	80000	69900	-12.6%
	(Req )	38996	39640	1.7%	69400	69900	0.7%

As per above, negative / significant variation ( $\geq 5\%$ ) in Actual Power Supply Position(Provisional) vis-à-vis Anticipated figures is observed for the month of April-2025 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, and in terms of Peak Demand similar variation is noted for Chandigarh, Delhi, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, 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 2<sup>nd</sup> and 15<sup>th</sup> 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 June-2025 is scheduled on 13-May-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 June-2025 is scheduled on 13-MAY-2025 via Video conferencing.

#### A.5. Planning of Grid Operation

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	190.0	420	No Revision submitted
	Requirement	246.0	481	
	Surplus / Shortfall	-56.0	-61	
	% Surplus / Shortfall	-22.8%	-12.7%	
DELHI	Availability	4420.0	9910	No Revision submitted
	Requirement	4727.0	9284	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Surplus / Shortfall	-307.0	626	
	% Surplus / Shortfall	-6.5%	6.7%	
HARYANA	Availability	7440.0	14480	No Revision submitted
	Requirement	8316.0	15911	
	Surplus / Shortfall	-876.0	-1431	
	% Surplus / Shortfall	-10.5%	-9.0%	
HIMACHAL PRADESH	Availability	2150.0	3970	No Revision submitted
	Requirement	1287.0	2109	
	Surplus / Shortfall	863.0	1861	
	% Surplus / Shortfall	67.1%	88.2%	
J&K LADAKH and	Availability	1910.0	3340.0	No Revision submitted
	Requirement	1775.0	3071.0	
	Surplus / Shortfall	135.0	269	
	% Surplus / Shortfall	7.6%	8.8%	
PUNJAB	Availability	7860.0	15270	No Revision submitted
	Requirement	9177.0	17097	
	Surplus / Shortfall	-1317.0	-1827	
	% Surplus / Shortfall	-14.4%	-10.7%	
RAJASTHAN	Availability	10430.0	19870	No Revision submitted
	Requirement	11823.0	19342	
	Surplus / Shortfall	-1393.0	528	
	% Surplus / Shortfall	-11.8%	2.7%	
UTTAR PRADESH	Availability	18810	32000	06-May-2025
	Requirement	18150	32000	
	Surplus / Shortfall	660	0	
	% Surplus / Shortfall	3.6%	0.0%	
UTTARAKHAND	Availability	1680	2725	07-May-2025
	Requirement	1710	2800	
	Surplus / Shortfall	-30	-75	
	% Surplus / Shortfall	-1.8%	-2.7%	
NORTHERN REGION	Availability	55310.0	99200	
	Requirement	58493.0	99600	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Surplus / Shortfall	-3183.0	-400	
	% Surplus / Shortfall	-5.4%	-0.4%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of May-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.II**.

**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.III**.

**Members may kindly deliberate.**

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

A.8.1 In 186<sup>th</sup> 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 07<sup>th</sup> May 2025) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Req'd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	0.87	17	16.2
ANPARA TPS	2630	0.80	17	23.4
BARKHERA TPS	90	0.44	26	55.1
DADRI (NCTPP)	1820	0.59	26	19.6
GH TPS (LEH.MOH.)	920	0.56	26	33.1
GOINDWAL SAHIB TPP	540	0.41	26	39.9
HARDUAGANJ TPS	1265	0.62	26	34.1
INDIRA GANDHI STPP	1500	0.61	26	43.9
KAWAI TPS	1320	0.65	26	20.9
KHAMBARKHERA TPS	90	0.58	26	57.6

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
KOTA TPS	1240	0.67	26	15.1
KUNDARKI TPS	90	0.58	26	40.3
LALITPUR TPS	1980	0.70	26	23.7
MAHATMA GANDHI TPS	1320	0.60	26	32.2
MAQSOODPUR TPS	90	0.58	26	52.4
MEJA STPP	1320	0.36	26	24.6
OBRA TPS	1094	0.50	26	17.3
PANIPAT TPS	710	0.59	26	50.8
PARICHHA TPS	1140	0.60	26	20.0
PRAYAGRAJ TPP	1980	0.80	26	23.9
RAJIV GANDHI TPS	1200	0.33	26	42.6
RAJPURA TPP	1400	0.79	26	22.9
RIHAND STPS	3000	0.89	17	23.9
ROPAR TPS	840	0.75	26	43.7
ROSA TPP Ph-I	1200	0.66	26	30.5
SINGRAULI STPS	2000	0.74	17	22.6
SURATGARH TPS	1500	0.40	26	17.3
TALWANDI SABO TPP	1980	0.55	26	12.8
TANDA TPS	1760	0.82	26	30.6
UNCHAHAHAR TPS	1550	0.75	26	17.3
UTRAULA TPS	90	0.59	26	44.6
YAMUNA NAGAR TPS	600	0.68	26	25.6
CHHABRA-I PH-1 TPP	500	0.73	26	23.8
KALISINDH TPS	1200	0.72	26	17.9
SURATGARH STPS	1320	0.71	26	27.8
CHHABRA-I PH-2 TPP	500	0.81	26	23.2
CHHABRA-II TPP	1320	0.52	26	31.3
JAWAHARPUR STPP	660	0.52	26	20.7

#### 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 221<sup>st</sup> 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 April 2025 is attached as **Annexure-A.IV.**

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	
<b>Chandigarh</b>	15.850	19.020	22.190	22.190	<b>79.248</b>
<b>Delhi</b>	299.338	359.205	419.073	419.073	<b>1496.690</b>
<b>Haryana</b>	526.332	631.599	736.865	736.865	<b>2631.661</b>
<b>Himachal Pradesh</b>	97.246	116.695	136.145	136.145	<b>486.231</b>
<b>UT J&amp;K &amp; Ladakh</b>	145.406	174.487	203.569	203.569	<b>727.031</b>
<b>Punjab</b>	601.638	721.966	842.293	842.293	<b>3008.190</b>
<b>Rajasthan</b>	811.056	973.268	1135.479	1135.479	<b>4055.282</b>
<b>Uttar Pradesh</b>	1191.769	1430.122	1668.476	1668.476	<b>5958.843</b>
<b>Uttarakhand</b>	113.069	135.682	158.296	158.296	<b>565.343</b>
<b>Total</b>	<b>3801.704</b>	<b>4562.045</b>	<b>5322.386</b>	<b>5322.386</b>	<b>19008.52</b>

A.10.3. In 226<sup>th</sup> OCC and 227<sup>th</sup> 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 15<sup>th</sup> 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 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.

A.10.5. As per the information received from SLDC's of NR States/UTs the current relief quantum at different stages of AUFLS is mentioned 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	NIL	NIL	NIL	NIL	NIL
Delhi	322	399	442	434	1597
Haryana	735	730	815	897	3175
Himachal Pradesh	432	365	183	97	1077
UT J&K & Ladakh	79	103	101	105	388
Punjab	249	298	1042	270	1859
Rajasthan	812	974	1138	1142	4066
Uttar Pradesh	2580	2188	2013	1757	8538
Uttarakhand	319	138	167	241	865
<b>Total</b>	<b>5528</b>	<b>5195</b>	<b>5900</b>	<b>4943</b>	<b>21566</b>

A.10.6. In 229<sup>th</sup> OCC meeting, forum suggested to have a separate meeting before next NPC meeting to get the status of feeder-wise, Stage-wise AUFLS quantum data of states till March, 2025.

A.10.7. Accordingly, a meeting under the chairmanship of Member Secretary, NRPC with SLDC's and STU's of States/UTs of NR was held on **01.05.2025** to get the updated status of feeder-wise, Stage-wise AUFLS quantum data of states till March, 2025.

A.10.8. SLDC's and STU's of States/UTs of NR to submit updated status of feeder-wise, Stage-wise AUFLS quantum data as on 31.03.2024 in the requisite format (Copy attached as **Annexure-A.V**).

**Respective SLDC's of NR to update the status.**

**A.11. Periodic testing of generators and FACTS/HVDC Devices (Agenda by NRPC Sectt.)**

- A.11.1. 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.
- A.11.2. 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.
- A.11.3. 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

A.11.4. In accordance with above, Generators and HVDC/FACT owners were supposed to furnish the Testing schedule for 2025-26 by 31st October 2024.

A.11.5. In 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.

A.11.6. In 230<sup>th</sup> OCC meeting, MS NRPC asked Generators and HVDC/FACT owners to furnish Testing schedule for 2025-26 in the format attached at Annexure-A.V. to [seo-nrpc@nic.in](mailto:seo-nrpc@nic.in).

A.11.7. In view of the above Generators and HVDC/FACT owners are requested to furnish Testing schedule for 2025-26 in the format attached as **Annexure-A.VI to [seo-nrpc@nic.in](mailto:seo-nrpc@nic.in)**.

**Utilities to update status.**

#### **A.12. Temporary Shifting of ICT-02 (RHS) to LHS to Mitigate Generation Loss due to ICT Failure (Agenda by Saurya Urja Company of Rajasthan Ltd.)**

A.12.1. Saurya Urja Company of Rajasthan Ltd. (SUCRL) has submitted that it is a 50:50 joint venture with the Government of Rajasthan, currently managing a 1000 MW Solar Park at Bhadla Phase-III, which involves 500MW (RHS) connected with CTU &

500MW(LHS) connected with STU through dedicated pooling substations for evacuation of solar power generated by various Solar Power Developers (SPDs).

- A.12.2. It has informed that SUCRL is presently facing a critical operational challenge due to the failure of two 125 MVA ICTs at the LHS pooling substation, second failure occurred on 22nd April 2025. This failure has significantly affected the power evacuation capacity of the LHS Pooling substation, resulting in 125MW curtailment of solar generation due to non-availability of Transformer.
- A.12.3. As an immediate mitigation step, it is proposed to temporarily shift the healthy ICT-02 transformer from the RHS substation to the LHS substation. The objective is to restore the evacuation capability for LHS-connected SPDs. Existing and Proposed arrangements are attached at **Annexure-A.VII**.
- A.12.4. Given that the proposed ICT shifting involves multi-stakeholder considerations, the key aspects requiring deliberation and various consents due to inter-regional operational impact and the involvement of multiple stakeholders, SUCRL has requested OCC forum for comprehensive deliberation and necessary approvals.

***Members may kindly deliberate.***

### **A.13. Intraday Downward Schedule Revision Constraint in ISGS (Agenda by TPDDL)**

- A.13.1. TPDDL has submitted that with the implementation of the amendment to Regulation 49 of the Indian Electricity Grid Code (IEGC), TPDDL is facing serious challenges in maintaining demand-supply balance efficiently, especially during sudden intraday weather events.
- A.13.2. They have mentioned that both demand and renewable generation are increasingly weather-dependent. During unforeseen changes in weather, thermal generation becomes the only available balancing tool. However, the revised provisions now restrict DISCOMs from revising schedules downward post 14:30 hrs on D-1 unless scheduled quantum is above the respective share of the MTDL.
- A.13.3. For instance, on 11th April 2025, a sudden thunderstorm led to a demand crash of ~450 MW around 18:00 hrs. Due to MTDL constraints, they were unable to revise the schedule of Aravali Jhajjar station, resulting in:
- 1.40 MUs of excess energy scheduled at a variable cost of ₹4.43/unit
  - Compensation done through merit order violation and low-price sale in RTM, leading to significant financial losses

Similar instances have occurred multiple times in April 2025 alone.

- A.13.4. The amendment has led to significant operational challenges. It restricts the real-time flexibility of utilities to manage sudden demand fluctuations, especially during unexpected weather events, thereby increasing stress on the grid. As thermal plants are often the only dispatchable option during such situations, curtailing their ramp-down flexibility severely limits balancing options. Consequently, above MTDL scheduled energy is often sold in the Real-Time Market (RTM) at significantly lower prices or managed through backing down of low-cost generation plants by violation of MOD, both of which result in financial inefficiencies and increased operational burden for the distribution utility.

A.13.5. TPPDL has requested up for detailed deliberation on the matter in the OCC forum for a balanced and practical solution in the collective interest of all stakeholders.

**Members may kindly deliberate.**

**A.14. Constraint in achieving the ram rate scheduled by UPSLDC (Agenda by Khurja STPP)**

- A.14.1. Khurja STPP has submitted that Khurja Unit's, 1% of the MCR Load is 92.32MW/block, which mean that unit can ramp up or down by 92.32MW in 15 min time block. For this ramp rate the block average load achievable is 46MW approximately. However, in current Load scheduling with UPSLDC they are getting 92.32MW as average load during ramp-up or down in every block instead of 46MW.
- A.14.2. To achieve 92.32MW as average load in each block the machine has to increase/decrease load by approximately 140MW which is very high.
- A.14.3. This high quantum of Load change in a 15-min time block is not desirable for safe and sustainable operation of the unit. The high rate has adverse effect on boiler and turbine due to high thermal stress as well as repeated expansion and contraction which may lead to deterioration of boiler tube life, LP turbine last stage blades,
- A.14.4. Turbine driven feed pumps and all other major equipment's and has also commercial implications in terms of UI/OI as per DSM regulation.

**Members may kindly deliberate.**

**खण्ड-ख: उ.क्षे.भा.प्रे.के.**

**Part-B: NRLDC**

**B.1. NR Grid Highlights for April 2025**

Detailed presentation on grid highlights of April'2025 will be shared by NRLDC in OCC meeting.

**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	322	30.04.25 at 15:00	6.4	30.04.25	5.0
2	Delhi	6014	28.04.25	122.3	28.04.25	104.4

			at 15:30			
3	Haryana	9937	17.04.25 at 23:45	213.6	30.04.25	173.7
4	H.P.	1818	04.04.25 at 07:45	37.1	26.04.25	33.2
5	J&K	2844	04.04.25 at 07:00	57.6	04.04.25	54.1
6	Punjab	11276	30.04.25 at 07:00	217.6	30.04.25	175.5
7	Rajasthan	15730	30.04.25 at 10:00	329.5	30.04.25	294.7
8	UP	26278	25.04.25 at 21:32	505.1	25.04.25	434.7
9	Uttarakhand	2305	24.04.25 at 20:00	50.1	30.04.25	43.9
<b>*10</b>	<b>Northern Region</b>	<b>69880</b>	<b>30.04.25 at 21:00</b>	<b>1524.6</b>	30.04.25	<b>1319.3</b>

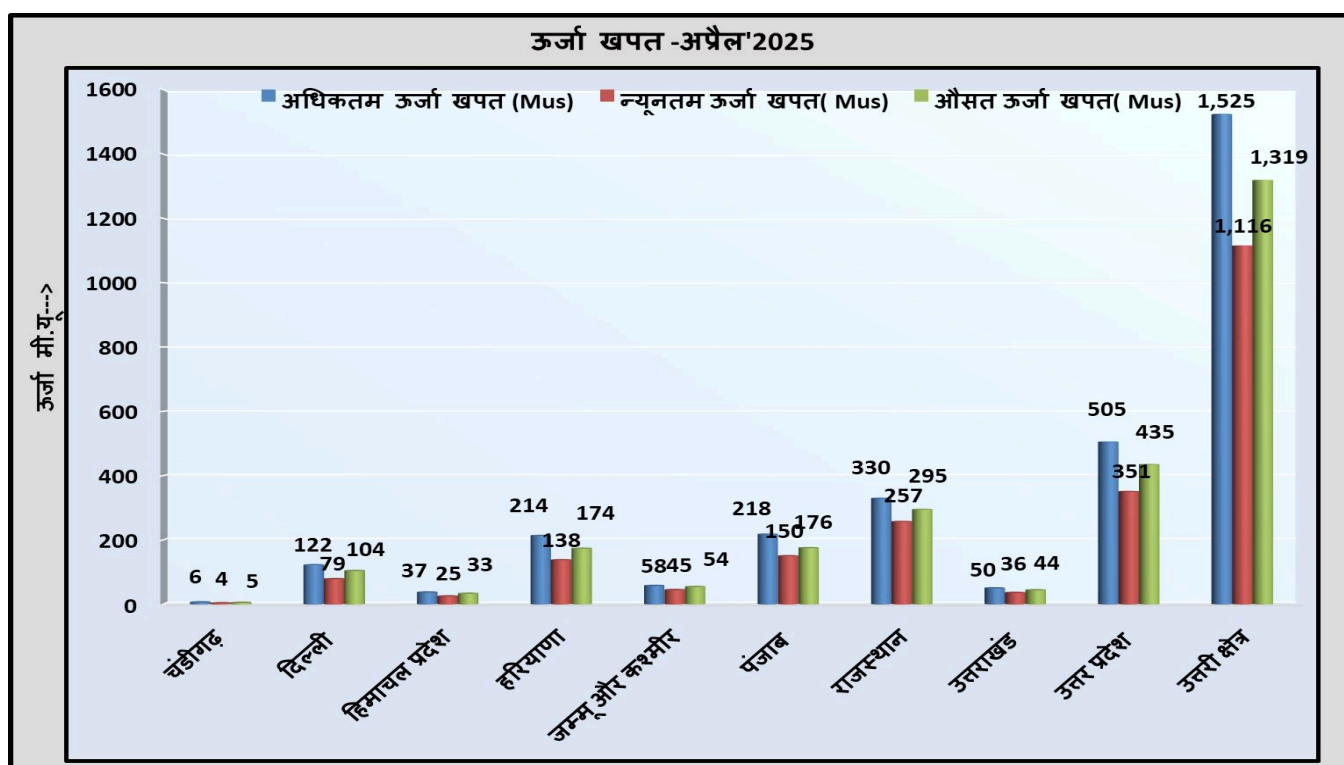
\*As per SCADA

- In Apr'25, the Maximum energy consumption of Northern Region was 1525 MUs on 30th Apr'25 and it was 12.08 % higher than Apr'24 (1360 MU 29th Apr'24)
- 
- In Apr'25, the Average energy consumption per day of Northern Region was 1319 MUs and it was 6.27 % higher than Apr'24 (1214 MUs/day)
- 
- In Apr'25, the Maximum Demand met of Northern Region was 69880 MW on 30th Apr'25 @21:00 hours (as per scada data) as compared to 62884 MW on 25th Apr'24 @22:00hours.
- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the Apr'24 vs Apr'25**

क्षेत्र/राज्य	फ़रवरी- 2024	फ़रवरी- 2025	% अंतर
चंडीगढ़	4	5	14.5%
दिल्ली	95	104	10.2%
हिमाचल प्रदेश	31	33	5.6%
हरियाणा	156	174	11.6%

जम्मू और कश्मीर	50	54	7.5%
पंजाब	154	176	14.2%
राजस्थान	271	295	8.7%
उत्तराखंड	43	44	1.1%
उत्तर प्रदेश	436	435	-0.4%
<b>उत्तरी क्षेत्र</b>	<b>1241</b>	<b>1319</b>	<b>6.3%</b>

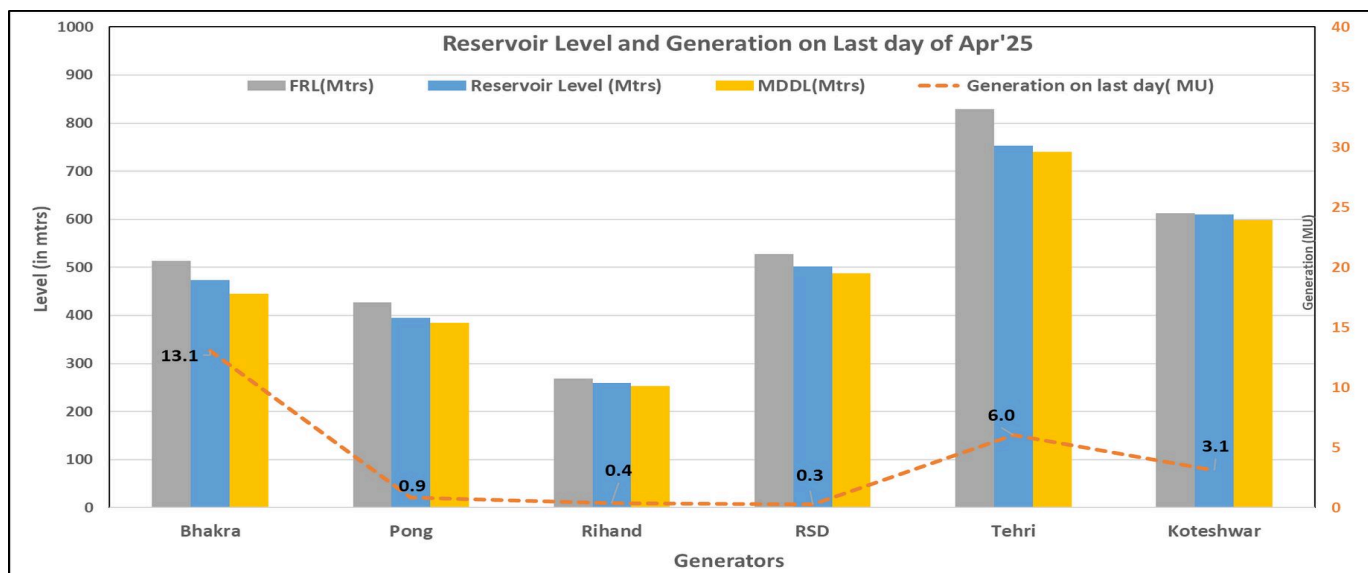
## Energy Consumption



## Frequency profile

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Apr'25	50.004	50.487 (06.04.25 at 13:03:00 hrs)	49.424 (21.04.25 at 19:04:20 hr)	5.16	75.64	19.20
Apr'24	50.00	50.43 (18.04.24 at 18:04:20 hrs)	49.55 (06.04.24 at 11:24:10 hrs)	5.3	78.6	16.2

## Reservoir Level and Generation on Last Day of Month



Reservoir Level on last day of Apr month (Low: -ve) (High: +ve)

Year	Bhakra	Pong	Rihand HPS	RSD	Tehri	Koteswar
2025	474	394	259	502	754	610
2024	477	404	256	506	744	603
Diff (in m)	-3.4	-9.7	2.8	-3.9	9.2	7.9

**Detailed presentation on grid highlights of Apr'2025 will be shared by NRLDC in OCC meeting.**

## B.2. State-wise transmission constraints anticipated in summer 2025

During the high demand season, the transmission system in Northern region remains heavily loaded. Transmission constraints observed in the grid during high demand period are regularly being highlighted in OCC meetings. Same is also being submitted to CTUIL and CEA through quarterly operational feedback.

Even after several follow-ups, it is observed that progress of several transmission elements are not upto the mark and expeditious actions from transmission utilities are required so that minimal issues are observed at transmission level during the high demand season.

State-wise anticipated issues and measures required thereof are listed below. Concerned transmission utilities are requested to provide update and ensure that these transmission elements are possibly commissioned before the high demand season.

**Punjab:**

- Expeditious commissioning of 2<sup>nd</sup> 400/220kV ICT at Dhanansu Substation. Timeline of March 2025 was provided in the meeting by PSTCL in 53TCC and 78 NRPC meeting.
- PSTCL to study requirement of ICT capacity augmentation at 400/220kV Ludhiana(PG) and take it up timely.
- POWERGRID to expedite commissioning of 400/220kV 500MVA Nallagarh ICT-4. During 53TCC and 78 NRPC meeting, POWERGRID representative informed that 500MVA Nallagarh ICT-4 is planned for commissioning by Sep 2025, however they would try and commission it by June 2025.
- PSPCL to take up the matter with Talwandi Saboo thermal generating units for minimising outages of (intrastate) thereby reducing dependency on power import from ISTS.

During 230 OCC meeting,

Punjab representative informed that ICT at Dhanansu(PS) is planned to be commissioned by 25th April 2025, shutdown from 22nd April has already been planned in this regard. He further stated that with the commissioning of new ICT at Dhanansu(PS), ATC of Punjab will also increase by approx. 300 MW.

CGM NRLDC requested Punjab to share their study w.r.t. ATC enhancement along with the schedule of ICT commissioning to NRLDC.

It was further highlighted that as generation at Parabati\_II HEP (total ~800MW) has been commissioned and in case of its peak generation during high inflow season, existing 3\*315 MVA ICTs at Nallagarh will become N-1 non-complaint. Expected increase in loading at Nallagarh ICT is 33MW per ICT (245-255 MW per ICT to ~285MW per ICT) and N-1 loading limit is ~255MW.

POWERGRID stated that new ICT is delayed as it is under manufacturing stage. In view of this, it is planned to commission the spare ICT from Ludhiana(PG) and tentative schedule of its commissioning at Nallagarh(PG) is 1st week of June 2025.

NRLDC representative highlighted the significantly large number i.e., 53 (no's since Jan 2024) of outages of generating units as Talwandi Saboo TPS (TSPL). SLDC-Punjab was requested to take necessary follow up actions and ensure availability of TSPL generation during upcoming summer.

**Accordingly, in upcoming 231 OCC meeting, PSTCL representative is requested to share:**

- **Status of commissioning of 400/220kV Dhanansu ICT-2.**
- **ATC/TTC assessment for paddy 2025 which becomes important as Punjab is configured as separate bid area.**
- **Proposal for SPS at 400/220kV Ludhiana(PG) to be discussed based on anticipated loading during paddy 2025.**
- **Measures taken for minimising outages of Talwandi Saboo thermal generating units**

**Haryana:**

During 53TCC and 78 NRPC meeting, NRLDC representative further requested HVPN regarding:

- Action plan for N-1 non-compliance being observed in real-time at 765/400kV Bhiwani, 400/220kV Panipat (BBMB), Kabulpur, Hisar ICTs by Haryana SLDC.
- SPS implementation till ICT capacity augmentation.
- Measures required for minimising MVAR drawl from ISTS to avoid low voltages.

HVPNL representatives agreed to provide inputs on the same in upcoming OCC meeting.

220kV Hisar (PG) - Hisar (IA) reconductoring needs to be expedited by POWERGRID.

During 230th OCC meeting,

HVPNL representative informed that new ICT at Kabulpur will be commissioned tentatively by 15th June and load at Panipat(BBMB) will also get relieved after LILO of 220kV line At 220kV Samalakha S/s. Further, it was informed that SPS at all three stations i.e., Panipat(BBMB), Kabulpur and Hissar will be implemented within approx. 01 month.

NRLDC representative raised concern over high reactive power drawl by Haryana from ISTS. It was requested to install the adequate capacitors for reactive power demand and minimize the MVAR drawl from ISTS to avoid low voltages.

***In upcoming 231 OCC meeting, Haryana SLDC to provide update of identification of feeders for SPS and measures taken to avoid low voltages during next 3-4 months.***

#### **Rajasthan:**

Constrained location	Status as available with NRLDC
N-1 contingency of 3*315=945 MVA ICT at Bhiwadi(PG)	Additional 500MVA ICT approved in 29 CMETS on 17.05.2024
N-1 contingency of 2*315+500=1130 MVA ICT at Bassi(PG)	Additional 500MVA ICT has been approved. Same is anticipated by 14.12.2025.
N-1 contingency of 315+500=815 MVA ICT at Neemrana(PG)	Additional 500MVA ICT has been approved in 36 NR CMETS held on 15.01.2025.
N-1 contingency of 2*500=1000 MVA ICT at Jaipur South(PG)	Additional 500MVA ICT has been approved in 36 NR CMETS held on 15.01.2025.
N-1 contingency of 2*315+500=1130 MVA ICT at Sikar(PG)	ICT Augmentation may be taken up in discussion with CTUIL/RVPNL.
N-1 contingency of 3*315=945 MVA ICT at Kankroli(PG)	ICT-4 has been approved and is expected to be commissioned by 22.09.2025.
N-1 contingency of 2*315=630 MVA ICT at Kotputli(PG)	Augmentation by 400/220 kV 500 MVA (3rd) ICT at Kotputli (PG) is expected by 31.12.2025
N-1 contingency of 2*315=630 MVA	As per latest status shared by Rajasthan SLDC order for

ICT at Deedwana(RVPN)	<p>10 no. ICT has been placed recently. First ICT is expected at Jaisalmer-II in Apr'25.</p> <p>All others expected by Sep'25.</p> <p>SPS has been implemented as temporary measure for some of the stations such as Chittorgarh (RVPN), Ajmer (RVPN), Merta (RVPN), Bikaner (RVPN), Jodhpur (RVPN), Suratgarh(RVPN), Ratangarh(RVPN)</p>
N-1 contingency of $3 \times 250 + 315 = 1065$ MVA ICT at Heerapura(RVPN)	
N-1 contingency of $3 \times 315 = 945$ MVA ICT at Chittorgarh (RVPN)	
N-1 contingency of $2 \times 315 = 630$ MVA ICT at Ajmer (RVPN)	
N-1 contingency of $2 \times 315 = 630$ MVA ICT at Merta (RVPN)	
N-1 contingency of $2 \times 315 = 630$ MVA ICT at Bikaner (RVPN)	
N-1 contingency of $2 \times 315 = 630$ MVA ICT at Jodhpur (RVPN)	
N-1 contingency of $2 \times 315 = 630$ MVA ICT at Suratgarh(RVPN)	
N-1 contingency of $3 \times 315 = 945$ MVA ICT at Ratangarh(RVPN)	
N-1 contingency of $1 \times 500 + 1 \times 315 = 815$ MVA ICT at Bhilwara (RVPN)	

During 53TCC and 78 NRPC meeting, RVPN representative intimated that:

- Out of the under implementation of additional capacity at 11 substations, ICTs have been commissioned at 2 no. 400/220 kV substations.
- ICT augmentation at other substations is expected by Sep 2025.
- NIT floated for upgradation of terminal equipment for 400 kV Bhadla-Bikaner D/C and 400 kV Jaisalmer-Kankani S/C.
- 4-month timeline (date of July 2025) was provided by RVPN for improvement of the condition of 400kV Bhadla(RJ)-Bikaner(RJ) D/C line.

NRLDC asked RVPN to take up equipment upgradation for other 4 intrastate lines, which are not having terminal equipment of commensurate ratings. RVPN representative agreed for the same.

During 230 OCC meeting,

*RVPNL representative informed that 08 number of ICTs i.e, Ramgarh, Jodhpur, Bhadla, Bikaner, Ajmer, Merta, Babai and Kalisindh are planned to be commissioned by September 2025. ICT at Heerapura will be commissioned in near future. For Ratangarh & Chittorgarh, process is at bidding stage and for Deedwana, feasibility study is going on.*

*NRLDC representative requested RVPNL to expedite the commissioning of ICTs at N-1 non compliant stations. Further, NRLDC raised concern over 750MW loading limit on in 400kVBhadla-Bikaner D/C and requested RVPNL to apprise the status of work of upgradation of terminal equipments in the line.*

*RVPNL representative informed that bid for upgradation of terminal equipments and maintenance will be opened on 20<sup>th</sup> April.*

- Tripping of 400kV Bhadla(RJ)-Bikaner(RJ) D/C in last one year:

S. No.	CKT ID	Outage Date & Time		Revival Date & Time	
1	400kV Bhadla(RJ)-Bikaner(RJ) Ckt-1	08-05-2024	13:06	09-05-2024	14:36
2		11-05-2024	03:59	11-05-2024	10:22
3		04-07-2024	14:18	04-07-2024	15:53
4		05-07-2024	16:12	05-07-2024	20:05
5		11-07-2024	22:27	12-07-2024	09:42
6		23-11-2024	22:11	24-11-2024	00:15
7		07-04-2025	12:33	08-04-2025	08:51
8		01-05-2025	13:04	01-05-2025	19:37
9	400kV Bhadla(RJ)-Bikaner(RJ)Ckt-2	08-05-2024	16:29	09-05-2024	14:39
10		23-11-2024	22:11	24-11-2024	00:25
11		07-04-2025	12:24	07-04-2025	20:45
12		08-04-2025	18:19	09-04-2025	08:58

***In upcoming 231 OCC meeting, Rajasthan SLDC is requested to share measures taken for:***

- ***Bid opening for upgradation of terminal equipment in different lines and maintenance for improvement of line condition of 400kV Bhadla(RVPN)-Bikaner(RVPN) D/C line***
- ***High MVAR drawal observed by intra-state network of Rajasthan at number of substations and poor power factor at various 400/220kV substations such as Bikaner, Kankani, Barmer, Jodhpur, Merta etc. (power factor of 0.55 observed at 400/220kV Bikaner during solar hours)***

**Uttar Pradesh:**

***In upcoming 231 OCC meeting,***

***POWERGRID to provide status of commissioning of 400/220kV Allahabad(PG) ICT.***

***UP SLDC to share measures being taken for relieving loading of highly loaded 220kV lines such as RaiBarelli-Bachrawan, Saharanpur-Saharanpur, RaiBarelli-Unchahar, Allahabad-Jhusi, Kanpur-Rania, Meerut-Modipuram etc. by UPPTCL***

***Further, it is to be noted that loading of 400/220kV 2\*315 MVA Jaunpur ICTs is expected to be N-1 non-compliant during upcoming summer season. Load at 400kV Jaunpur is being fed through split bus system with Bhadohi, Azamgarh new and Gajokhar on one 220kV bus and other elements on another bus. SPS***

***proposal has been approved at NR-OCC level, however implementation is pending at UPPTCL end. Apart from SPS, long term measure such as ICT capacity augmentation or shifting of load to other nearby 400/220kV substation to be planned.***

#### **Uttarakhand:**

During 230 OCC meeting,

PTCUL representative informed that capacitors of ~390MVAR capacity was planned to be installed. ~160 MVAR capacitors will be installed by the end of April 2025.

Regarding new ICT at Kashipur, it was informed that tender process has been completed, process of investment approval is in process. After this, order will be awarded.

***In upcoming 231 OCC meeting, PTCUL representative to provide status of new ICT procurement at 400/220kV Kashipur and capacitor commissioning expected before summer 2025.***

In view of above transmission constraints for all states, it is requested that:

- All SLDCs to take actions such that loading of ICTs and lines in their control area are below their N-1 contingency limits.
- While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC.
- SLDCs also need to ensure that their drawl from grid remains within these limits during real-time operation. In the past, it has been observed that some states have drawn power beyond their ATC limits as assessed by SLDCs and NRLDC.
- Further, all SLDCs need to make sure that loading of 220kV and below voltage level intrastate lines remain within safe limits during the high demand season.

Further, all SLDCs are requested to share their ATC/TTC assessment for summer 2025 at the earliest with NRLDC.

Further, it may be noted that 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” which requires SLDCs to submit network data as well as PSSE basecases on M-12, M-6, M-1 basis. The monitoring of submission of these data by SLDCs is being done in OCC meetings on monthly basis where response of some of the states needs improvement.

December 2024 Mails						January 2025 Mails						February 2025 Mails					
ATC/TTC Declaration			Interconnection Studies			ATC/TTC Declaration			Interconnection Studies			ATC/TTC Declaration			Interconnection Studies		
M-1(January-25)	M-12(December-25)	M-6(June-25)	M-1(February-25)	M-12(January-26)	M-6(July-25)	M-1(March-25)	M-12(February-26)	M-6(August-25)	M-1(April-25)	M-12(March-26)	M-6(September-25)	M-1(May-25)	M-12(April-26)	M-6(October-25)	M-1(June-25)	M-12(May-26)	M-6(November-25)
Data Values	Basecases	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	Chandigarh	No	No	No	No	No	Chandigarh	No	No	No	No	No
Delhi	No	No	No	No	No	Delhi	No	No	No	No	No	Delhi	No	No	No	No	No
Haryana	No	No	No	No	No	Haryana	No	No	No	No	No	Haryana	No	No	No	No	No
Himachal	Yes	No	Yes	No	No	Himachal	Yes	No	Yes	No	No	Himachal	Yes	No	Yes	No	No
J&K	Yes	Yes	Yes	Yes	Yes	J&K	Yes	Yes	Yes	Yes	Yes	J&K	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	Ladakh	No	No	No	No	No	Ladakh	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Punjab	No	No	Yes	Yes	Yes	Punjab	No	No	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Rajasthan	Yes	Yes	Yes	Yes	Yes	Rajasthan	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Uttar Pradesh	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	Uttarakhand	No	No	No	No	No	Uttarakhand	No	No	No	No	No
Submitted with one month delay																	

**Separate workshop was also carried out for Chandigarh SLDC for all topics including PSSE basecase preparation in month of May 2025.**

**Chandigarh, Delhi and Uttarakhand SLDCs are requested to provide update.**

**ATC/TTC limits of states for the month of May 2025 are attached as Annexure-B.I.**

**Members may please discuss.**

### **B.3. Expediting SPS implementation before summer 2025:**

Very high demand in Northern region is expected during the month of May-Sep months. During the high demand period, it is observed that often the transmission system remains heavily loaded and may become N-1 non-compliant on several occasions.

To overcome this N-1 non-compliance, planning for new transmission system is being carried out by CTUIL and CEA. However, it is observed that there are certain occasions when the transmission elements approved will take considerable time for commissioning. Due to this delay, the existing transmission system may get overloaded.

To address the issue and avoid major contingency due to cascading tripping, SPS are being designed to minimize impact of outage of one or more transmission elements. As per clause 29.14 of IEGC 2023,

*“NLDC, RLDCs, SLDCs, CTU, STUs or users may identify the requirement of System Protection Schemes (SPS) (including inter-tripping and run-back) in the power system to operate the transmission system within operating limits and to protect against situations such as voltage collapse, cascade tripping and tripping of important corridors/flow-gates. Any such SPS at the intra-regional level shall be finalized by the concerned RPC. SPS at the inter-regional and cross-border levels shall be finalized by the NLDC in coordination with the concerned RPCs. SPS shall be installed and commissioned by the concerned users. SPS shall always be kept in service. If any SPS at the intra-regional level is to be taken out of service, the permission of the concerned RLDC shall be required. If any SPS at the inter-regional and cross-border levels is to be taken out of service, permission of NLDC shall be required.”*

As per NRLDC, SPS at following substations need to be commissioned before summer 2025 so as to avoid major contingency incase of outage of one or more transmission element.

➤ Haryana SLDC to provide feeder details to be wired under SPS

- 765/400kV 2\*1000MVA Bhiwani ICTs (two ICT section)
- 400/220kV 450+500MVA Panipat ICTs (BBMB)
- 400/220kV 2\*315MVA Kabulpur ICTs
- 400/220kV 3\*315MVA Hissar ICTs

During 230 OCC meeting,

OCC forum asked Haryana SLDC to identify feeders to be wired under SPS at the earliest and requested POWERGRID and SLDC Haryana to share proposed SPS with NRLDC/NRPC for further studies.

It is to be noted that NRLDC has sent two emails dated 11.04.2025 & 01.05.2025 to SLDC Haryana for identification of feeders for SPS implementation at:

1. 765/400kV Bhiwani ICTs: 500-600MW load
2. 400/220kV Hisar(PG) ICTs: 200MW load
3. 400/220kV Kabulpur ICTs: 100-150MW load
4. 400/220kV Panipat ICTs: 200-250MW load

However, response from Haryana SLDC is pending.

Further, as discussed earlier on numerous occasions, as majority of 400/220kV ICTs in Rajasthan state (both interstate as well as intrastate are N-1 non-compliant, RVPNL may identify feeders and discuss with POWERGRID for finalisation of SPS at interstate substations. For intrastate substations, where SPS have not been planned and implemented, the same may be taken up. List of N-1 non-compliant substations is shown below:

Constrained location	SPS Status as available with NRLDC
3*315=945 MVA ICT at Bhiwadi(PG)	Not planned
2*315+500=1130 MVA ICT at Bassi(PG)	Not planned
315+500=815 MVA ICT at Neemrana(PG)	Not planned
2*500=1000 MVA ICT at Jaipur South(PG)	Not planned
2*315+500=1130 MVA ICT at Sikar(PG)	Not planned
3*315=945 MVA ICT at Kankroli(PG)	Not planned
2*315=630 MVA ICT at Kotputli(PG)	Not planned
2*315=630 MVA ICT at Deedwana(RVPN)	Not planned
3*250+315=1065 MVA ICT at Heerapura(RVPN)	Not planned
3*315 =945 MVA ICT at Chittorgarh (RVPN)	Implemented
2*315 =630 MVA ICT at Ajmer (RVPN)	Implemented
2*315 =630 MVA ICT at Merta (RVPN)	Implemented
2*315 =630 MVA ICT at Bikaner (RVPN)	Implemented
2*315 =630 MVA ICT at Jodhpur (RVPN)	Implemented
2*315=630 MVA ICT at Suratgarh(RVPN)	Implemented

3*315=945 MVA ICT at Ratangarh(RVPN)	Implemented
1*500+1*315 =815 MVA ICT at Bhilwara (RVPN)	Implemented

To discuss the feeders in Delhi control area to be wired under SPS, separate meeting was also convened on 02.04.2025 in NRPC. Subsequently, a separate meeting was convened on 04.04.2025 between DTL, Delhi SLDC, NRPC, NRLDC and POWERGRID for finalisation of feeders, for SPS at different 765/400kV and 400/220kV POWERGRID ICTs supplying power to Delhi state control area where loading of ICTs is expected to be beyond N-1 limits during summer 2025.

***POWERGRID may provide update on the implementation of SPS at 765/400kV Jhatikara and 400/220kV Mandola and Maharaniabagh.***

Further, it may be noted that NRLDC had received letter from NHPC side regarding evacuation of power from Parbati-II HEP through deemed T-GNA till commissioning of 400/200kV 500MVA ICT-4 at Nallagarh(PG).

Subsequently, NRLDC carried out simulation studies and following are inputs:

Major Impact on Line and ICT Loadings:

- 765/400kV ICTs at Moga: Decrease in loading by ~75 MW per ICT.
- 400kV Amritsar – Banala: Increase in loading by ~175 MW.
- 400kV Koldam – Ludhiana: Increase in loading by ~145 MW.
- 400kV Koldam – Ropar: Increase in loading by ~195 MW.
- 765/400kV ICTs at Bhiwani: Decrease in loading by ~95 MW per ICT (2 ICT section).
- 400kV Rampur – Nallagarh: Decrease in loading by ~95 MW per circuit.
- 400kV KWHEP – Wangtoo: Increase in loading by ~58 MW per circuit.

Critical Observation at Nallagarh ICTs:

The loading of 400/220kV ICTs at Nallagarh is expected to increase by approximately 33 MW per ICT.

- Considering the last year's maximum loading of ~245-250 MW per ICT, the loading is projected to reach around 280-285 MW per ICT.
- The N-1 loading of the ICTs is estimated to be around 255 MW, which indicates that the ICTs will be significantly stressed post-commissioning of Parbati-II generation.
- To mitigate potential overloading risks, implementation of a SPS is needed.

***POWERGRID to update status of 500MVA ICT-IV at Nallagarh. Incase commissioning schedule of ICT is not expected by mid-June 2025, SPS proposal to be taken with Punjab, HP, Chandigarh and POWERGRID.***

***It is to be noted that details of feeders to be wired under SPS is yet to be received from Haryana SLDC and Rajasthan SLDC.***

***Haryana SLDC to provide update.***

***Rajasthan SLDC/RVPN are also requested to identify feeders for SPS at pending 400/220kV POWERGRID and RVPN substations supplying power to Rajasthan. While identification of feeders it needs to be ensured that in case of***

***SPS operation and tripping of one/two feeders, any other element should not get overloaded (no cascade tripping).***

***Feeders details to be shared by respective SLDCs well in advance so that feeders and SPS logics are prepared and finalised in next OCC meeting.***

#### **B.4. Actions taken based on committee recommendation report on 17th June load loss event**

On 17th June 2024, a grid event occurred at 13:53 hours in the Northern Region, leading to a substantial load reduction of approximately 16.5 GW. This event started with the tripping of both bipoles of the +/-800 kV HVDC Champa (WR) – Kurukshetra (NR) link, which was transferring 4500 MW of power from the Western Region (WR) to the Northern Region (NR). The tripping of this HVDC link triggered a series of events. There was a sudden voltage drop across the stations in the Northern region which resulted in a significant load drop of around 16.5 GW in the Northern region. There was simultaneous reduction of around 2800 MW of RE-based generation in the Rajasthan RE complex. There was also trippings of conventional generating units leading to a generation loss of 3909 MW at the allIndia level. The significantly higher load loss resulted in the rise in frequency of the Indian power system from 50.03 Hz to 50.68 Hz. The load drop resulted in a rise in the voltages of stations in the Northern region. This high voltage resulted in the tripping of 18 nos. of EHVAC lines in the Northern Region on over-voltage protection. The power system was normalised after the revival of all the poles of HVDC Champa-Kurukshetra by 15:51 Hrs.

A Committee under the Chairmanship of Member (GO&D), CEA with members from CEA, IIT-Delhi, NRPC, NLDC, NRLDC, POWERGRID, SLDC Delhi & DISCOMs was set up to analyse the above-mentioned issues during which about 16.5 GW of consumer load in Northern Region got interrupted for a brief period.

The committee recommended the following remedial measures for avoiding the recurrence of such grid event for which actions taken are yet to be received from utilities:

- **Reactive Power Management (Dynamic/Static) by STU and DISCOMs:** In order to maintain voltage stability, reactive power support is desired from all grid connected utilities without leaning over each other so as to ensure minimum reactive exchange at different voltage levels.
- **Planning for dynamic reactive power sources near load centers based on load composition:** Adequate static/dynamic reactive devices may be planned at the distribution level near loads so that there is minimum drawl from reactive sources at the transmission (STU) level. The dynamic reactive power sources shall be commissioned near load centre stations based on the composition and quantum of individual load type.
- **Enhance reliability of HVDC Link:** Committee recommended POWERGRID to the followings
  - a. Review of protection schemes to avoid frequent outages.
  - b. Review of transmission line design including cross arms, jumpers, etc.
  - c. Design of filter switching logic to support system voltage.

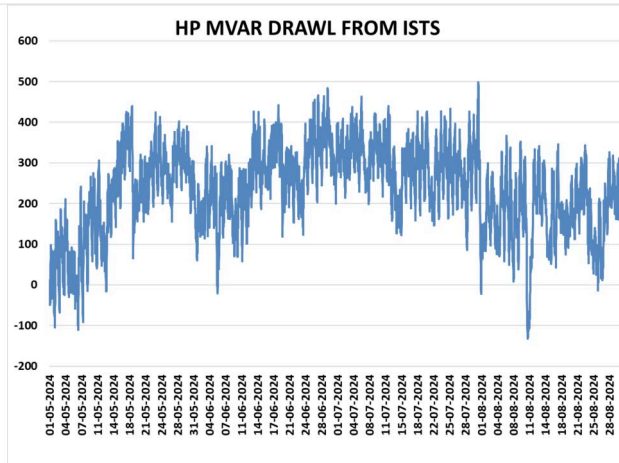
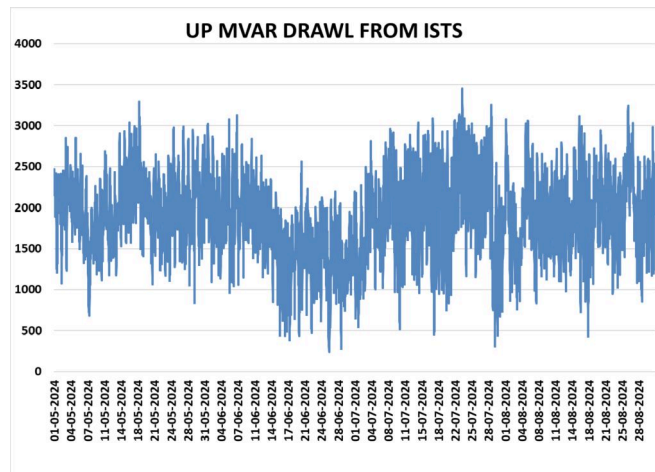
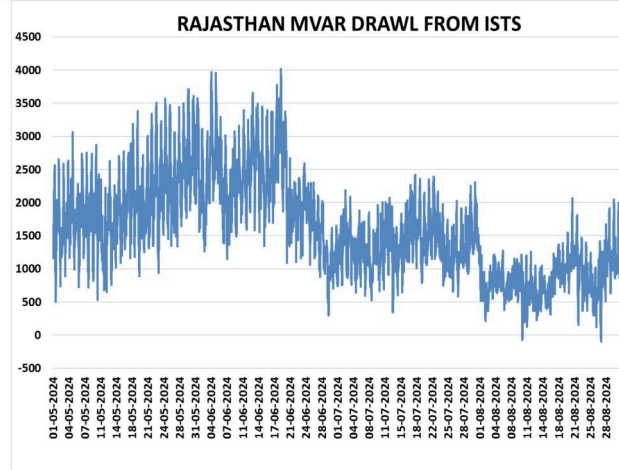
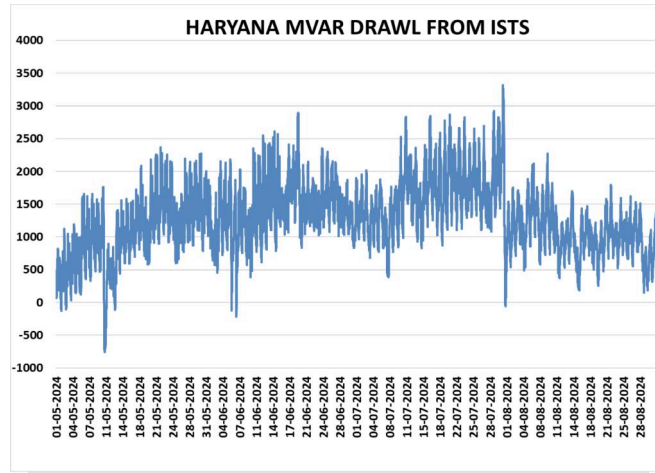
The above agenda point was also discussed in 75th NRPC Meeting held on 28 August 2024 through online mode. Forum acknowledged the sensitivity of event and directed the concerned to take appropriate actions based on the recommendations of Committee.

### Measures for Low voltages

During summer months, reactive power requirement by load also increases due to increased cooling and pumping requirement. Due to lack of sufficient compensation at distribution and transmission level, huge reactive power is being drawn from ISTS network. Due to this high reactive power requirement during day-time and high loading of existing transmission lines from RE complex, low voltages are seen in the grid during afternoon time. Sample snapshot of low voltage observed in the grid during summer 2024 is shown below:



Reactive power drawl by states during May-Jul months is shown below where it can be clearly seen that there is huge MVAR drawl by some of the states such as Haryana, Rajasthan, HP and UP during these months. These huge MVAR drawl leads to low voltages in the grid especially during the day-time as there is high agricultural as well as cooling load requirement during this time.



During 229 OCC meeting, NRLDC representative requested STUs/SLDCs/POWERGRID to provide update on the actions taken at their end based on committee recommendations.

POWERGRID representative informed that they had availed shutdown of HVDC Champa-Kurukshetra poles last year during Sep to attend few issues that were observed in committee recommendations and assured that all identified issues have been attended.

NRLDC and NRPC representative requested that POWERGRID may submit brief report on actions taken at their end on improvement of reliability of HVDC Champa-Kurukshetra poles based on committee recommendations.

MS NRPC stated that NRPC had also formed a committee to review overvoltage settings as per committee recommendation of 17<sup>th</sup> June event. The overvoltage settings would be finalized in upcoming protection subcommittee meeting and utilities may implement those settings at the earliest.

OCC forum discussed that it seems that actions on other recommendations listed at s.no. (i) & (ii) have not been taken from STU/SLDC side. In this case, there is likelihood of low voltages in the grid again during summer 2025.

It was highlighted from NRLDC side that in case no major capacitor banks are added before summer, and as NR load is projected to rise to 98GW during this summer season, therefore there is high probability of low voltages during upcoming summer season.

During 230 OCC meeting,

NRLDC representative requested STUs/SLDCs/POWERGRID to provide update on the actions taken at their end based on committee recommendations.

POWERGRID representative informed that they have formed four team for complete review and rectification work w.r.t. issues in HVDC Chamba-Kurukshetra line.

NRLDC and NRPC representative requested POWERGRID to take necessary corrective actions for rectification of issues highlighted by committee related to clearance and design related aspects at few locations in HVDC Champa-Kurukshetra line.

Further, NRLDC also highlighted the two incidents of multiple pole tripping of HVDC Champa-Kurukshetra in March 2025 due to issues in protection, control and communication system. POWERGRID was requested to rectify the issues to avoid unwanted tripping due to maloperation of protection, control and communication system.

MS NRPC stated that NRPC had also formed a committee to review overvoltage settings as per committee recommendation of 17<sup>th</sup> June event. The overvoltage settings were finalized in 58<sup>th</sup> PSC meeting and utilities were requested to implement the revised overvoltage setting in lines of their respective control area. In case it is pending in any of the control area then such utility shall ensure to implement the revised setting by the end of April 2025.

Regarding reactive power management issue states informed following:

- Rajasthan informed that 150 sets of capacitors to total capacity of 900MVAR are planned to be installed. Out of 150, 50 sets of capacitors have been purchases but delivery of CTs is awaited.
- HP representative informed that STU was requested to take necessary actions in this regard. No further update is received.

OCC forum discussed that it seems that actions on other recommendations listed at s.no. (i) & (ii) have not been taken from STU/SLDC side. In this case, there is likelihood of low voltages in the grid again during summer 2025.

It was highlighted from NRLDC side that in case no major capacitor banks are added before summer, and as NR load is projected to rise to 98GW during this summer season, therefore there is high probability of low voltages during upcoming summer season.

OCC asked all STUs and SLDC to ensure maximum reactive power support at underlying network to minimize low voltage issues during summer season.

***In upcoming 231 OCC meeting, concerned members are requested to provide update on the actions taken at their end in this regard. Members may please discuss.***

#### **B.5. Shifting of Rihand-III to NR temporarily as agreed in 53 TCC and 78 NRPC meeting**

The agenda for opening of 400kV Singrauli-Anpara line and shifting of Rihand Stage-III generating units to Northern region was discussed in 50th TCC & 74th NRPC meetings held in Raipur on 28.06.2024 & 29.06.2024 respectively. In the meeting, UP SLDC and UPRVUN expressed concern regarding possibility of major grid event in case of multiple element outage (N-2/N-3) in UP Control area. Further, NTPC expressed concern on healthiness of bus coupler at Rihand and also stated it would increase stress on Stage-1 & 2 switchyard equipments. Accordingly, forum decided that joint meeting would be convened with participants from NRPC, WRPC, CEA-PSPA I, CTUIL, NRLDC, WRLDC, NLDC, NTPC, POWERGRID, UP SLDC, UPPTCL, UPRVUN and Lanco Anpara.

After detailed deliberations in meeting on 09.07.2024, all members agreed that:

1. Following works are in pipeline which are expected to be completed by 31st July 2024 and would facilitate opening of 400kV Singrauli-Anpara line as per decision of 1 NRPCTP and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability :
  - Testing of equipments of bus coupler bay connecting Rihand-II and Rihand-III by NTPC
  - SPS implementation at 400/220kV Allahabad(PG) by POWERGRID
  - SPS implementation in Anpara complex by UPPTCL
  - Commissioning of one 765/400kV ICT at Obra C
2. As it has been observed that there has been significant delay w.r.t commitments made for some of the works at s.no.1, opening of 400kV Singrauli-Anpara line to control fault levels and shifting of Rihand-III to NR for enhancement of WR-NR transfer capability

would be implemented as temporary measure in first week of August without further deliberations.

3. Above rearrangement of Rihand-III would be reversed to original configuration (Rihand-III back to WR) in October 2024. 400kV Singrauli-Anpara would continue to be kept opened as it is being opened to control fault levels in the complex.
4. Protection settings/CEA safety clearances to be coordinated before first time charging of the proposed rearrangement.
5. SOP to be prepared by NRLDC/NLDC for shifting of Rihand-III generation to NR
6. SOP/ready reckoner to be prepared by NRLDC and UP SLDC for switching operation of 400kV Singrauli-Anpara as per requirement.

Subsequently, all required SOPs were prepared and shared with all concerned. After review of SOPs, 400kV Singrauli-Anpara line was opened on 06.08.2024 to control fault levels in the complex as agreed in 1st Meeting of NRPCTP held on 24.01.2020.

After keeping the line under observation for one week and completion of works as agreed in meeting held on 09.07.2024, shifting of Rihand-III from WR to NR was carried out on 14.08.2024 with coordination with all stakeholders.

Rihand-III generation was evacuated through Northern region from 14.08.2024 to Oct 2024. Thereafter, when demand of Northern region reduced and shutdown of HVDC Rihand-Dadri was to be provided Rihand-III generation was shifted back to Western region on 04.11.2024.

Shifting of Rihand-III generation to Northern region reduced loading of 765kV Vindhaychal-Varanasi D/C, due to which NR was able to import higher power from WR without major constraint. ATC/TTC limits on WR-NR corridor and NR import were increased after shifting exercise which facilitated NR states to import higher power during summer months.

SI No	Corridor	Time Period	TTC with Rihand-III in NR (MW)	TTC with Rihand-III in WR (MW)	Increase in TTC due to shifting of Rihand from WR to NR (MW)
1	NR Import	00-09	28400	25700	2700
		09-15	20650	20250	400
		15-16	21750	21750	0
		16-24	28400	25700	2700
2	WR-	00-09	24800	22350	2450

		09-15	19450	19050	400
	>NR	15-16	20550	20550	0
		16-24	24800	22350	2450

It was specifically highlighted from NRLDC side that number of meetings had to be convened last year to converge on the issue:

- 14.06.2024 between NRLDC, NLDC, UP SLDC, UPPTCL, UPRVUN, NTPC
- 220 OCC meeting held on 19.06.2024
- 50th TCC 74th NRPC meeting held on 28.06.2024 & 29.06.2024
- Joint meeting with participants from NRPC, WRPC, CEA-PSPA I, CTUIL, NRLDC, WRLDC, NLDC, NTPC, POWERGRID, UP SLDC, UPPTCL, UPRVUN and Lanco Anpara held on 09.07.2024.

Accordingly, the agenda was taken up for discussion in 53rd TCC and 78th NRPC meetings held in March 2025. TCC forum discussed that as similar demand and line loading pattern is expected when NR imports high power from WR during summer 2025 & summer 2026 months, that there may be requirement of such changeovers for next 2-3 high demand seasons till approved transmission system of establishment of 765/400kV Prayagraj and 765/400kV Robertsganj is implemented. No reservations were expressed from any members on the above agenda and shifting of Rihand-III to NR based on requirement was approved. Further, it was agreed that the exercise may be carried out upon discussion in OCC forum/separate meeting by NRPC one week before schedule of exercise so that in case of requirement, the exercise is carried out swiftly for the benefit of NR states.

***Accordingly, readiness is sought from NR utilities for the above proposal. NRPC is requested to decide upon convening meeting at the earliest with participation from WR utilities also so that the proposal is discussed, agreed and implemented in the month of May 2025 itself.***

***Members may please discuss.***

## **B.6. Grid Operation related issues in Northern region**

### **a) Line outages in Rajasthan State control area:**

Multiple EHV transmission line outages have been reported in the Rajasthan Control Area in the first week of May 2025. Tower collapse of 400 KV Jaisalmer-Barmer (RS) D/C line and 400 KV Bhinmal (PG)-Barmer (RS) (RS) D/C line were also reported. The transmission lines under outage in Rajasthan Control Area are major RE generation Evacuating and load serving lines. The outage of a large no of EHV transmission lines is a matter of serious concern in view of grid security.

Further, planned outage of 400 KV Bhadla-Merta and 400 KV Bhadla-Jodhpur was also facilitated on Rajasthan request for the work of Shifting / Height raising work for Jodhpur Ring Road project of NHAI. SLDC Rajasthan had agreed to revive these transmission lines from Bhadla (Raj) after availing only 01 day of continuous shutdown on 04.05.2025 but now the shutdown has been extended to Night hours of 08.05.2025 citing bad weather condition.

It is to be noted that prolonged outage of these lines following RE curtailment was done:

Hence SLDC Rajasthan is requested to take following measures for safe evacuation of RE generation and reliable grid operation:

1. Expedite revival of transmission lines on planned outage (400KV Bhadla - Jodhpur and 400KV Bhadla-Merta).
2. Expedite restoration of transmission lines on forced outages where tower collapse/damages have not been reported.
3. Adequate patrolling team and maintenance team to be deployed for quick restoration works.
4. Revival of EHV transmission lines on ERS towers to be explored for safe evacuation of RE generation.
5. Carry out load shifting, RE optimisation for preventing any cascade tripping of remaining transmission elements.

***Members may please discuss.***

#### **b) Long outage of transmission elements**

It is requested to expedite restoration of the Grid elements under long outage at the earliest and also provide an update regarding their expected restoration date/time in the meeting/ NRLDC outage portal.

**Some of the key elements that need to be revived at the earliest:**

Sl. No.	Element Name	Owner	Outage (Date & Time)		Reason / Remarks
1	400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)	UPPTCL	13-03-2020	02:46	Buccholz relay alarm and Local Breaker Backup protection operated. Tripped along with Hapur-Muradnagar line. Flags are not reset because of cable flashover.
2	FSC(40%) of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri(PG)	POWER GRID	24-10-2021	21:07	VME protection system was blocking the FSC back to in service
3	50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP)	UPPTCL	28-10-2021	22:27	R and Y phase bushing damaged at Agra(UP).
4	400/220 kV 240 MVA ICT 3 at Moradabad(UP)	UPPTCL	13-12-2021	22:38	Due to high DGA values, Hydrogen gas is above permissible limit.
5	FSC(40%) of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri(PG)	POWER GRID	29-01-2022	08:25	While attempting charging of FSC-2 (Fathepur Mainpuri line-2) at Mainpuri, VME protection system was blocking the FSC back to in service. Due to that FSC-2 could not be taken in service.
6	400/220 kV 315 MVA ICT 1 at Loni Harsh Vihar(DV)	DTL	07-06-2024	18:28	Earth fault. During back charging of ICT-1 was tripped off on OLTC OSR, E/f pick up and harmonic block relay indication.
7	220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1	PDD JK	21-06-2024	20:09	Tower foundation damaged . Emergency shutdown of 220k KPTL Kishenpur - Mirbazar Ckt as the landslide occurred at Tower Loc. no. KP-196 at Peerah and tower is on the verge of collapse.
8	400KV Bus 2 at Noida Sec 148(UP)	UPPTCL	08-03-2023	17:28	Bus bar protection operated. GIS duct issue at Noida Sec 148(UP).
9	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-2	UPPTCL	09-03-2023	17:26	Flashover Y-phase earth switch compartment at Noida Sector-148.
10	400/220 KV 500 MVA ICT 1 at Ramgarh(RS)	RRVPNL	26-04-2023	18:06	Preparatory arrangement & dismantling work of ICT-I at Ramgarh
11	FSC(39%) of 765 KV Koteswar-Meerut (PG) Ckt-1 at Meerut(PG)	POWER GRID	08-06-2023	08:41	B-Phase to earth fault, Fault Current: 9.0kA, , Dist. 100.8km from Meerut end.
12	400/220 kV 500 MVA ICT 1 at Rasra (UP)	UPPTCL	26-10-2023	20:34	Y-phase bushing has got damaged.
13	400/220 kV 315 MVA ICT 1 at Kabulpur(HV)	HVPNL	11-08-2024	06:07	Operation of transformer protection . Differential protection trip.
14	400 KV Baglihar(JK)-Kishenpur(PG) (PDD JK) Ckt-2	PDD JK	12-09-2024	06:24	Phase to earth fault B-N , Dist. 62km, Fault current 5.86kA from Kishenpur(PG) & Dist. 0.3km, Fault current 7.46kA from Baglihar. After thorough inspection fault was detected in the Pot head yard due to insulation failure in 400kV SUDKABEL outdoor termination kit.
15	400KV Bus 3 at Anpara(UP)	UPPTCL	07-10-2024	08:30	For Replacement of Breaker(Transfer bus)
16	400 KV Dulhasti(NH)-Kishenpur(PG) (PG) CKT-2	POWER GRID	15-10-2024	10:44	400KV Dulhasti Kishenpur -II is a Double circuit Line but stringing is done on one circuit only. Award placed for stringing on Circuit-2 under evacuation of Power from
	कार्यसूची: उ.क्षे. वि. स. की प्रचालन समन्वय उप-समिति की 230 वीं बैठक		पृष्ठ - 35 of 54		Chenab Valley HEPs. Shutdown to carryout stringing on Circuit 2.
17	407 Bus Coupler Bay - 400kV Bus 1	NHPC	03-12-2024	17:21	Partial Outage Problem in Bay

It is requested to provide update regarding the likely revival date for these in the meeting/ NRLDC outage portal and expedite revival of these transmission elements.

**Member may like to discuss.**

**c) Update of Important grid element document in line with IEGC:**

In line with Chapter 6 section 29.2.(b) of IEGC, list of important grid elements in Northern region has to be compiled by NRLDC. Such elements shall be opened/closed only on instructions from NRLDC. It is requested to submit the list of all elements with details charged under their jurisdiction from 1.4.2024 till date including those expected to be commissioned till May 2025 so that the same could be included in the list.

It is requested to provide details before 15th May 2025. Same has also been requested vide email dated 01.04.2025 from NRLDC side.

Last updated document is available at following link:  
<https://nrlcdc.in/documents/Documents>

Any other feedback related to inclusion/deletion of elements may also be provided.

**Utilities may provide update.**

**d) Action Points as agreed in 50th FOLD meeting**

The 50<sup>th</sup> Meeting of the Forum of Load Despatchers was held in hybrid mode on 23rd April 2025, with physical venue at EROS Hotel, Nehru Place, New Delhi. Over 170 participants (both online & offline), including senior officials from GRID-INDIA and State Load Despatch Centres, attended the meeting.

The approved agenda items were discussed as following:

- a) Agenda-1: Preparedness for Upcoming Summer by NLDC
- b) Agenda-2: Update on Ancillary Services by NLDC
- c) Agenda-3: Operational and Capacity Building Issues by Odisha SLDC
- d) Agenda-4: Registration of GENCOS/Intra state plants in NOAR by NLDC
- e) Agenda-5: SLDC Establishment – Chandigarh
- f) Agenda-6: RE integration challenges, learnings and way forward -experiences in Northern Region by NRLDC
- g) Agenda-7: Exam related to CERTIFICATION for system operation by West Bengal SLDC
- h) Agenda-8: Intra-State Operations – Western Region Focus by WRLDC
- i) Agenda-9: Update on Intra-State Security Constrained Economic Despatch by NLDC

Various action points that were agreed in the meeting for secure grid operation during upcoming summer months are listed below for actions by all states:

1. All SLDCs to continuously monitor demand and ensure generation ramping aligns with realtime variations.

2. SLDCs and GENCOS to coordinate closely to avoid delays in unit synchronization, especially during low-frequency or high-demand periods.
3. Ensure implementation of 55% minimum technical limits and pursue compensation mechanisms through SERCs, in line with CERC guidelines.
4. Conduct health assessments of UVLS, UFR, ADMS, and other critical defense systems; submit reports to respective RLDCs.
5. States anticipating shortages to expedite power procurement through exchanges or bilateral tie-ups.
6. Surplus states to actively offer generation in the market during peak demand hours to enhance national adequacy and grid stability.
7. States with intra-state IPPs to explore and facilitate their participation in RTM and ancillary services, especially where surplus is available.
8. All SLDCs to identify intra-state generating stations that are yet to register on NOAR and initiate coordination for their registration.

***MoM of 50<sup>th</sup> FOLD meeting held on 23.04.2025 is attached as Annexure-B.II.***

***Concerned SLDCs are requested to take necessary actions and provide update.***

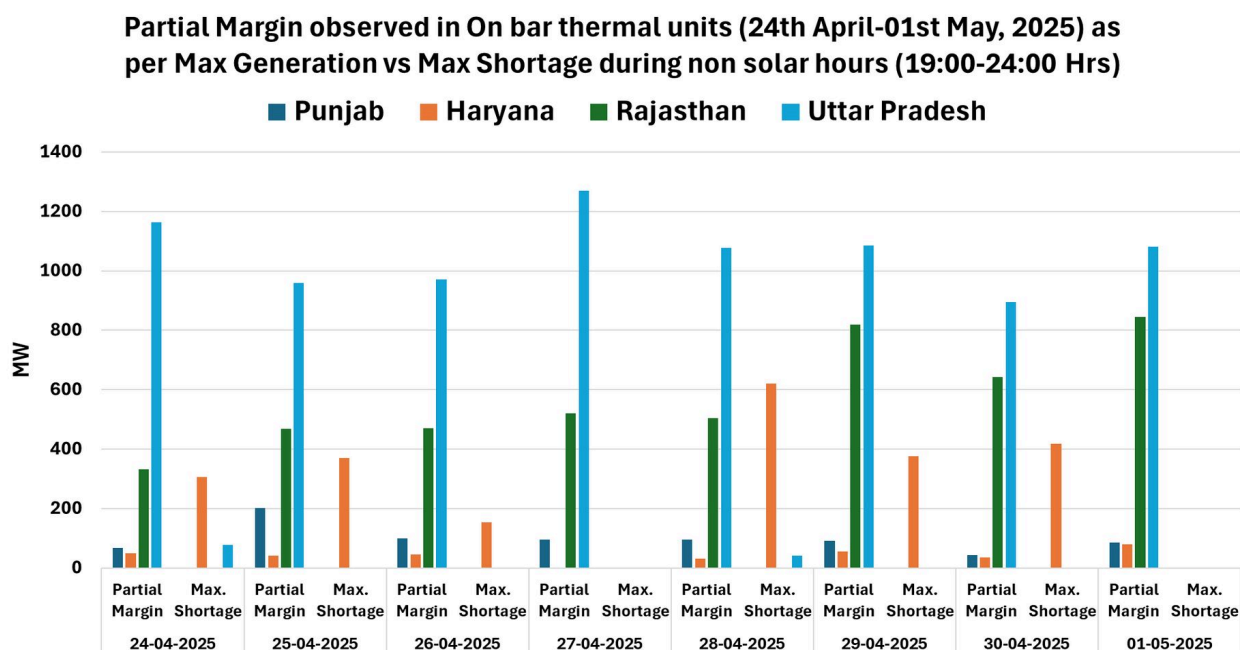
#### **e) Partial outage of thermal generating units in NR**

In light of the increasing trend in power demand across All India and the Northern Region, the power supply position of all India states is being closely monitored. This is being done through daily appraisal reports submitted to the MoP/CEA, as well as through weekly review meetings chaired by the Chairperson, CEA to review the overall power supply status, generating unit outages, and partial outage/margins, particularly during non-solar hours.

In view of the above, all SLDCs are requested to ensure the following:

1. Correct and Verified Reasons:  
The reasons for partial outages or margins in thermal generating units on bar during non-solar hours must be clearly stated and duly verified in the daily appraisal reports being submitted.
2. Addressing Fuel-Related Constraints:  
For generating units facing challenges due to poor coal quality or coal shortages, it is advised to explore feasibility of coal blending options to maximize the generation.
3. Utilization of surplus margin:  
In instances where the margin is on account of low demand within the control area, SLDCs are encouraged to sell the surplus power through the Real-Time Market (RTM), thereby ensuring effective utilization of available resources.

The trend of partial margins observed in thermal power plants during the period 24th to 30th April 2025 is shown below.



Additionally, the report dated 05.05.2025, along with the reasons submitted by the respective SLDCs, is attached as **Annexure B.III** for reference.

Further, all the SLDCs and representatives of generating stations are requested to ensure their presence in the review meetings held every Monday.

***Members may please discuss.***

#### **B.7. 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. NLDC, RLDCs, and SLDCs were directed to submit their responses to the measures contained in para 9 of this order by 16.10.2024.

Subsequently, a meeting was taken by Hon'ble CERC on 14.02.2025 with all NR SLDCs, NRLDC and NRPC to review the actions being taken at SLDC end on measures related to resource adequacy.

***It is to be noted that CERC has also released "Report on 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 Order dated 07.10.2024 in Suo-Moto Petition No. 9/SM/2024” on 29.04.2025.***

***In the report following actions have been suggested:***

6.1 Power supply position during the month of October 2024 and preparedness of the SLDCs for the next upcoming power shortage:

- SLDCs need to adopt a proactive approach to plan their power procurement in advance and to minimize their dependence on last-minute Day-Ahead Market (DAM) and Real-Time Market (RTM) purchases, as these do not guarantee power availability during high-demand periods
- Power may be tied up well in advance through banking arrangements, short term contracts, and long-term agreements to ensure reliable supply.

6.2 Submission of Resource Adequacy data:

- Enhanced coordination between RLDCs and SLDCs for improving forecasting capabilities of SLDCs.
- Access to advanced forecasting tools should be facilitated to ensure better accuracy and reliability.
- SLDCs facing manpower challenges should leverage automation and training programs to strengthen forecasting and data management capabilities and should make best efforts to submit the requisite data with the available manpower till the availability of additional manpower.
- SLDC to take up the matter of non- submission of data with concerned Discerns in their control area and as a short gap arrangement SLDC should submit the requisite information based on historical data.
- **The issue of submission of Resource Adequacy data including demand estimation and generation data by the states should be taken up as a regular agenda in the RPC meeting of concerned region.**
- An issue was highlighted that ISTS drawl of some of the states were more than their ATC limit. In case of inadequate ATC, a State may not be able to draw power from identified sources outside the state and would not be able to meet the demand. States need to ensure their intra-state transmission resource adequacy and needs to plan and implement their intra-state transmission system adequately.

6.3 Shortage of manpower in SLDCs:

- SLDCs to take up the matter with their management to provide the manpower as per their current sanctioned strength.

- SLDCs to take up the matter with their management for approval of revised sanction strength considering the MoP Workforce Adequacy Guidelines for Load Despatch Centres
- Forum of Regulator can take up with the State Regulatory Commissions for determining the Fees and Charges for the Load Dispatch Centers which will provide financial autonomy to the Load Dispatch Centers. The possibility of establishing separate cadre system for SLDCs may also be explored.
- RLDCs, in collaboration with NLDC, to conduct structured capacity-building programs to equip SLDC personnel with the required technical skills.
- SLDCs to post their employees at RLDCs temporarily to enhance their technical expertise.

#### 6.4 Reserve estimation and management

- SLDCs to take up the issue of maintaining the reserves with their respective Discoms to maintain the reserves as allocated to them by NLDC as per the provisions of the Grid Code.
- RLDCs to hold discussions with respective SLDCs, in coordination with NLDC to explain the exact process of estimation and allocation of reserve quantum of each state.
- NLDC to review the quantum of reserves allocated to North-Eastern Region states, where the reserve requirement appears disproportionately high compared to their demand.
- The regulations enabling implementation of AGC and recovery of cost of maintaining reserves may be taken up at FOR level on recommendations and requirements cited by States.

#### 6.5 Backing down of state-owned thermal generating stations up to Minimum Turndown level (MTL) (i.e., 55% of the MCR)

- SLDCs to take up the issue of operation of intra-state thermal generating stations with intra-state generators to investigate the technical issues and work towards addressing the issues of operation at MTL of 55%. Intra-State generators to collaborate with the Inter-State Generating Stations in overcoming the various technical issues involved in achieving MTL of 55%.
- Forum of Regulator to take up the issue with respective SERC regarding formulation of regulatory framework at state level to compensate the generators for part load operation of thermal generation station.

#### 6.6 Implementation of SAMAST (Scheduling, Accounting, Metering, and Settlement of Transactions) Scheme

- Implementation of the SAMAST framework in the 9 control areas needs to be closely monitored and implemented in the timeframe or earlier as indicated in table under para 5.8.
- The states where the scheme is under initial stage, the scheme needs to be awarded within two months and its implementation in period not exceeding one year after the award.
- In Puducherry the SAMAST framework has not been yet initiated. Puducherry may be directed to implement the scheme in a period not exceeding 15 months after issue of order.

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 April-2025 as per Clause 31(4) (a) & (b) of IEGC-2023 is shown below:

State/Entity	Day Ahead (As on Apr-25)	Week Ahead	Month Ahead (Apr 2025)	Year-Ahead
Punjab	As per Format	Demand and Resource not as per format	Demand and Resource not as per format & timeline	Not received
Haryana	Demand and Resource not as per format	Only demand	Only demand	Not received
Delhi	Demand and Resource not as per format	As per Format	As per Format	Only Demand
Rajasthan	As per Format	Not received	Not received	Not received
Uttar Pradesh	As per Format	As per Format	As per Format	As per Format
Uttarakhand	Demand and Resource not as per format and irregular	As per Format	As per Format	Not received
Himachal Pradesh	As per Format	As per Format	As per Format	As per Format
J&K and Ladakh (UT)	Demand and Resource not as per format & irregular	Not received	Not received	Not received
Chandigarh (UT)	Demand and Resource not as per format	Not received	Not received	Not received

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/1KWY4G9gTBLV5wTJkhGEleRptKP-QbhjL?usp=drive\\_link](https://drive.google.com/drive/folders/1KWY4G9gTBLV5wTJkhGEleRptKP-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.IV:

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.IV.

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 NLDC operating procedure (Link: [https://posoco.in/wp-content/uploads/2024/08/NLDC-Operating-Procedure\\_2024.pdf](https://posoco.in/wp-content/uploads/2024/08/NLDC-Operating-Procedure_2024.pdf)).

During the 228th OCC meeting, CGM, NRLDC, reiterated the importance of conducting the self-audit exercise within the timelines mandated by regulations. He informed that NRLDC has already submitted its self-audit report to CERC and urged all stakeholders to do the same.

As per IEGC Clause 56.2(c), 'The self-audit reports by users, QCAs, and SNAs shall be submitted to the concerned RLDC or SLDC, as the case may be.' Failure to submit the self-audit report within the stipulated timeframe would be considered a non-compliance with IEGC regulations.

Self-audit report has been received from NHPC and Koteswar THDC.

During last two OCC meetings,

NRLDC representative stated that data on day ahead basis received from some of the states (as shown in table) is not as per NRLDC format. It was further mentioned that NRLDC is in process of developing a code/program for automation of day-ahead resource adequacy. Incase data is not received in formats circulated by NRLDC, it would not be possible to map/utilize the data submitted by states in the internal program being developed at NRLDC end.

OCC requested all the states to take actions at their end to ensure compliance of all regulations and guidelines w.r.t. resource adequacy framework. SLDCs were also asked to maintain the reserves as per the allocated quantum by the NLDC as per the Grid Code. SLDCs were also asked to submit data to CERC as mentioned in MoM issued by CERC on 05.03.2025.

***All SLDCs are requested to provide update. Members may please discuss.***

## **B.8. Monitoring of Data center/Electrolysers and their compliances before connection to the grid**

National Green Hydrogen Mission launched in Jan 2023 has included in its objective to build capabilities to produce at least 5 Million Metric Tonne (MMT) of Green Hydrogen per annum by 2030, with potential to reach 10 MMT per annum with growth of export markets. Achieving this goal will require an estimated 60-100 GW of electrolyzer capacity installations. A significant portion of this load is expected to get connected at the ISTS (Inter-State Transmission System) level, primarily in concentrated green hydrogen zones across the country. In addition to electrolyzer load, a large quantum of data centre load is also expected to be connected at intra-state level in Northern region.

Following aspects of data centers and electrolysers need to be studied in detail:

### **1. Classification and Load Interface Assessment**

- State of the art technology for electrolyzers, data centres and their characteristics
- Classification of the nature of these bulk consumer loads - distinguishing between Inverter-Based Resources (IBR) and traditional synchronous connections.
- Analyse load characteristics to inform tailored connection requirements and grid support functions.

### **2. Connection Code/Standard Development**

- Ride-Through Capabilities: Define fault ride-through standards to maintain grid connection during disturbances.
- Voltage and Frequency Support: Establish dynamic support criteria for voltage regulation and frequency stability.
- Harmonic Compliance: Set standards for harmonic distortion limits to mitigate power quality impacts on the grid.
- Grid Supportive Control Modes: Specify droop and other frequency-sensitive control modes to contribute to grid frequency containment. Any other technical requirement

### **3. Reactive Power and Voltage Support Requirements**

- Define reactive power requirements, including dynamic reactive capability specifications, to support voltage stability and local grid requirements.
- Establish reactive power capability curves for bulk consumer loads, ensuring alignment with grid voltage regulation needs during both normal and contingency conditions.

### **4. Ramping Requirements**

- Determine acceptable ramp rate limits for bulk loads to prevent adverse impacts on grid stability, considering rapid load variations typical of electrolyzers and similar facilities.
- Specify maximum permissible ramping rates based on load characteristics and grid operational needs.

#### 5. Energy Management and Curtailment Mechanisms

- Outline requirements for curtailment capabilities during peak load and contingency conditions to enhance grid flexibility and renewable integration.

#### 6. Requirements to be specified for approval of First-time energization and Integration

- Model submission, telemetry, metering, trial operation, COD, disturbance records etc.

Furthermore, it may be noted that committee has been setup for the same under Member Power System, CEA.

During 229 OCC meeting, NRLDC representative stated that SLDCs are required to share the details of Data Centers/Electrolysers functional in their respective states. The below mentioned format may be referred for sharing the details. It was also requested to obtain the telemetered data of active power and reactive power consumption of data centers for one complete year at highest time resolution possible.

S.No.	Data Centre Or Electrolysers	Owner	Capacity	State	Connectivity via line/ICT at 220 kV level	Telemetry available(Yes/No)
1						

NRLDC representative also stated that information on following points may also be shared and taken up by all SLDCs of Northern region:

1. Availability of PMU on radial feeders supplying to Data Centers/Electrolysers
2. Phase wise power consumption trend as obtained from PMU for atleast three scenarios of a day
3. Action by NRLDC/SLDC/DISCOM for PMU placement on the radial supply feeder.

MS NRPC stated that data centers load will be growing rapidly in the coming years and urged SLDCs to get involved in data sharing and regulation formulation exercise.

OCC asked all SLDCs to submit the information on the points as requested by NRLDC for further actions.

During 230 OCC meeting,

UP representative informed that data center have come in Noida with load capacity of ~5MW, currently peak demand is ~4MW. Around ~12MW of data center load was planned however as of now only 5 MW have come. It was further informed that no specific monitoring is being done as load quantum is very low.

Representatives from Rajasthan, Haryana and Punjab stated that no such load have come in their respective control area.

NRLDC requested all the states to be vigil about monitoring of data center and electrolyser type of load as these load would be of sensitive nature and sudden load through off from these load centers will impact the grid. Hence, proper monitoring of these load centers is necessary.

MS NRPC stated that data centers load will be growing rapidly in the coming years and urged SLDCs to get involved in data sharing and regulation formulation exercise.

***Since some of SLDCs have already intimated regarding data center facility in their states, in 231 OCC meeting other SLDCs are also requested to provide update. Further, al SLDCs are requested to ensure:***

- ***Data telemetry from Data Center Feeders at SLDC and RLDC end.***
- ***Explore possibility of installation of PMUs at these facilities in coordination with NRLDC.***

***Members may please discuss.***

## **B.9. 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.

# RAPP A & B ISLANDING SCHEME (RAJASTHAN)

13.9.24 11:3:17

INSTANTANEOUS FREQ. 50.06 HZ					ISLANDING FREQ. 50.06 HZ	
NAME OF FEEDER	LOAD	STATUS	STATUS	STATUS	RAPP-A GENERATION 170	
RAPP-A-1					RAPP-B GENERATION 183	
220KV RAPP-A-1	17	BLOCKED			TOTAL GENERATION 353	
220KV RAPP-A-2	1	OPERATIVE			EX BUS GENERATION 374	
220KV RAPP-A-3	1	OPERATIVE			TOTAL BLOCKED/ISLANDED LOAD 0	
220KV RAPP-A-4	14	BLOCKED			TOTAL OPERATIVE LOAD 0	
RAPP-B-1						
220KV RAPP-B-1	5	OPERATIVE				
220KV RAPP-B-2	81	BLOCKED				
220KV RAPP-B-3	35	BLOCKED				
220KV RAPP-B-4	1	OPERATIVE				
220KV RAPP-B-5	1	OPERATIVE				
220KV RAPP-B-6	1	OPERATIVE				
220KV RAPP-B-7	1	OPERATIVE				
220KV RAPP-B-8	1	OPERATIVE				
220KV RAPP-B-9	1	OPERATIVE				
220KV RAPP-B-10	1	OPERATIVE				
220KV RAPP-B-11	1	OPERATIVE				
220KV RAPP-B-12	1	OPERATIVE				
220KV RAPP-B-13	1	OPERATIVE				
220KV RAPP-B-14	1	OPERATIVE				
220KV RAPP-B-15	1	OPERATIVE				
220KV RAPP-B-16	1	OPERATIVE				
220KV RAPP-B-17	1	OPERATIVE				
220KV RAPP-B-18	1	OPERATIVE				
220KV RAPP-B-19	1	OPERATIVE				
220KV RAPP-B-20	1	OPERATIVE				
220KV RAPP-B-21	1	OPERATIVE				
220KV RAPP-B-22	1	OPERATIVE				
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220KV RAPP-B-26	1	OPERATIVE				
220KV RAPP-B-27	1	OPERATIVE				
220KV RAPP-B-28	1	OPERATIVE				
220KV RAPP-B-29	1	OPERATIVE				
220KV RAPP-B-30	1	OPERATIVE				
220KV RAPP-B-31	1	OPERATIVE				
220KV RAPP-B-32	1	OPERATIVE				
220KV RAPP-B-33	1	OPERATIVE				
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220KV RAPP-B-36	1	OPERATIVE				
220KV RAPP-B-37	1	OPERATIVE				
220KV RAPP-B-38	1	OPERATIVE				
220KV RAPP-B-39	1	OPERATIVE				
220KV RAPP-B-40	1	OPERATIVE				
220KV RAPP-B-41	1	OPERATIVE				
220KV RAPP-B-42	1	OPERATIVE				
220KV RAPP-B-43	1	OPERATIVE				
220KV RAPP-B-44	1	OPERATIVE				
220KV RAPP-B-45	1	OPERATIVE				
220KV RAPP-B-46	1	OPERATIVE				
220KV RAPP-B-47	1	OPERATIVE				
220KV RAPP-B-48	1	OPERATIVE				
220KV RAPP-B-49	1	OPERATIVE				
220KV RAPP-B-50	1	OPERATIVE				
220KV RAPP-B-51	1	OPERATIVE				
220KV RAPP-B-52	1	OPERATIVE				
220KV RAPP-B-53	1	OPERATIVE				
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220KV RAPP-B-71	1	OPERATIVE				
220KV RAPP-B-72	1	OPERATIVE				
220KV RAPP-B-73	1	OPERATIVE				
220KV RAPP-B-74	1	OPERATIVE				
220KV RAPP-B-75	1	OPERATIVE				
220KV RAPP-B-76	1	OPERATIVE				
220KV RAPP-B-77	1	OPERATIVE				
220KV RAPP-B-78	1	OPERATIVE				
220KV RAPP-B-79	1	OPERATIVE				
220KV RAPP-B-80	1	OPERATIVE				
220KV RAPP-B-81	1	OPERATIVE				
220KV RAPP-B-82	1	OPERATIVE				
220KV RAPP-B-83	1	OPERATIVE				
220KV RAPP-B-84	1	OPERATIVE				
220KV RAPP-B-85	1	OPERATIVE				
220KV RAPP-B-86	1	OPERATIVE				
220KV RAPP-B-87	1	OPERATIVE				
220KV RAPP-B-88	1	OPERATIVE				
220KV RAPP-B-89	1	OPERATIVE				
220KV RAPP-B-90	1	OPERATIVE				
220KV RAPP-B-91	1	OPERATIVE				
220KV RAPP-B-92	1	OPERATIVE				
220KV RAPP-B-93	1	OPERATIVE				
220KV RAPP-B-94	1	OPERATIVE				
220KV RAPP-B-95	1	OPERATIVE				
220KV RAPP-B-96	1	OPERATIVE				
220KV RAPP-B-97	1	OPERATIVE				
220KV RAPP-B-98	1	OPERATIVE				
220KV RAPP-B-99	1	OPERATIVE				
220KV RAPP-B-100	1	OPERATIVE				

## STPS ISLANDING SCHEME (RAJASTHAN)

13.9.24 11:9:29

INSTANTANEOUS FREQ. 50.04 HZ					ISLANDING FREQ. 50.04 HZ	
NAME OF FEEDER	LOAD	STATUS	STATUS	STATUS	TOTAL GENERATION 1543	
STPS-1					EX BUS GENERATION 1398	
220KV STPS-1	54	OPERATIVE			TOTAL BLOCKED/ISLANDED LOAD 0	
220KV STPS-2	108	OPERATIVE			TOTAL OPERATIVE LOAD 499	
220KV STPS-3	108	BLOCKED				
220KV STPS-4	269	BLOCKED				
220KV STPS-5	269	OPERATIVE				
220KV STPS-6	269	OPERATIVE				
220KV STPS-7	175	BLOCKED				
220KV STPS-8	128	BLOCKED				
220KV STPS-9	128	BLOCKED				

## NAPS ISLANDING LOAD DISPLAY

FREQUENCY (HZ)

50.06 HZ

13.9.24 11:1:17

NAME OF SUBSTATION	ELEMENT NAME	LOADING	
		WHEN ONE MACHINE IS RUNNING	WHEN BOTH THE MACHINE ARE RUNNING
220KV NAPP	SUT-1	11.23	11.23
	SUT-8	9.43	9.43
	63 MVA ICT-1	0.02	0.02
	63 MVA ICT-2		
	40 MVA ICT-3	3.17	3.17
220KV SIMBHOLI	132KV GARHMUKTESHWAR	-0.00	-0.00
	132KV SUGAR MILL	1.48	1.48
	132 KV ANDOPSHAHAR	N / APP	6.66
	132 KV KHURJA-II	N / APP	0.00
	63 MVA ICT-1	N / APP	9.85
220KV KHURJA	40 MVA ICT-2	N / APP	9.23
	40 MVA ICT-3	N / APP	10.12
	TOTAL LOAD	37.99	104.6
	RANGE OF REQUIRED LOAD	70-90 MW	150-280 MW

220KV NAPP-GENERATION

UNIT	GENERATION(MW)	G/L RATIO(%)
UNIT-I	199.1	5.26
UNIT-II	9.43	4.47
TOTAL	407.5	3.82

Rajasthan SLDC was asked to include G/L ratio of island in their displays and also check for missing load values so that correct total island load data is available.

Erroneous values

*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.

Thereafter, a meeting was also convened by NRLDC with states on 06.02.2025 to review the progress.

Following was discussed during the meeting:

During 228 OCC meeting,

Rajasthan representative informed that the islanding basecase will be submitted to NRLDC within a week.

Punjab representative stated that they are in the process of aggregating dynamic data from the site. Regarding UFR testing and SCADA display, they confirmed that both will be completed and submitted within a week.

Delhi representative informed that UFR testing was delayed due to the legislative assembly elections in Delhi during January-February 2025. Now that the elections are over, the pending UFR testing at Maharanibagh, Bawana, and Electric Lane will be completed within a week, and a consolidated UFR testing report will be submitted to NRLDC thereafter.

OCC Forum urged all concerned SLDCs to expedite the mock testing of the islanding scheme, submission of PSSE islanding basecase, dynamic data, preparation of SCADA display/SCADA map and complete the associated studies before the next OCC meeting.

During 229 OCC meeting,

DTL representative informed that UFR testing is pending for POWERGRID Maharanibagh substation and thereafter testing report would be submitted to NRLDC/NRPC.

No update could be received from Punjab SLDC.

Rajasthan SLDC assured that they will be sharing basecases for other scenarios also shortly.

NRLDC representative requested that as per IEGC, load flow and dynamic studies and mock testing need to be carried out once every year. Accordingly, incase same is not completed before march 2025, same would be treated as non-compliance in self/ third party audit for 2024-25.

OCC asked all SLDCs to ensure that all testing and basecase sharing for islanding studies as per IEGC 2023 is done at the earliest.

After 229 OCC meeting, Punjab SLDC has shared basecase files for islanding schemes, however only steady stated files have been shared and dynamic data of

generators is yet to be shared. UFR testing has been carried out by Punjab and report has been shared with NRLDC. SCADA display for RSD scheme is being developed at Punjab SLDC end (G/L ratio is pending)

*During 230 OCC meeting, NRLDC representative presented the status of mock testing of islanding and studies:*

### Current Status

Scheme	UFR testing done	Basecase shared	SCADA display made
NAPP Islanding scheme (UP)	Yes	Yes	Yes*
RAPP Islanding scheme (Raj)	Yes	Yes	No
Pathankote-RSD Islanding scheme (Pun)	Yes	Yes#	No
Bawana Islanding scheme (Delhi)	No	Yes	Yes

\*Telemetry not coming properly

# steady state basecase received

NRLDC representative stated that, after 229 OCC meeting, Punjab SLDC has shared basecase files for islanding schemes, however only steady state files have been shared and dynamic data of generators is yet to be shared. UFR testing has been carried out by Punjab and report has been shared with NRLDC. SCADA display for RSD scheme is being developed at Punjab SLDC end (G/L ratio is pending)

Moreover, pending basecase files have been received from Rajasthan SLDC.

**Delhi representative stated that testing is pending at 400kV only, all the testing at 220kV & below has been completed. They will submit the report at the earliest.**

**No further updated received from Punjab and Rajasthan.**

**OCC requested Rajasthan and Punjab to complete the work related to SCADA display of islanding scheme and Delhi was requested to complete the UFR testing and submit testing report.**

**Rajasthan, Punjab and Delhi SLDCs are requested to provide update.**

#### **B.10. Multiple element tripping events in Northern region in the month of April 2025**

A total of 24 grid events occurred in the month of April 2025 of which 16 are of GD-1 category, 03 are of GI-2 Category and 05 is 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.V.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Gurgaon(PG) and 220kV Gurgaon Sec72(HR) at 13:59 hrs on 17<sup>th</sup> April, 2025 (As per PMU at Gurgaon(PG), B-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 08 events out of 24 grid events occurred in the month. In 01 (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.***

DR/EL and tripping report of following multiple elements tripping event not received as on date 08.05.2025:

- a) 220kV Ayana Bikaner on 02.04.2025
- b) 400/220kV Jaisalmer(RS) on 02.04.2025 (Time sync issue in DR)
- c) 220kV Azure(Bhadla) on 06.04.2025 (Not received from Azure end)
- d) 220kV Thar Surya (Bikaner) on 07.04.2025
- e) 220kV Mehal kalan(PS) on 08.04.2025
- f) 220kV Fatehabad(HV) on 09.04.2025 (DR/EL & tripping report not received)
- g) 220kV Singoli Bhatwari HEP on 09.04.2025 (not received from Singoli end)
- h) 220kV Dandhari Kalan(PS) on 10.04.2025 (not received from Punjab end)
- i) 220kV Renew Sunbright on 11.04.2025 (Not received from Renew end)
- j) 220kV Unchhahar(NTPC) on 13.04.2025 (Tripping report not received)
- k) 220kV Pong(BBMB) on 16.04.2025 (Partial data received)
- l) 220kV Bairasiul HEP(NHPC) on 16.04.2025 (No details received)
- m) 220kV Bhiwani(BBMB) and Charkhi Dadri(BBMB) on 25.04.2025 (No details received)
- n) 400/220kV Ropar(PS) on 28.04.2025 (Partial data received)
- o) 220kV GrianPSS\_BIK2\_(AMPLUS) on 28.04.2025 (No details received)

Concern utility may share the reason of not sharing the tripping details.

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and share the report of actions taken by respective utilities. 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 IEGC clause 37.2 (c) & (e).

***Members may like to discuss.***

#### **B.11. Status of submission of DR/EL and tripping report of utilities for the month of April 2025**

The status of receipt of DR/EL and tripping report of utilities for the month of **April 2025** is attached at **Annexure-B.VI**. It is to be noted that as per the IEGC provision under clause 37.2 (c), the 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 of RE stations, SLDC-HR, SLDC-PS, SLDC-J&K, SLDC-HP, INDIGRID, NHPC, BBMB, POWERGRID(NR-3) and RAPS 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 “<https://postda.nrlldc.in/Default.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 (.cfg/.dat) may please also be submitted in tripping portal.

**Members may like to discuss.**

## **B.12. 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 56 numbers of System Protection Scheme (SPS) approved in Northern Region. These SPS are implemented at major generation complexes, important evacuating transmission lines and ICTs which are N-1 non-complaint. System Protection Scheme Document of Northern Region has been revised/updated on 31st February 2025. Revised version of the document is available on the NRLDC website in Document section and can be accessed at below link: <https://newnr.nrlldc.in/documents/Documents>.

In this regard, communication was sent to constituents through NRLDC letter dated 01.05.2024, 21.02.2025 & 05.03.2025 for conducting mock testing of SPS in their control area and continuous follow up is also being done in OCC & PSC meeting since May 2024. Mock testing of most of the SPS has been conducted, however it is pending at some of the stations / complex shown in below table

Not conducted Mock Testing of SPS in 2024-25				
Sr. No.	Scheme Name	Control Area	Remarks	Date of Last Mock testing conducted
1	SPS for contingency due to tripping of HVDC Mundra-Mahendergarh	ADANI	Not healthy. Review is being done at OCC/PSC forum	
2	System Protection Scheme (SPS) for HVDC Balia-Bhiwadi Bipole	POWERGRID	Schedule not received. Review of SPS is needed.	
3	SPS for high capacity 400 kV Muzaffarpur-Gorakhpur D/C Inter-regional tie-line related contingency	POWERGRID	Schedule not received. Review of SPS is needed.	
4	SPS for Reliable Evacuation of Ropar Generation	Punjab	Schedule not received	
5	SPS for contingency due to tripping of evacuating lines from Narora Atomic Power Station	NAPS	Schedule not received	
6	SPS for Lahal Generation	Himachal Pradesh	Schedule not received	08-07-2020
7	SPS for evacuation of Kawai TPS, Kalisindh TPS generation complex	Rajasthan	Partially conducted on 14-03-2025. Complete exercise needs to be conducted.	
8	SPS for Transformers at Ballabgarh (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
9	SPS for Transformers at Maharaniabagh (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
10	SPS for Transformers at Mandola (PG) substation	POWERGRID	Not in service, Review is being done in OCC/PSC forum	
11	SPS for Transformers at Bamnauli (DTL) Substation	Delhi	Schedule not received; Review is being done at OCC/PSC forum	
12	SPS for Transformers at 400kV Deepalpur (JKTPL) Substation	Haryana	Schedule not received	
13	SPS for Transformers at 400KV Fatehgarh Solar Park (AREPRL)	ADANI	Schedule not received	
14	SPS for Transformers at 400kV Unnao (UPPTCL) Substation	Uttar Pradesh	SPS Unhealthy	19-05-2023

Concerned constituents / utility were requested to conduct the mock testing of pending SPS (mentioned in above table) by the end of April 2025 month through NRLDC letter dated 04.04.2025.

Mock testing of the following SPS have been conducted recently w.r.t 2025-26 year:

- ICTs at Moradabad(UP): 02.04.2025
- Lalitpur TPS: 09.04.2025
- Rosa TPS: 12.04.2025

iv. 400KV Fatehgarh Solar Park (AREPRL): 19.04.2025

**Concerned constituents / utility are requested to conduct the mock testing of pending SPS (whose mock testing was not conducted in 2024-25) at the earliest.**

**Utilities are also requested to conduct the mock testing of SPS schemes in their respective control area w.r.t. year 2025-26.**

**In compliance with IEGC clause 16.2, users shall ensure that mock testing along with the review of SPS logic of all the SPS is conducted at least once a year.**

**Further In compliance with IEGC clause 16.3, users shall also share the detailed report of SPS operation in their respective control area within 3 days of its operation. Presently, no such report is being received.**

*Members may like to discuss.*

#### **B.13. Confirmation of regarding implementation of proposed Overvoltage protection setting by committee**

The committee formed by NRPC (during 52nd PSC meeting held on 20.09.2024) to review the Overvoltage Protection settings of 400kV and 765kV transmission lines in NR finalized the philosophy for overvoltage protection and proposed the revised overvoltage protection setting for 400kV and 765kV transmission lines in NR. The proposed protection settings were discussed and approved in 58th Protection Sub-Committee (PSC) meeting held on 26.03.2025. The PSC forum requested all the utilities to implement the proposed overvoltage protection settings in 400kV and 765kV transmission lines in their respective control area. Details of the revised overvoltage protection setting to be implemented at site is attached as **Annexure-B.VII.**

Further, the agenda in this regard was again discussed in 230 OCC meeting held on 17.04.2025 and members were requested to ensure the implementation of proposed overvoltage settings by the end of April 2025.

**Therefore, all the utilities are requested to share the confirmation regarding implementation of revised overvoltage protection setting in 400kV and 765kV transmission lines in their respective control area.**

*Members may like to discuss.*

#### **B.14. Long Outage of 400KV BUS-3 AT MOGA(PG)**

It is to bring to your notice that 400KV BUS 4 AT MOGA(PG) was under outage to attend Leakages in GIS Bus from 11:52Hrs of 13.09.25 and revived at 17:51Hrs of 16.01.25 i.e. total of around 125days. Also, Shutdown of 400KV BUS 3 AT MOGA(PG)

was taken from 11:50Hrs of 06.02.25 and it is yet to be revived i.e. almost 91 days are already passed.

It may be noted that 400KV BUS 3 AT MOGA(PG) is an important element from the point of Grid security and reliability and in case of N-1 contingency and outage of other Bus will lead to tripping of 1500 MVA ICT 1 & 2, along with circuits of 400kV Kishenpur-Moga 1 & 2 and 400kV Hissar-Moga ckt-2 & 3 which may result into problem of solar generation evacuation and meeting the load of J&K valley.

It may be further noted that during the initial shutdown request, work plan of 90 days was submitted and approved by OCC forum. Therefore, in the interest of Grid security and reliability, it is requested to adhere to the approved shutdown duration and revive the bus as early as possible.

**Members may like to discuss.**

#### B.15. Long Outage due to Tower Collapse:

Following lines are under outage due to tower collapse

Name of element उपकरण का नाम	Owner स्वामित्व	Outage time (in hrs) / date	Revival time (in hrs) / date	Reason of outage दिए गए कारण	Remarks/ Expected date
220 KV KISHENPUR(PG)-MIR BAZAR(PDD) (PDD) CKT-1	JK	20:09/ 21.06.24	-----	Tower foundation damaged. Emergency shutdown of 220k KPTL Kishenpur - <u>Mirbazar</u> Ckt as the landslide occurred at Tower Loc. no. KP-196 at Peerah and <u>tower</u> is on the verge of collapse.	30.05.25
220 KV SHAHJAHANPUR(PG)-HARDOI(UP) (UP) CKT-1	UP	06:42/ 05.06.24	-----	Tower Collapse. Tower collapse at loc no. 86 & 87	
400 KV MORADABAD(UP)-KASHIPUR(UK) (UK) CKT-1	UK	22:37/18.04.25	-----	Phase to Phase Fault R-Y, Fault current <u>I<sub>r</sub></u> 6.7kA, <u>I<sub>y</sub></u> 6.76kA from Kashipur. Tower collapsed at Loc. no. 94.	15.05.25
400 KV JAISALMER-BARMER (RS) CKT-2	RRVPNL	21:05/01.05.25	-----	Phase to Phase Fault R-Y, Zone-1, Dist. 80.44km, Fault current <u>I<sub>r</sub></u> 4.226kA, <u>I<sub>b</sub></u> 4.328kA from Barmer & Zone-1, Dist. 20.1km from Jaisalmer.	Tower collapsed from Location No. 70 to 81-12 Nos. (09 Towers damaged + 03 Nos. peak damaged) due to Heavy wind
400 KV JAISALMER-BARMER (RS) CKT-1	RRVPNL	21:05/01.05.25	-----	Phase to earth fault B-N, Zone-1, Dist. 91.46km, fault current 3.017kA from Barmer & Zone-1, Dist. 25.31km from Jaisalmer.	
400 KV BHINMAL(PG)-BARMER(RS) (RS) CKT-2	RRVPNL	04:14/05.05.25	-----	Tower collapse at Loc:101	
400 KV BHINMAL(PG)-BARMER(RS) (RS) CKT-1	RRVPNL	04:14/05.05.25	-----	Tower collapse at Loc:101	

Utilities are requested to update the revival status of the above-mentioned lines.

**Members may like to discuss.**

#### B.16. Detailed analysis of resource adequacy and peak demand scenarios in view of anticipated high demand in coming months:

It has been observed that Tamil Nadu (SR region) is currently scheduling generation from the Anta, Auraiya, and Dadri gas plants in open cycle mode, predominantly during non-solar hours to meet the high demand.

In view of the anticipated increase in electricity demand during the upcoming summer months, all Northern Region (NR) states are hereby requested to undertake a detailed analysis of their resource adequacy and peak demand scenarios. Based on this assessment, NR states are requested to consider scheduling their requisitions from the Anta, Auraiya, and Dadri gas stations in closed/open cycle, particularly during periods of anticipated shortfall. Such proactive planning and optimal utilization of available gas-based generation resources will support overall grid reliability and ensure a balanced supply-demand situation during critical periods.

***Members may like to discuss.***

Status of action taken on decision of 230<sup>th</sup> OCC meeting of NRPC

S.N.	Agenda	Decision of 230 <sup>th</sup> OCC meeting of NRPC	Status of action taken
1	A.12. Tower integrity of 400KV Transmission lines emanating from Adani Kawai TPP & frequent porcelain string insulator failures.	OCC forum asked RVPN to take appropriate steps immediately such as increasing the height of tower base of tower 9 & 10 of 400KV Kawai-Anta D/C transmission line to prevent tower damage. Forum further asked RVPN to increase the patrolling of 400KV Kawai-Anta D/C transmission line and 400KV Kawai-Chhabra S/C transmission line to prevent the theft of tower members.	RVPN to update the status.
2	A.15. N-1 Contingency violation in 765/400KV 1500MVA ICT at Moga Substation (Agenda by Powergrid NR-2)	Forum asked POWERGRID and CTU to take up the matter of additional ICT at 765/400kV Moga(PG) Substation in the next CMETS meeting.	POWERGRID and CTU to update the status.

Status of action taken on decision of 230<sup>th</sup> OCC meeting of NRPC

3	A.16. Frequent disconnection of Leh Transmission system from National GRID due to radial connectivity/ N-1 Contingency violation J&K and Ladakh Region. (Agenda by Powergrid NR-2)	Forum asked CTU and Powergrid to prepare the proposal for additional connectivity of Leh for further discussion.	POWERGRID and CTU to update the status.
4	A.17. Extreme voltage variation in J&K & Ladakh area (Agenda by Powergrid NR-2)	Forum asked CTU and Powergrid to prepare the proposal for installing static / dynamic reactive power compensation devices in J&K control area.	POWERGRID and CTU to update the status.

## Follow up issues from previous OCC meetings

Annexure-A. II

1	Down Stream network by State utilities from ISTS Station	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.	List of downstream networks is enclosed in Annexure-A. II. I.																																								
2	Progress of installing new capacitors and repair of defective capacitors	Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.	<div>Data upto following months, received from various states / UTs:</div> <table><tr><td>⊙ CHANDIGARH</td><td>Sep-2019</td></tr><tr><td>⊙ DELHI</td><td>Mar-2025</td></tr><tr><td>⊙ HARYANA</td><td>Jan-2025</td></tr><tr><td>⊙ HP</td><td>Sep-2024</td></tr><tr><td>⊙ J&amp;K and LADAKH</td><td>Not Available</td></tr><tr><td>⊙ PUNJAB</td><td>Mar-2025</td></tr><tr><td>⊙ RAJASTHAN</td><td>Mar-2025</td></tr><tr><td>⊙ UP</td><td>Mar-2025</td></tr><tr><td>⊙ UTTARAKHAND</td><td>Apr-2025</td></tr></table> <div>All States/UTs are requested to update status on monthly basis.</div>	⊙ CHANDIGARH	Sep-2019	⊙ DELHI	Mar-2025	⊙ HARYANA	Jan-2025	⊙ HP	Sep-2024	⊙ J&K and LADAKH	Not Available	⊙ PUNJAB	Mar-2025	⊙ RAJASTHAN	Mar-2025	⊙ UP	Mar-2025	⊙ UTTARAKHAND	Apr-2025																						
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⊙ UTTARAKHAND	Apr-2025																																										
3	Healthiness of defence mechanism: Self-certification	<div>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” .</div> <div>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</div>	<div>Data upto following months, received from various states / UTs:</div> <table><tr><td>⊙ CHANDIGARH</td><td>Not Available</td></tr><tr><td>⊙ DELHI</td><td>Mar-2025</td></tr><tr><td>⊙ HARYANA</td><td>Dec-2024</td></tr><tr><td>⊙ HP</td><td>Mar-2025</td></tr><tr><td>⊙ J&amp;K and LADAKH</td><td>Not Available</td></tr><tr><td>⊙ PUNJAB</td><td>Mar-2025</td></tr><tr><td>⊙ RAJASTHAN</td><td>Dec-2024</td></tr><tr><td>⊙ UP</td><td>Dec-2024</td></tr><tr><td>⊙ UTTARAKHAND</td><td>Mar-2025</td></tr><tr><td>⊙ BBMB</td><td>Dec-2024</td></tr></table> <div>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.</div> <div>Status:</div> <table><tr><td>⊙ CHANDIGARH</td><td>Not Available</td></tr><tr><td>⊙ DELHI</td><td>Increased</td></tr><tr><td>⊙ HARYANA</td><td>Increased</td></tr><tr><td>⊙ HP</td><td>Increased</td></tr><tr><td>⊙ J&amp;K and LADAKH</td><td>Increased</td></tr><tr><td>⊙ PUNJAB</td><td>Increased</td></tr><tr><td>⊙ RAJASTHAN</td><td>Increased</td></tr><tr><td>⊙ UP</td><td>Increased</td></tr><tr><td>⊙ UTTARAKHAND</td><td>Increased</td></tr><tr><td>⊙ BBMB</td><td>Increased</td></tr></table>	⊙ CHANDIGARH	Not Available	⊙ DELHI	Mar-2025	⊙ HARYANA	Dec-2024	⊙ HP	Mar-2025	⊙ J&K and LADAKH	Not Available	⊙ PUNJAB	Mar-2025	⊙ RAJASTHAN	Dec-2024	⊙ UP	Dec-2024	⊙ UTTARAKHAND	Mar-2025	⊙ BBMB	Dec-2024	⊙ CHANDIGARH	Not Available	⊙ DELHI	Increased	⊙ HARYANA	Increased	⊙ HP	Increased	⊙ J&K and LADAKH	Increased	⊙ PUNJAB	Increased	⊙ RAJASTHAN	Increased	⊙ UP	Increased	⊙ UTTARAKHAND	Increased	⊙ BBMB	Increased
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⊙ J&K and LADAKH	Not Available																																										
⊙ PUNJAB	Mar-2025																																										
⊙ RAJASTHAN	Dec-2024																																										
⊙ UP	Dec-2024																																										
⊙ UTTARAKHAND	Mar-2025																																										
⊙ BBMB	Dec-2024																																										
⊙ CHANDIGARH	Not Available																																										
⊙ DELHI	Increased																																										
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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 <b>Annexure-A.II.II.</b>																																													
			⊙ 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 <b>Annexure-A.II.III.</b>																																													
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: <table><tr><td>Category→</td><td>Consumption by Domestic Loads</td><td>Consumption by Commercial Loads</td><td>Consumption by Agricultural Loads</td><td>Consumption by Industrial Loads</td><td>Traction supply load</td><td>Miscellaneous /Others</td></tr><tr><td>&lt;Month&gt;</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	Category→	Consumption by Domestic Loads	Consumption by Commercial Loads	Consumption by Agricultural Loads	Consumption by Industrial Loads	Traction supply load	Miscellaneous /Others	<Month>							Status of the information submission (month) from states / utilities is as under: <table><tr><td></td><td>State / UT</td><td>Upto</td></tr><tr><td>⊙</td><td>CHANDIGARH</td><td>Not Submitted</td></tr><tr><td>⊙</td><td>DELHI</td><td>Feb-25</td></tr><tr><td>⊙</td><td>HARYANA</td><td>Mar-25</td></tr><tr><td>⊙</td><td>HP</td><td>Jan-25</td></tr><tr><td>⊙</td><td>J&amp;K and LADAKH</td><td>JPDCI- Mar' 24 KPDCL- Not Submitted</td></tr><tr><td>⊙</td><td>PUNJAB</td><td>Mar-25</td></tr><tr><td>⊙</td><td>RAJASTHAN</td><td>Dec-24</td></tr><tr><td>⊙</td><td>UP</td><td>Feb-25</td></tr><tr><td>⊙</td><td>UTTARAKHAND</td><td>Jan-25</td></tr></table> Chandigarh is requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format			State / UT	Upto	⊙	CHANDIGARH	Not Submitted	⊙	DELHI	Feb-25	⊙	HARYANA	Mar-25	⊙	HP	Jan-25	⊙	J&K and LADAKH	JPDCI- Mar' 24 KPDCL- Not Submitted	⊙	PUNJAB	Mar-25	⊙	RAJASTHAN	Dec-24	⊙	UP	Feb-25	⊙	UTTARAKHAND	Jan-25
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⊙	UTTARAKHAND	Jan-25																																														
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 meetings.	Status of the information submission (month) from states / utilities is as under: <table><tr><td>⊙</td><td>HARYANA</td><td>Jun-2024</td></tr><tr><td>⊙</td><td>PUNJAB</td><td>Feb-2025</td></tr><tr><td>⊙</td><td>RAJASTHAN</td><td>Feb-2025</td></tr><tr><td>⊙</td><td>UP</td><td>Jan-2024</td></tr><tr><td>⊙</td><td>NTPC</td><td>Mar-2025</td></tr></table> FGD status details are enclosed as <b>Annexure-A. II. IV.</b> All States/utilities are requested to update status of FGD installation progress on monthly basis.		⊙	HARYANA	Jun-2024	⊙	PUNJAB	Feb-2025	⊙	RAJASTHAN	Feb-2025	⊙	UP	Jan-2024	⊙	NTPC	Mar-2025																													
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⊙	UP	Jan-2024																																														
⊙	NTPC	Mar-2025																																														
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 7 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.

						Annexure-A-II.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	Contractual completion date on 04.08.2025.	Under construction.Updated in 230rd 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	Utilized: 7	• 220 kV D/C Shahjahanpur (PG) - Gola line	Commissioned	Energization date: 26.10.2023 updated by UPPTCL in 215th OCC
		Approved/Under Implementation:1		• 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.Commissioned 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.	-	Issue related to ROW as intimated in 228th OCC by HVPNL. <b>Status:</b> 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 31.03.2025. 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	Oct'25	Erection and stringing work completed.The signing of Connection agreement amongst the Utilities is pending. Updated in 230th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6	Utilized: 6 Unutilized: 0	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	Commissioned	Updated in 216th OCC by DTL
		Under Implementation: 4		• Masjid Mor – Tughlakabad 220kV D/c line.	Commissioned	Updated in 216th OCC by DTL
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 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
			Unutilized: 2	• 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
			Under Implementation:2	• 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 - Pali D/C line Kadarpur - Sec-65	Apr'25	Updated in 230th OCC by HVPNL <b>Status:-</b> A-formats for FTC of line submitted on FTC portal of NRLDC on dated 09.04.25.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
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	Oct'25	Line work completed, but commissioning of 220kV substation Roj ka Meo is pending till now.. However, this arrangement will not lead to usage of additional bays i.e. no of utilised bays at Sohna road will remain same.Updated in 230th 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 228th OCC by HVPNL. <b>Status:-</b> 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 Approved: 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	Dec'25	Contract awarded on 08.08.23 to M/s Skipper with completion in December 25.Updated in 230th 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	31.07.2025	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 228th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	Jul'25	The work for construction of 220kV D/C Prithla-Sector-78 Faridabad line on multi circuit towers is delayed mainly due to severe resistance by local villagers & ROW problem at site during construction. Due to delay in construction of 220kV D/C Prithla-Sector-78 Faridabad line, the work for construction of 220kV D/C Prithla-Sector 89 Faridabad line might delay..Updated in 230th OCC by HVPNL
16	400/220kV Sonapat 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 Sonapat	Apr'25	Updated in 230th OCC by HVPNL. <b>Status:</b> A-formats for FTC of line submitted on FTC portal of NRLDC on dated 09.04.25.
				• Sonapat - HSIISC Rai 220kV D/c line	Commissioned	Energization date: 31.05.2024 updated by HVPNL in 220th OCC
				• Sonapat - Kharkhoda Pocket A 220kV D/c line	May'25	Updated in 230th OCC by HVPNL. <b>Status:</b> 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.
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 Jalandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar	-	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Route plan and estimate of work sanctioned, DNIT has been sent to float tender as updated by PSTCL in 227th OCC
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.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
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	Utilized: 2	• Panchkula – Pinjore 220kV D/c line	Commissioned	Updated in 218th OCC by HVPNL
		Under tender:2	Unutilized: 4 Under Implementation:2	• Panchkula – Sector-32 220kV D/c line	Commissioned	Energization date: 24.05.2024 updated by HVPNL in 220th OCC
		Total: 10		• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
		Out of these 10 nos. 220kV		• Panchkula – Sadhaura 220kV D/c line: Sep'23	Jun'25	Revised target date as confirmed by concerned XEN TS, Panchkula.Updated in 230th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7	Utilized: 6	• Amritsar – Patti 220kV S/c line	31.08.2024	Draft connectivity agreements for 220kV Rashiana-Amritsar & 220kV Patti-Amritsar lines are under consideration by CTU. CTU is processing these agreements and PSTCL is providing with the requisite inputs/data to CTU from time to time, as and when required.. Updated in 230th OCC by PSTCL.
		Approved in 50th NRPC- 1 no. Total: 8	Under Implementation:2	• 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	Draft connectivity agreements for 220kV Rashiana-Amritsar & 220kV Patti-Amritsar lines are under consideration by CTU. CTU is processing these agreements and PSTCL is providing with the requisite inputs/data to CTU from time to time, as and when required.. 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 Bahadurgarh 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	-	Proposal turned down by CEA.Updated in 230th OCC by HVPNL.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	15.06.2026	Updated in 230th OCC by HVPNL. <b>Status:</b> The work stands awarded to the M/s KRR and the execution work has been started at site. Partial route stands approved by the competent authority of the HVPNL. Further, 06 no. Foundation has been casted.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	30.06.2025	Updated in 230th OCC by HVPNL. <b>Status:</b> RoW issues which are being resolved with the help of Duty Magistrate.
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.
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- A proposal is being prepared for the creation of another 220kV D/C line from the 400kV substation Panchgaon (PG) to the 220kV substation Panchgaon (HVPNL), along with the LILO of one circuit of the 220kV D/C Panchgaon (PG) – Mau line at the 220kV substation Panchgaon to utilize two bays at the 400kV substation Panchgaon. The load flow study for this has already been completed.
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 Tanmsmission 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	• 400 kV PGCIL Patiala - 220 kV Bhadson (D/C)	-	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Technical bid for civil work of 66kV to 220kV Bhadson upgradation has been opened and further processed for opening of financial bid. Work likely to be started by 15.05.2025. as updated by PSTCL in 230th OCC meeting

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks

## Status of ADMS implementation in NR:

Sl. No.	State / UT	Status	Remarks
1	DELHI	Scheme Implemented but operated in manual mode.	<p>In 225th OCC meeting NRPC representative apprised forum that revised Standard Operating Procedure (SOP) of Automatic Demand Management Scheme (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 implementation is 28th February 2025. DTL intimated that TPPDL has informed that they have engaged SCADA OEM for the implementation of ADMS. However, OEM has confirmed that incorporation of ADMS logic into the current SCADA system is not feasible and it would require an upgrade or refresh of the system, necessitating additional expenditure for which DERC has been approached. The complete implementation cycle is expected to be within 2 years. However, in the meantime considering the criticality, their in-house team is working to develop a trigger notification/alarm system for manual operation of breaker triggering from the control room and thereafter exploring the possibility of automatically triggering the breaker using the trigger notification. TPPDL has stated that they expect to complete it by August 2025, if materialized.</p> <p>BRPL and BYPL have informed that their existing SCADA system is obsolete and it is in the up-gradation phase by OEM. After the up-gradation of SCADA system, the ADMS is expected to be implemented in BRPL &amp; BYPL by Oct 25.</p>
2	HARYANA	Scheme not implemented	<p>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:</p> <p>PART-I: Control with Transmission Utility</p> <p>PART-II: Control with Distribution Utility</p> <p>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.</p> <p>Hence, there is no need to acquire a separate ADMS application &amp; associated hardware for data centre for implementation of PART-I.</p> <p>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.</p>
3	HP	Scheme not implemented	<p>HP SLDC intimated 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 from HPSEB is awaited as intimated by HPSLDC.</p>
4	PUNJAB	Scheme not implemented	<p>i. A committee comprising of following officers of PSPCL &amp; 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:</p> <ol style="list-style-type: none"> <li>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.</li> <li>2. In case the frequency falls further below 49.85 Hz, the Over Drawl will be reduced to zero.</li> <li>3. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation.</li> </ol> <p>ii. In 222nd OCC, MS NRPC asked Punjab to co-ordinate with Powergrid for integration of their proposed logic with the ULDC phase-III SCADA system for timely implementation.</p>
5	RAJASTHAN	Under implementation	<p>In 230th OCC meeting, RVPN informed that 247 nos. of circuit breakers have been mapped to ADMS, all 247 circuit breakers tested upto yard individually. Total 650CBs are to be mapped in phased manner.</p>

6	UP	Scheme implemented by NPCIL only	<p>i. A meeting regarding ADMS was held on 15.01.2023 with the UPPCL under the chairmanship of MD UPPTCL</p> <p>ii. A committee formed for identification of load at 33 kV level under the chairmanship of Director (Distribution), UPPCL.</p> <p>iii. Another committee under the chairmanship of Director UPSLDC shall identify the technical and operational requirement for ADMS implementation</p> <p>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.</p> <p>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.</p> <p>vi. MS, NRPC apprised forum that a letter has been written to Director, SLDC for co-ordinating with Director (Distribution), UPPCL for expediting the finalization of feeder list at 33kV for ADMS implementation.</p> <p>vii. Response from UPPCL regarding the finalization of feeder list at 33kV for ADMS implementation is awaited.</p> <p>viii. UPSLDC intimated that they plan to have a meeting with UPPCL in the month of April 2025 for the finalization of feeder list at 33kV.</p> <p>ix. In 230th OCC meeting UP SLDC representative informed that feeder list at 33kV level for ADMS is awaited from UPPCL.</p>
7	UTTARAKHAND	Scheme not implemented	<p>i. UPCL has prepared a system architecture in which all the non-monitored sub-stations 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.</p> <p>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.</p> <p>iii. Uttarakhand SLDC informed that feeder list at 11kV level has been finalized and logic of ADMS implementation is under finalization.</p> <p>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.</p> <p>v. First Phase- Data Acquisition of 32 interstate points completed.</p> <p>vi. Second Phase-95 distribution side Substation work is on progress.</p> <p>vii In 230th OCC meeting Uttarakhand SLDC representative informed that Harbour installation and communication establishment has been done on 35 11kV feeders out of total 195 11kV feeders. The work is expected to be completed by December, 2025.</p>

## 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 bidder.
		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 Ballabgarh	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 Ajmer
		220 kV	16227.979		3		
		400 kV	6899.386		2		
		765 kV	425.498		1		

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
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)
15	HVPN						HVPN has apprised that purchase order for procurement of 2 sets of Emergency Restoration System (ERS) in HVPNL has been issued to M/s Jost's Engineering Company Ltd., Mumbai
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 COMMISSIONING STATUS							
S.No.	Utility	Plant Name	Unit	Target Commissioning Date (As updated by utility in OCC)	If commissioned , Actual Date of Commissioning	If not commissioned , Target Date of Commissioning	
1	Adani Power Ltd.	KAWAI TPS	1	31-Dec-24		31-Dec-29	
2			2	31-Dec-24		31-Dec-29	
3	APCPL	INDIRA GANDHI STPP	1		3-May-24		
4			2	30-Sep-23	27-Jan-25		
5			3	30-Jun-23		31-May-25	
6	GVK	GOINDWAL SAHIB	1	30-Apr-20	INFO NOT RECEIVED		
7			2	29-Feb-20			
8	NTPC	DADRI NCTPP	1	31-Dec-20	31.12.2019,(DSI - Dry FGD)		
9			2	31-Oct-20	27.12.2019,(DSI - Dry FGD)		
10			3	31-Aug-20	27.07.2020,(DSI - Dry FGD)		
11			4	30-Jun-20	14.07.2020,(DSI - Dry FGD)		
12			5	30-Jun-22	15-Jun-22		
13			6	31-Mar-23	8-Feb-24		
14		RIHAND STPS	1	31-Dec-24		30-Nov-26	
			2	30-Jun-26		31-Aug-26	
			3	31-Dec-24		31-Dec-26	
			4	31-Mar-25		30-Sep-26	
			5	30-Jun-25		30-Jun-26	
			6	31-Mar-25		31-Mar-25	
15		SINGRAULI STPS	1	31-Dec-24		30-Sep-25	
16			2	31-Dec-24		30-Sep-25	
17			3	31-Dec-24		30-Sep-25	
18			4	31-Dec-24		31-Dec-25	
19			5	31-Mar-25		31-Dec-25	
20			6	30-Jun-24		31-Aug-25	
21			7	31-Mar-24	Hot Gas In completed on 26.03.2025	30-Jun-25	
22			UNCHAHAR TPS	1	31-Dec-23	22-Feb-25	
23				2	31-Dec-23	22-Feb-25	
24				3	30-Sep-23		30-May-25
25				4	30-Sep-23		30-May-25
26				5	30-Sep-23		30-May-25
27		6		31-Aug-22	11-Oct-22		
28		MEJA STAGE- 1	1	31-Oct-23	16-Jan-25		
29			2	30-Jun-23	28-Feb-25		
30		TANDA STAGE -1	1	No FGD			
31			2	No FGD			
32			3	No FGD			
33			4	No FGD			
34		TANDA STAGE -2	5	31-Mar-23	28-Nov-24		
			6	30-Sep-23		30-May-25	
35	L&T POWER DEVELOPMENT	NABHA TPP (RAJPURA TPP)	1	30-Apr-21	NPL has completed construction of FGD units for both of its units, which have been ready for		
36			2	28-Feb-21			
37	TALWANDI SABO POWER LTD.	TALWANDI SABO TPP	1	28-Feb-21	INFO NOT RECEIVED		
38			2	31-Dec-20			
39			3	31-Oct-20			
40	HGPCCL	PANIPAT TPS	6	31-Dec-25			
41			7	31-Dec-25			
42			8	31-Dec-25			
43		RAJIV GANDHI TPS	1	31-Aug-27			
44			2	31-Aug-27			
45		YAMUNA NAGAR TPS	1	31-Aug-27			
46	2		31-Aug-27				
47	Lalitpur Power Gen. Company Ltd.	LALITPUR TPS	1	31-Dec-26			
48			2	30-Sep-26			
49			3	30-Jun-26			
50	Lanco Anpara Power Ltd.	ANPARA C TPS	1	31-Dec-25			
51			2	31-Dec-25			
52	Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP	1	31-Dec-26			
53			2	31-Dec-26			
54			3	31-Dec-26			
55	PSPCL	GH TPS (LEH.MOH.)	1	31-Dec-26			
56			2	31-Dec-26			
57			3	31-Dec-26			
58			4	31-Dec-26			
59		GGSSTP, Ropar	3	31-Dec-26			
60			4	31-Dec-26			
61	5		31-Dec-26				
62	Rosa Power Supply Company	ROSA TPP PH-I	6	30-Dec-26			
63			1	31-Dec-26			
64			2	31-Dec-26			
65			3	31-Dec-26			
66			4	31-Dec-26			
67			5	30-Nov-25			

68	RRVUNL	KOTA TPS	6	30-Nov-25		
69			7	30-Nov-25		
70		SURATGARH TPS	1	31-Dec-29		
71			2	31-Dec-29		
72			3	31-Dec-29		
73			4	31-Dec-29		
74			5	31-Dec-29		
75			6	31-Dec-29		
76		SURATGARH SCTPS	7	28-Feb-26		
77			8	28-Feb-26		
78		CHHABRA TPP	1	31-Dec-29		
79			2	31-Dec-29		
80			3	31-Dec-29		
81			4	31-Dec-29		
82		CHHABRA SCPP	5	28-Feb-26		
83			6	28-Feb-26		
84		KALISINDH TPS	1	28-Feb-26		
85			2	28-Feb-26		
86	UPRVUNL	ANPARA TPS	1	31-Dec-25		
87			2	31-Dec-25		
88			3	31-Dec-25		
89			4	31-Dec-25		
90			5	31-Dec-25		
91			6	31-Dec-25		
92			7	31-Dec-25		
93		HARDUAGANJ TPS	8	31-Dec-26		
94			9	31-Dec-26		
95		OBRA TPS	9	31-Dec-26		
96			10	31-Dec-26		
97			11	31-Dec-26		
98			12	31-Dec-26		
99			13	31-Dec-26		
100		PARICHHA TPS	3	31-Dec-26		
101			4	31-Dec-26		
102			5	31-Dec-26		
103			6	31-Dec-26		

### MIS Report for Status of Islanding Scheme Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healthiness	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

[illegible]

## Annexure-A.IV

Name of Station	UNIT_NM	STN_TYP E_ID	SECTOR	REGION_ NM	ST_NM	SH_NM	IPP	FUEL_NM	Capacity (MW) 31- 03-2025	Approved Planned Outage-1			Actual Planned Outage-1		
										Start Date	End Date	Reason	Start Date	End Date	Reason for any deviation
PANIPAT TPS	8	T	STATE SECTOR	Northern	Haryana	HPGCL	FALSE	COAL	250	01-Apr-25	23-Apr-25	Annual Overhauling	06.04.2025	30.04.2025	
RAJASTHAN A.P.S.	2	N	CENTRAL SECTOR	Northern	Rajasthan	NPCIL	FALSE	NUCLEAR	200	01-Apr-25	30-Apr-25	Reactor feeder refurbishment and Enmasse thermowell	01-Apr-25	30-Apr-25	No deviation from plan is expected.
SURATGARH TPS	6	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	250	15-Apr-25	05-May-25	Annual Boiler Overhauling	01.07.25	15.07.25	Postponed due to Power demand in state is running
JALIPA KAPURDI TPP	2	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	23-Apr-25	30-Apr-25	Boiler License renewal			Planned in next week.
JALIPA KAPURDI TPP	8	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	01-Apr-25	08-Apr-25	Boiler License renewal	31-Mar-25	04-Apr-25	
CHHABRA TPP	4	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	250	01-Apr-25	15-May-25	Capital Overhauling	Not Taken		Deferred due to Power demand in state is running
KALISINDH TPS	2	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	600	01-Apr-25	14-Apr-25	Annual Boiler Overhauling and checking of Generator Stator & Rotor	01.07.25	15.08.25	Postponed due to Power demand in state is running
ANTA CCPP	1	T	CENTRAL SECTOR	Northern	Rajasthan	NTPC Ltd.	FALSE	NATURAL GAS	88.71	01-Apr-25	26-Apr-25	Maintenance Type - C (16000 hrs)			
NARORA A.P.S.	1	N	CENTRAL SECTOR	Northern	Uttar Pradesh	NPCIL	FALSE	NUCLEAR	220	01-Apr-25	15-Jun-25	BSD FOR 90 DAYS	14-Apr-25	09-Jul-25	In electricity generation program NAPS-1 tentative outage date was from 15.03.2025 for BSD of 90 days. However, outage was planned from 15.05.2025. But NAPS-1 TG tripped on Gen Differential protection on 14.04.2025 at 04:36:43 hrs. Subsequently reactor also tripped. NAPS-1 BSD is declared from 14.04.2025.

**Format for UFR Settings for NR States/UTs as on 31.03.2025**

S. No.	Name of S/Stn (including voltage level)	Name of Feeder/ transformer (including voltage level)	UFR(Hz) setting	Estimated Load relief (MW)			
				49.4 Hz	49.2 Hz	49.0 Hz	48.8 Hz
1	A	x					
		y					
		z					
2	B	x					
		y					
		z					

S. No.	Name of Plant	Unit	Installed Capacity	MVA Rating	Make of Units	COD	GT Details			Mode of Fuel Transport (Pit Head/No n Pit-head)	Name of Utility	Sector	Control Area	Type	Real and Reactive Power Capability assessment.			Assessment of Reactive Power Control Capability as per CEA Technical Standards for connectivity			Model Validation and verification test for the complete Generator and Excitation System model including PSS.			Model Validation and verification of Turbine/Governor and Load Control or Active Power/frequency Control Functions.			Testing of Governor performance and Automatic Generation Control		
							Voltage Ratio	GT MVA Capacity	Tap Ratio of GT (Present Tap/Total Taps)						Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date
1																													
2																													
3																													
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9																													
10																													

Revised Simulation Models

Whether Revised Models Submitted?      Remarks

## Hydro Generators

[illegible]

## Revised Simulation Models

Whether Revised Models Submitted?	Remarks
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As per guidelines the OEM representative must remain present at the time of Generator periodic testing hence looking to the age and present status of Units at Mahi PH-I, Letters Dated 12/07/2024 and 19/12/2024 have been sent to the OEM M/s BHEL, Bhopal, and accordingly the plan may be scheduled .

## Nuclear Generators

[illegible]

## Gas Based Generators

[illegible]

## Renewable Energy Plants

[illegible]

HVDC Links

S. No	Name of Link	Type (LCC/VSC/Back-to-Back)	HVDC_Voltage (kV)	Converter-1		Converter-2		Master Converter Station	Pole_number	Length (km)	Capacity (MW)	Owner	Forward Direction			Reverse Direction			Reactive Power Controller (RPC) Capability for HVDC/FACTS			Filter bank adequacy assessment based on present grid condition, in consultation with NLDC.		
				Station Name	Region	Station Name	Region						Maximum Capacity	Minimum Capacity	Ground_return_capacity	Maximum Capacity	Minimum Capacity	Ground_return_capacity	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date
1			500	APL-Mundra	WR	Mohindargarh	NR		1	989	1,250	ATIL	150	500	1250					Due			Due	
2			500	APL-Mundra		Mohindargarh			2	989	1,250	ATIL	150	500	1250					Due			Due	
3		LCC	800	Champa_HVDC	WR	Kurukshetra	NR	Champa_HVDC	1	1,306	1,500	POWERGRID	150	1,500	DMR path	NA	NA	NA		Due	Apr-2025		Due	
4		LCC	800	Champa_HVDC	WR	Kurukshetra	NR	Champa_HVDC	2	1,306	1,500	POWERGRID	150	1,500	DMR path	NA	NA	NA		Due	Apr-2025		Due	
5		LCC	800	Champa_HVDC	WR	Kurukshetra	NR	Champa_HVDC	3	1,306	1,500	POWERGRID	150	1,500	DMR path	NA	NA	NA		Due	Apr-2025		Due	
6		LCC	800	Champa_HVDC	WR	Kurukshetra	NR	Champa_HVDC	4	1,306	1,500	POWERGRID	150	1,500	DMR path	NA	NA	NA		Due	Apr-2025		Due	

Revised Simulation Models

Whether Revised Models Submitted? Remarks

STATCOMs/SVCs

S.No	Station	Statcom	Capacity (MVAR)	Owner	Make	Reactive Power Controller (RPC) Capability for HVDC/FACTS			Filter bank adequacy assessment based on present grid condition, in consultation with NLDC			Validation of response by FACTS devices as per settings.		
						Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date
1	Kurukshetra	TCR	500	POWERGRID	GE Vernova T&D	NA		NA	NA	NA	NA	Nov-2023	No	Sep-2028
2	Fatehgarh-2	STATCOM	±/-600	POWERGRID	SIEMENS	Oct-2023	No	Sep-2028	NA	NA	NA	Oct-2023	No	Sep-2028
3	Bhadla-2	STATCOM	±/-600	POWERGRID	SIEMENS	Jun-2023	No	May-2028	NA	NA	NA	Jun-2023	No	May-2028
4	Bikaner-2	STATCOM	±/-300	POWERGRID	SIEMENS	Jul-2023	No	Jun-2028	NA	NA	NA	Jul-2023	No	Jun-2028

Revised Simulation Models

Whether Revised Models Submitted?      Remarks

## FSCs/TCSCs

[illegible]






Series Reactor

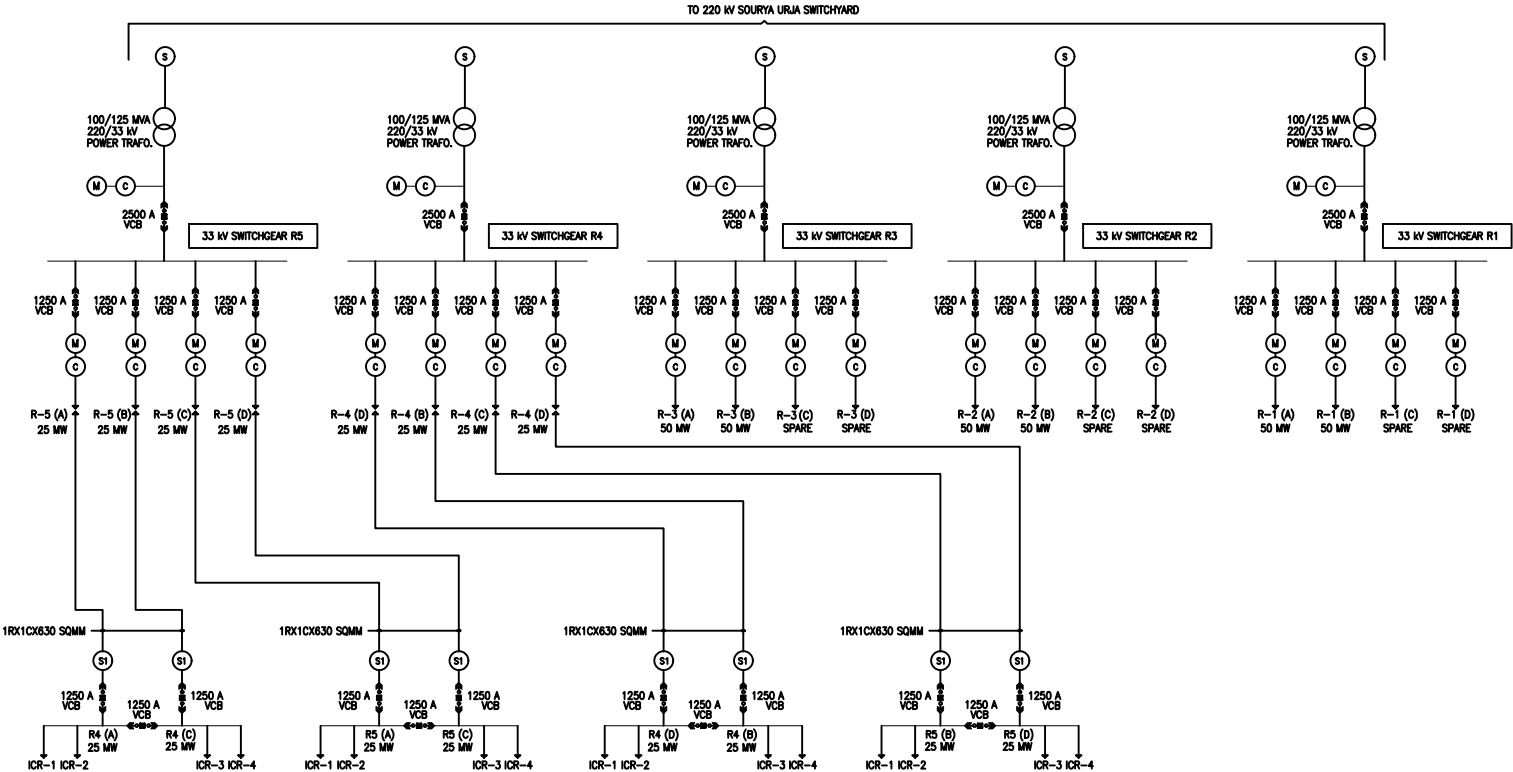
S.No	End 1	End 2	Line No.	End	Capacity	Make	Reactive Power Controller (RPC) Capability for HVDC/FACTS			Filter bank adequacy assessment based on present grid condition, in consultation with NLDC			Validation of response by FACTS devices as per settings.		
							Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date
1															

Revised Simulation Models

Whether Revised Models Submitted?      Remarks

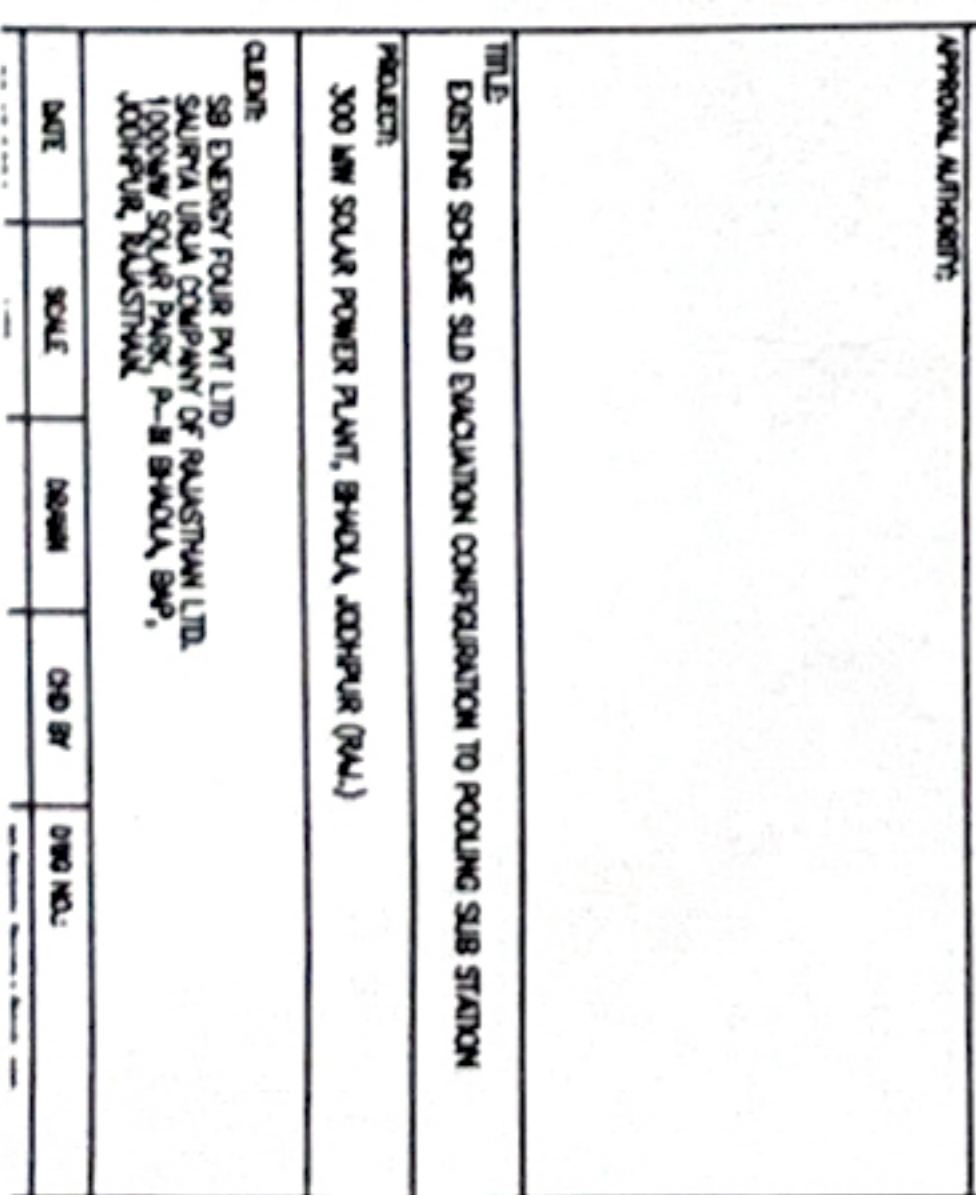
LEGENDS:-

SYMBOLS	DESCRIPTION
	POWER TRANSFORMET
	VCB
	MAIN METER
	CHECK METER
	STANDBY METER



APPROVAL AUTHORITY:				
TITLE:				
EXISTING SCHEME SLD EVACUATION CONFIGURATION TO POOLING SUB STATION				
PROJECT:				
300 MW SOLAR POWER PLANT, BHADLA, JODHPUR (RAJ.)				
CLIENT:				
SB ENERGY FOUR PVT LTD. SAURYA URJA COMPANY OF RAJASTHAN LTD. 1000MW SOLAR PARK, P-III BHADLA, BAP, JODHPUR, RAJASTHAN.				
DATE	SCALE	DRAWN	CHD BY	DWG NO.:
22.12.2021	NTS			SB/MSPP/RAJASJA/0017-002

SYMBOLS	DESCRIPTION
	POWER TRANSDUCER
	VCB
	MAIN METER
	CHECK METER
	STANDBY METER



## National Load Despatch Centre

### Import Capability of Punjab for June 2025

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Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of Uttar Pradesh for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of Haryana for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of Rajasthan for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of Delhi for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of Uttarakhand for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of HP for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of J&K for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

## National Load Despatch Centre

### Import Capability of Chandigarh for June 2025

Issue Date: -

Issue Time: 1600

Revision No. 0

[illegible]

Forum of Load Despatchers (FOLD)

Secretariat: C/o National Load Despatch Centre, New Delhi

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### **Minutes of the 50<sup>th</sup> Meeting of Forum of Load Despatchers (FOLD)**

**held on 23<sup>th</sup> April 2025 , New Delhi**

The 50<sup>th</sup> Meeting of the Forum of Load Despatchers was held in hybrid mode on 23<sup>rd</sup> April 2025, with physical venue at EROS Hotel, Nehru Place, New Delhi. Over 170 participants (both online & offline), including senior officials from GRID-INDIA and State Load Despatch Centres, attended the meeting.

#### **A) Opening Remarks by CMD, Grid-India**

CMD, Grid-India, extended a warm welcome to all esteemed colleagues, distinguished representatives from State and Regional Load Despatch Centres to the 50<sup>th</sup> FOLD meeting.

Reflecting on FOLD's remarkable journey since its establishment—following recommendations by the Forum of Regulators and its formal inauguration in 2009— CMD Grid-India highlighted its substantial evolution. He described FOLD as now being central to collaboration and shared learning within India's power system operations, profoundly influencing nationwide practices and operational readiness. A notable example of this collective preparedness was the successful coordination during the "9 PM, 9-Minute" lights-off event, demonstrating exceptional solidarity and coordinated effort.

Acknowledging the increasing emphasis on professional and leadership development within the power system operations community, CMD Grid-India discussed FOLD's expanded focus on capacity building. He highlighted various initiatives, including the PowerLead programme in partnership with the Indian School of Business, the PowerNext leadership series, specialized technical training programs addressing regulatory frameworks, cybersecurity, and PSSE, as well as the launch of the eligyasa online learning platform. Additionally, he recognized the formation of specialized working groups that facilitate in-depth dialogues and peer-learning opportunities on critical emerging issues such as SAMAST, cybersecurity, resource adequacy, disturbance recording, and renewable energy integration. These efforts have contributed significantly to developing a distinct professional identity among system operators, who play an essential role in national energy security.

Given the ongoing transformation of India's power system marked by increased complexity, decentralization, and digitalization, CMD Grid-India underscored the heightened importance of collaboration and shared knowledge fostered through FOLD. He identified several key operational challenges and issues slated for deliberation during the meeting. These include preparations for



managing peak demands anticipated during the upcoming summer, expanding ancillary services and state-level participation, addressing operational and workforce-related concerns raised by Odisha SLDC, enhancing registration processes for generating plants in the NOAR for improved market efficiency, addressing renewable energy integration challenges as presented by the Northern Region, examining aspects of the System Operation Certification Exam raised by West Bengal SLDC, improvements in intra-state operational practices led by the Western Region, and advancing intra-state SCED implementations such as the My-SCED project.

In concluding his address, CMD Grid-India strongly encouraged open, insightful, and constructive dialogue throughout the sessions. He urged all participants to fully utilize this exceptional platform to innovate, collaborate, and drive meaningful outcomes aimed at enhancing grid resilience and paving the path toward a sustainable energy future for India.

## **B) Deliberations During the Meeting**

The approved agenda items were discussed as follows:

1. **Agenda-1:** Preparedness for Upcoming Summer by NLDC
2. **Agenda-2:** Update on Ancillary Services by NLDC
3. **Agenda-3:** Operational and Capacity Building Issues by Odisha SLDC
4. **Agenda-4:** Registration of GENCOS/Intra state plants in NOAR by NLDC
5. **Agenda-5:** SLDC Establishment – Chandigarh
6. **Agenda-6:** RE integration challenges, learnings and way forward -experiences in Northern Region by NRLDC
7. **Agenda-7:** Exam related to CERTIFICATION for system operation by West Bengal SLDC
8. **Agenda-8:** Intra-State Operations – Western Region Focus by WRLDC
9. **Agenda-9:** Update on Intra-State Security Constrained Economic Despatch by NLDC

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## **C) Agenda-1: Preparedness for Upcoming Summer by NLDC**

NLDC presented that the all-India peak electricity demand during the summer months is projected to range between 265–270 GW during solar hours and 250–255 GW during non-solar hours. It was also mentioned that India Meteorological Department (IMD) has forecasted above-normal temperatures for the upcoming summer season. In light of these projections and the inherent uncertainties in generation availability, NLDC has published an assessment of the likely shortages in the *Short-Term National Resource Adequacy Plan (ST-NRAP) for FY 2025 -26*.



The presentation underscored the need for targeted and strategic measures, particularly to manage demand during non-solar peak periods between 1900 hrs and 0200 hrs, when the system is expected to be most stressed. Based on both recent data and IMD's seasonal outlook, a persistent increase in peak loads and a higher frequency of extremely hot days is anticipated in the coming months.

Special attention was drawn to recent low-frequency events. On 21<sup>st</sup> April 25, system frequency remained on the lower side, and up reserves were not sufficiently available, contributing to grid stress. The event was cited as indicative of the kind of operational scenarios that may recur if proactive measures are not implemented.

NLDC reiterated the importance of readiness at all levels, from individual generating units to regional coordination. Measures already in place and ongoing were discussed in depth, along with the response mechanisms needed from SLDCs to address potential shortfalls.

Andhra Pradesh reported that its ramping rates are not aligned with load variations, which is causing operational challenges. DSO, Grid-India, emphasized the need to optimize demand-side operations and effectively utilize available generation resources. States were reminded of the importance of implementing the 55% minimum generation threshold. CERC has issued directions for compensation in cases where backing down falls below this threshold, and SLDCs were encouraged to engage with SERCs to support such provisions.

CMD, Grid-India, stressed the importance of real-time monitoring of generating station availability during low-frequency events. He advised SLDCs to engage with their respective state GENCOS and to file compensation petitions with SERCs. He further highlighted the need for a comprehensive national database of availability to aid in system-level visibility and coordination. Referring to the grid stress on 21st April, the CMD Grid-India noted that six coal-fired units remained under Reserve Shutdown (RSD) and were synchronized too late to be of timely support. He pointed out that states with surplus generation could have supported the grid via the power exchange.

#### **Operational insights from states included:**

- **Karnataka** submitted that they have banking arrangements in place with Uttar Pradesh and Punjab until May 2025.
- **Tamil Nadu** reported that although supply has been secured from Lanco, a 500 MW shortfall is still anticipated during the summer.
- **Maharashtra** reported challenges due to unit tripping and partial outages, which have been raised with MAHAGENCO. Inadequate transmission capacity has led to a reliance on hydro generation. The 55% generation limit is being implemented in major conventional stations. An advisory has also been issued on UVLS and UFR system readiness.



- **Uttar Pradesh** was under-drawing on 21st April. CMD Grid-India noted that earlier dispatch from Jawaharpur units could have alleviated grid pressure.
- **Gujarat** reported high demand, with additional issues stemming from restrictions on daytime operation of units in Gandhinagar. CMD Grid-India suggested better utilization of local units like Sikka.
- **Rajasthan** confirmed implementation of the 55% generation limit since 1st April but continues to face transmission constraints.
- **Punjab** expects its peak demand to touch 17 GW this year (up from 16,089 MW last year), with agricultural demand being phased from 1st June.
- **West Bengal** reported overdrawal on 21st April due to JSW refusing to supply power, which posed a significant issue for grid stability.

The DSO reiterated the critical need for full operational readiness, especially the health of ADMS and other defense schemes. CMD Grid-India concluded the agenda by urging all stakeholders to take proactive action. He emphasized that even minor operational lapses can escalate into major system issues. In crisis situations, accountability would be unavoidable, and facing some criticism is preferable to enduring the consequences of a preventable blackout.

#### **Action Points:**

1. All SLDCs to continuously monitor demand and ensure generation ramping aligns with real-time variations.
2. SLDCs and GENCOS to coordinate closely to avoid delays in unit synchronization, especially during low-frequency or high-demand periods.
3. Ensure implementation of 55% minimum technical limits and pursue compensation mechanisms through SERCs, in line with CERC guidelines.
4. Conduct health assessments of UVLS, UFR, ADMS, and other critical defense systems; submit reports to respective RLDCs.
5. States anticipating shortages to expedite power procurement through exchanges or bilateral tie-ups.
6. Surplus states to actively offer generation in the market during peak demand hours to enhance national adequacy and grid stability.



#### **D) Agenda-2: Update on Ancillary Services by NLDC**

NLDC provided a comprehensive update on the current status and future direction of Ancillary Services, with a focus on expanding participation under the Secondary Reserve Ancillary Services (SRAS) and Tertiary Reserve Ancillary Services (TRAS). Grid-India is working actively to increase the participation of both inter-state and intra-state generating stations. Currently, 73 GW of installed capacity across 76 power plants is under Automatic Generation Control (AGC), though greater participation is needed, especially for frequency regulation.

CERC (Ancillary Services) Regulations, 2022, allow intra-state generators to participate in SRAS and TRAS. More than 35 workshops have been conducted to create awareness and build capacity. NLDC shared that renewable energy generators are being increasingly considered for participation, and a pilot AGC project with the 180 MW Devikot solar power plant has been successfully conducted.

Options for AGC participation were discussed, including both State and Regional ACE mechanisms. If appropriate infrastructure is in place, joint operations between SLDCs and RLDCs may also be explored. SLDCs were encouraged to update on their AGC implementation and progress.

#### **TRAS Participation:**

NLDC presented that intra-state power plants are eligible to participate in market-based TRAS through any of the three power exchanges. However, liquidity in the TRAS market remains limited. Some plants are participating in both TRAS-Up and TRAS-Down. To improve participation, the Order Carry Forward (OCF) mechanism from the Day-Ahead Market (DAM) to the ancillary market was noted as a viable option.

Additionally, simple registration through the National Open Access Registry (NOAR) was encouraged to streamline access to these markets. Any operational or procedural bottlenecks affecting TRAS participation were invited for discussion during the meeting.

NLDC concluded by stressing the need for continued collaboration between SLDCs, RLDCs, and generators to enhance system reliability through broader ancillary service participation.

#### **State-wise updates are:**

- Maharashtra: It was shared that Maharashtra has filed a petition with MERC for intra-state ancillary service regulations. However, there are implementation hurdles that have been flagged with CEA. The state has requested further discussions and workshops on the intra-state deviation settlement mechanism. It was suggested to have FOLD Working Group to document the current scheduling mechanism at all SLDCs.



- West Bengal: Informed that ancillary service regulations have been notified by the State Electricity Regulatory Commission. Tendering for AGC-compliant generators is in progress. A separate SCADA-related tender is also being pursued to support the implementation.
- Gujarat: Reported that a microgrid pilot project combining solar, wind, and BESS is underway. The state plans to submit a detailed report to SERC upon its completion

CMD, Grid-India emphasized the need for a uniform gate closure mechanism across markets to facilitate broader participation. He noted that some intra-state IPPs are already participating and should at least be allowed to participate in the Real-Time Market (RTM). He cautioned that during solar hours, ramping remains a challenge—especially in situations like sudden cloud cover—where increasing thermal generation swiftly becomes difficult. It is also highlighted that the absence of a comprehensive flexibility framework is a limiting factor, and suggested that this issue should be addressed by the envisaged FOLD Working Group.

#### **Action Points:**

1. A new FOLD Working Group to document existing scheduling practices and address flexibility constraints post schedule finalization.
2. Standardize gate closure timelines to enable wider market participation to be taken up with CERC.
3. States with intra-state IPPs to explore and facilitate their participation in RTM and ancillary services, especially where surplus is available.

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#### **E) Agenda-3: Operational and Capacity Building Issues by Odisha SLDC**

SLDC Odisha presented the following key issues and requests:

- Data Mismatch between SCADA and SEM: Proposed real-time ABT data integration via RTU or direct RLDC transfer with firewalls. Odisha to bear costs.
- System Enhancements: Requested inclusion of real-time contingency analysis and AI/ML-based alerts in the new GE SCADA system. Sought support for deploying IIT Bombay's WAMS applications.
- Staffing Shortage: Requested support from Ministry of Power to urge the state for timely staffing.
- Capacity Building: Sought inclusion in national/international training and exposure programs (e.g., NREL, European TSOs). Proposed incentives for certified operators, with Ministry support for budgetary inclusion.



### **Discussion Highlights and Responses:**

- ED, NLDC stated that the matter regarding streaming of from energy meters was deliberated in the NCT meeting wherein it was agreed that the respective States may take up the project at their own cost. DSO, Grid India stated that currently, RLDCs receive SEM data on a weekly basis. He shared that SLDC MP has some experience in this regard. He underlined the necessity of improving SCADA data quality by addressing the communication related issues. CMD Grid-India proposed that MP SLDC could share their experience of streaming energy meter data from all its drawal points to SLDC in the next FOLD meeting.
- DSO, GRID-INDIA shared that utilization of WAMS applications was limited due to the challenges in maintaining updated database on account of rapid changes in network topology. The separate database of EMS and WAMS (in URTDSM-Phase-I) limited that cross-functional use. He encouraged SLDC Odisha to coordinate directly with IIT Bombay and PGCIL for deploying WAMS applications developed by IIT-B.
- CMD, GRID-INDIA stated that going forward only the basic WAMS applications could be implemented across all SLDCs while specialized applications could be tailored to the unique needs of each SLDC.
- Regarding workforce adequacy, Director (HR), Grid-India confirmed that the Secretary, Ministry of Power had issued a D.O. letter dated 13 March 2025 to Chief Secretary of States urging them to address workforce adequacy at their respective SLDCs.
- Regarding capacity building Director (HR) shared that HRD calendar for 2025-26 has several programmes where SLDC personnel could be nominated without any registration fee. He also encouraged all SLDCs to nominate personnel to the basis and specialist level certification training programmes being conducted by NPTI.

### **Action Points:**

1. SLDC Odisha to engage with IIT Bombay and PGCIL for deployment of customized WAMS applications; reference similar efforts by Gujarat.
2. Capacity building programme on AI/ML techniques to be explored.
3. MP SLDC to present its pilot on real-time SEM data utilization at the next FOLD meeting for evaluation and potential adoption by different states.

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### **F) Agenda-4: Registration of GENCOS/Intra state plants in NOAR by NLDC**

The session focused on the importance of registering intra-state generating stations in the National Open Access Registry (NOAR) to enhance the efficiency and transparency of market operations. The registration process is critical for ensuring visibility of surplus generation capacity and facilitating



participation in real-time and day-ahead markets through open access, particularly in compliance with regulatory requirements such as the Late Payment Surcharge (LPS) Rules.

NLDC delivered a presentation outlining the regulatory context and technical steps for NOAR registration. The key regulatory requirements highlighted included GNA Regulations, Late Payment Surcharge (LPS) Rules 2022 and their amendments and Section 11 directions from competent authorities

It was reiterated that compliance with these regulations necessitates formal registration of generating stations, including intra-state Independent Power Producers (IPPs), in NOAR. NLDC representative provided a live demonstration of the registration process and shared useful resources and links to assist states and generating companies in completing the process effectively.

The discussion emphasized that registration in NOAR is essential for generators to participate in market-based mechanisms, particularly for optimizing surplus availability through Real-Time Market (RTM) and Day-Ahead Market (DAM). It was also noted that such registration would streamline market interactions and improve accountability under LPS compliance.

States were reminded that a High-Level Committee (HLC) Chaired by Additional Secretary Power MOP is continuously monitoring the status of registration of Generating stations on NOAR, particularly Thermal generation station on NOAR. In this regards a letter dated 6<sup>th</sup> Nov 2024 was sent from REM section MOP to Secretary (Power) of all the states. The copy of the same is attached at Annexure-####. SLDCs were advised to follow up with the GENCOs to register on NOAR portal, collate and share information on unregistered GENCOS and reason or difficulties if any in NOAR registration and submit to RLDC/NLDC. The importance of coordination between SLDCs, state GENCOS, and NLDC was strongly reiterated.

#### **Action Points:**

1. All SLDCs to identify intra-state generating stations that are yet to register on NOAR and initiate coordination for their registration.

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#### **G) Agenda-5: SLDC Establishment – Chandigarh**

SLDC Chandigarh presented an update on the operationalization and infrastructural development of the newly established State Load Despatch Centre (SLDC) for the Union Territory. The formal notification for the establishment of SLDC Chandigarh was issued on 31<sup>st</sup> January 2025, under Section 31 of the Electricity Act, 2003. The SLDC, housed within the Engineering Department of the UT Administration, has officially begun operations, albeit with limited staffing.



As of 1<sup>st</sup> February 2025, Chandigarh's distribution system structure was finalized, with only 15 executives currently in place, including the presenting officer. Given the nascent stage of SLDC operations and limited human resources, a formal request has been made to CERC for institutional support to accelerate capacity building and operational readiness.

SLDC Chandigarh provided a snapshot of the current and projected power demand scenario. The peak demand for 2024–25 was recorded at 449 MW, with projections showing a gradual increase to 510 MW by FY 2031–32. The city's power procurement is majorly sourced from central generating stations, comprising 68% hydro, 12% thermal, 8.8% nuclear, 10% gas-based, and 1.2% renewable energy sources.

To modernize operations and ensure regulatory compliance, Chandigarh SLDC highlighted the following pressing requirements:

- Implementation of SCADA/EMS under the Unified Load Despatch and Communication Scheme.
- Roll-out of SAMAST framework for efficient scheduling, accounting, and settlement.
- Extensive training programs for staff to operate in alignment with national despatch standards.
- Development of digital monitoring systems, especially in the area of rooftop solar integration.

CMD, Grid-India, acknowledged the early-stage challenges faced by SLDC Chandigarh and recommended that dedicated training sessions be held on-site in Chandigarh, with training and technical support provided by Grid-India. He further advised engaging with PGCIL for enabling SCADA infrastructure and data access, which is critical for real-time grid monitoring and control. Emphasizing the city's potential for renewable energy growth, CMD Grid-India also requested SLDC Chandigarh to initiate efforts toward rooftop solar monitoring, aligning with broader national goals on distributed generation and grid visibility.

**Action Points:**

1. Grid-India to organize focused training sessions at SLDC Chandigarh to build operational and regulatory capacity, supported by subject matter experts.
2. SLDC Chandigarh to coordinate with PGCIL in SCADA data integration and related infrastructure enhancements.
3. SLDC Chandigarh to initiate rooftop solar monitoring.



## **H) Agenda-6: RE integration challenges, learnings and way forward -experiences in Northern Region by NRLDC**

NRLDC presented an in-depth overview of the challenges and operational learnings in managing Renewable Energy (RE) integration in the Northern Region, along with practical recommendations to ensure future reliability and stability of the power grid amid rising RE penetration.

### **Key Challenges Identified:**

#### **1. Large Voltage Variation in RE Pockets**

Voltage levels in RE-rich zones like Rajasthan fluctuate between 750 kV and 800 kV within a day. This issue is aggravated during solar hours due to steep voltage drops and high MVAR injection, while night-time sees high voltages due to low load.

#### **2. Non-Compliance with CEA Grid Connectivity Standards**

NRLDC reported **59+ instances of generation loss exceeding 1000 MW** since January 2022 due to inadequate Low Voltage Ride Through (LVRT), High Voltage Ride Through (HVRT), and reactive power support capabilities. Non-compliance increases the need for reserves and threatens system security.

#### **3. Voltage Oscillations in RE Complexes**

Persistent oscillations, especially in Fatehgarh zones, are attributed to low system strength, delayed PPC-IBR communications, and poorly tuned control parameters. Instances of STATCOMs amplifying oscillations due to protective "hunting detection" modes were also cited.

#### **4. Delays in Transmission Commissioning**

Several RE projects experienced curtailments due to **delays in commissioning of transmission lines**, especially under Rajasthan's RE evacuation schemes (Phases I–III). This led to stranded generation despite available resource potential.

#### **5. Large Deviations from Schedule by RE Plants**

RE generators frequently **under- or over-inject** relative to schedules, adversely impacting system frequency and stability. For instance, on **19th February 2025**, prolonged under-injection contributed to sustained low frequency for over three hours.



## **Recommendations – Way Forward:**

### **Short-Term Measures:**

- Improve forecasting accuracy and ensure schedule adherence.
- Tune PPC modes and reactive power controllers.
- Revisit STATCOM specifications to reduce oscillation amplification.
- Coordinate better during real-time operations.

### **Long-Term Measures:**

- Install and mandate Battery Energy Storage Systems (BESS) alongside new RE capacities.
- Develop Indian certification bodies for RE equipment (under CEA/NIWE/NISE).
- Archive high-resolution data at inverter/PPC levels for diagnostics.
- Adopt Grid Forming Inverters, and commission synchronous condensers in RE-dominant zones.

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## **I) Agenda-7: Certification Exam for System Operation – Suggestions by West Bengal SLDC**

West Bengal SLDC raised several concerns and recommendations regarding the System Operator Certification Exam conducted by NPTI. The state emphasized the criticality of timely certification to ensure qualified personnel are available for operational duties at SLDCs and RLDCs.

A key proposal was to conduct the certification exam twice a year, instead of the existing annual schedule. This would allow system operators to take the exam immediately after completing the 21-day training program, without having to wait several months, which can result in a loss of learning continuity. Candidates who do not clear the exam in the first attempt to reappear within six months, thereby maintaining a continuous pool of certified personnel available for deployment.

West Bengal SLDC also pointed out that frequent inter-departmental transfers within the transmission utility (TRANSCO) often lead to newly inducted personnel being posted to SLDCs. Conducting exams more frequently would facilitate the timely certification of these new entrants, especially when followed immediately by training.

Another key issue highlighted was the relevance and coverage of topics in the certification exam. It was noted that the exam held on 30<sup>th</sup> March 2025 included conceptual and numerical questions that were not covered in adequate detail during the standard 21-day training program or in the refresher



sessions. SLDC West Bengal suggested that question papers must align more closely with the training curriculum, ensuring all tested concepts are comprehensively addressed during training.

The Forum acknowledged the importance of timely certification for operational staffing and supported the proposal to increase exam frequency to twice a year, subject to feasibility.

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#### **J) Agenda-8: Intra-State Operations – Western Region Focus by WRLDC**

WRLDC delivered a consolidated overview on key operational aspects in the Western Region, focusing on the implementation status and challenges related to AGC in intra-state generators, demand and renewable energy forecasting, reserve management, and the need for intra-state communication guidelines.

On AGC implementation, WRLDC highlighted its critical role in frequency control and contingency support. It shared that a regional workshop was conducted in Raipur on 7th March 2025 with participants from IPPs, ISGSs, SLDCs, and state generators. The session emphasized the benefits of AGC for stabilizing frequency during contingencies, sustained deviations, and regular grid fluctuations.

In the area of demand and RE forecasting, WRLDC underlined regulatory obligations under IEGC Clause 31(2)(b), which mandate detailed short- and long-term demand estimation methodologies. Forecasting examples from Gujarat and Madhya Pradesh were shared, along with forecast error summaries across quarters. The importance of accurate RE forecasts, collaboration with Forecast Service Providers (FSPs), and intra-day monitoring was reiterated.

For reserve management, WRLDC referenced CERC's Suo Motu Petition No. 9/SM/2024 and its October 2024 order, which require states to maintain unutilized reserve margins for emergencies. This was reinforced at a compliance review held at Maharashtra SLDC in February 2025.

Lastly, WRLDC discussed the growing urgency for robust intra-state communication guidelines. As power demand and RE integration grow, effective data exchange and telemetry are essential. States were advised to align with existing CEA and CERC communication standards and the "Manual of Communication Planning" (CEA, March 2022), emphasizing the formation of SLDC-STU coordination frameworks to support this.

#### **K) Agenda-9: Update on Intra-State Security Constrained Economic Despatch by NLDC**

The Forum received an update on the ongoing developments under the My-SCED (Intra-State Security Constrained Economic Despatch) initiative, building upon the success of the national-level SCED pilot that began in April 2019. The national SCED model has already delivered significant economic and



operational benefits, with over ₹40 billion in cumulative savings attributed to enhanced dispatch efficiency and cost minimization. These benefits have been equitably shared between generators and beneficiaries, and the framework has since been institutionalized under the Indian Electricity Grid Code (IEGC) 2023.

The My-SCED initiative aims to bring these benefits into the intra-state domain by enabling more optimized dispatch within state boundaries. Apart from tangible cost savings, intra-state SCED is expected to provide intangible benefits such as:

- Enhanced automation in the scheduling process.
- More efficient handling of real-time constraints including ramp rates, turn-down levels, transfer capabilities, and load-generation balancing.

The Forum was informed that some states have begun pilot programs in collaboration with academic institutions:

- Maharashtra: Published a report in October 2024 detailing the outcomes of its intra-state SCED pilot.
- Gujarat: Has initiated implementation efforts, building on its strong real-time market participation.
- Other states such as Uttar Pradesh, Madhya Pradesh, Delhi, and Telangana have shown interest and are at various stages of planning or initial rollout.

#### **Vote of Thanks by Executive Director, NLDC**

Executive Director, NLDC delivered the Vote of Thanks, conveying sincere appreciation to all participants for their active engagement in the 50<sup>th</sup> FOLD Meeting. She acknowledged the insightful contributions from SLDCs and RLDCs across the various agenda discussions.

A special note of gratitude was extended to Sh. S.R. Narasimhan, CMD, Grid-India, for his visionary leadership and exceptional contributions to system operations, particularly as he approaches his retirement.

She also thanked the organizing team for their seamless coordination and emphasized the continued importance of collaboration to ensure grid reliability and operational excellence. With that, the meeting was formally concluded.

**FOLD Secretariat**

## PARTIAL MARGIN OBSERVED BETWEEN 19:00-24:00 Hrs on 05-05-2025

Station-Constituents	Installed Capacity (A)	Running Capacity (B=A-E)	Max generation between 1900 to 2400 (C)		Range of generation between 1900hrs to 2400hrs (Max(MW)-Min(MW))	Partial generation outage in running units (D=B*0.93-C)	Planned-Forced Outage Capacity During Max gen(E)	Reason for not attaining full generation
	(MW)	(MW)	(MW)	Hrs		(MW)	(MW)	
<b>HARYANA</b>								
PANIPAT TPS( 1 * 210 + 2 * 250 )	710	710	670	20:00	670.0-556.0	0	0	
DCRTPP (YAMUNA NAGAR)( 2 * 300 )	600	600	513	20:00 Hrs	513.0-294.0	0	0	
RGTPP( KHDAR)( 2 * 600 )	1200	600	499	19:45	499.0-375.0	59	600	Unit-2:- Due to poor coal quality and high ash content, backing down & restricted coal feeding to avoid over loading of system.
<b>Total</b>						<b>59</b>		
<b>PUNJAB</b>								
GURU GOBIND SINGH TPS (ROPAR)( 4 * 210 )	840	630	440	19:00	440.0-440.0	146	210	As per schedule
GURU HARGOBIND SINGH TPS (LEHRA MOHABBAT)( 2* 210 + 2 * 250 )	920	460	416.32	19:00	416.32-306.0	11	460	As per schedule
RAJPURA(NPL) TPS( 2 * 700 )	1400	1400	1320	19:00	1320.0-1120.0	0	0	
<b>Total</b>	3160					<b>157</b>		
<b>RAJASTHAN</b>								
SURATGARH TPS ( 6 * 250 + 2 * 660(SSCTPS))	2820	910	718	19:00	717.5-637.5	129	1910	DC revised due to design defect in Unit-7 of SSCTPS.
CHHABRA TPS( 2 * 660 + 4 * 250 )	2320	1660	1432	21:00	1432.0-1080.0	112	660	POOR COAL QUALITY
KOTA TPS( 2 * 110 + 2 * 195 + 3 * 210 )	1240	1240	1120	19:00	1120.339-682.0	33	0	POOR COAL QUALITY
RAJWEST (IPP) LTPS( 8 * 135 )	1080	945	744	19:00	743.95-743.95	135	135	As per demand and schedule.
BARSINGSAR (IPP) LTPS( 2 * 125 )	250	125	110	19:00	110.0-110.0	6	125	
VSLPP (IPP)( 1 * 135 )	135	135	105	19:00	105.0-105.0	21	0	As per demand and schedule.
<b>Total</b>						<b>435</b>		
<b>UTTAR PRADESH</b>								
OBRA TPS (5 * 200 )	1000	1000	520	21:15	520.0-492.0	385	0	Ageing of units and THERMAL BACKING & LOW DEMAND.
HARDUAGANJ TPS (1 * 110)	110	110	67	23:15	67.0-61.0	33	0	
HARDUAGANJ-D TPS (2 * 250)	500	500	266	23:30	266.0-253.0	189	0	THERMAL BACKING & LOW DEMAND.
HARDUAGANJ-E TPS (1 * 660)	660	660	474	23:00	474.0-356.0	144	0	THERMAL BACKING & LOW DEMAND.
PARICHA-B TPS (2 * 210)	420	420	290	23:00	290.0-218.0	92	0	THERMAL BACKING & LOW DEMAND.
PARICHA-C TPS (2 * 250)	500	500	323	23:00	323.0-265.0	132	0	THERMAL BACKING & LOW DEMAND.
ANPARA-A TPS (3*210)	630	630	444	23:30	444.0-332.0	129	0	Due to Mill problem in Unit#2
ANPARA-B TPS (2 * 500)	1000	1000	859	22:30	859.0-550.0	71	0	Due to ID Fan Problem in Unit#4
ANPARA-D TPS (2 * 500)	1000	1000	944	23:00	944.0-532.0	0	0	
JAWAHARPUR TPS (1 * 660)	1320	660	370.87	21:15	371.0-355.0	248	660	Due to Mill problem
OBRA C TPS (1 * 660)	660	660	596.62	23:00	597.0-368.0	22	0	Problem in turbine and work in progress Poor Coal Quality
GHATAMPUR TPS (1 * 660)	660	660	363.7509196	23:45	364.0-347.0	255	0	Coal shortage. Contract under renewal
PANKI TPS (1*660)	660	660	343	19:00	343.0-343.0	275	0	Due to Condensate Polishing Unit(CPU)(THERMAL BACKING & LOW DEMAND)
<b>Total</b>						<b>1975</b>		

## PARTIAL MARGIN OBSERVED BETWEEN 19:00-24:00 Hrs on 05-05-2025

Station-Constituents	Installed Capacity (A)	Running Capacity (B=A-E)	Max generation between 1900 to 2400 (C)		Range of generation between 1900hrs to 2400hrs (Max(MW)-Min(MW))	Partial generation outage in running units (D=B*0.93-C)	Planned-Forced Outage Capacity During Max gen(E)	Reason for not attaining full generation
	(MW)	(MW)	(MW)	Hrs		(MW)	(MW)	
<b>State IPP</b>								
TALWANDI SABO TPS( 3 * 660 )	1980	1980	1700	20:15	1700.0-924.0	141	0	As per schedule
GOINDWAL(GVK)( 2 * 270 )	540	270	245.7	19:00	245.7-145.0	5	270	
KALISINDH TPS( 2 * 600 )	1200	600	530	19:00	530.0-530.0	28	600	
KAWAI TPS( 2 * 660 )	1320	1320	1200	20:00	1200.0-726.0	8	0	
JHAJJAR(CLP)( 2 * 660 )	1320	1320	1302	22:11	1302.0-907.0	0	0	
BARA PPGCL TPS( 3 * 660 )	1980	1980	1766	23:30	1766.0-1005.0	65	0	
ANPARA-C TPS( 2 * 600 )	1200	1200	1139	23:30	1139.0-615.0	0	0	
LALITPUR TPS( 3 * 660 )	1980	1980	1877	23:00	1877.0-1022.0	0	0	
MEJA TPS ( 2 * 660 )	1320	660	592	20:15	592.0-340.0	22	660	
ROSA TPS ( 4 * 300 )	1200	1200	789	23:00	789.0-594.0	309	0	DC reduce in U#4 for Condenser tube leakage
BAJAJ ENERGY PVT LTD (IPP) TPS ( 10 * 45 )	450	0	250	19:00	250.0-250.0	0	0	
TANDA TPS ( 4 * 110 )	440	440	341	23:30	341.0-330.0	48	0	THERMAL BACKING & LOW DIMAND.
KHURJA STPP (1*660)	660	660	615.00	19:00	615.0-615.0	0	0	
<b>Total</b>						<b>626</b>		
<b>ISGS</b>								
DADRI-II TPS( 2 * 490 )	980	980	599.35	20:55	599-484	312	0	As per schedule
DADRI-I TPS( 4 * 210 )	840	840	501.86	23:30	502-437	279	0	As per schedule
UNCHAHAH III TPS( 1 * 210 )	210	210	175.98	19:09	176-111	15	0	
ISTPP (JHAJJAR)( 3 * 500 )	1500	1500	898.60	23:30	899-795	496	0	As per schedule
UNCHAHAH II TPS( 2 * 210 )	420	420	343.11	19:05	343-227	35	0	
UNCHAHAH I( 2 * 210 )	420	420	349.96	19:09	350-224	41	0	
UNCHAHAH IV TPS( 1 * 500 )	500	500	442.65	19:07	443-257	22	0	
RIHAND-III STPS( 2 * 500 )	1000	1000	965.00	22:54	965-851	0	0	
RIHAND-I STPS( 2 * 500 )	1000	500	968.20	21:05	968-866	0	0	
RIHAND-II STPS( 2 * 500 )	1000	1000	979.79	21:47	980-874	0	0	
TANDA TPS STAGE-II( 2 * 660 )	1320	1320	1297.23	23:06	1297-1067	0	0	
SINGRAULI STPS( 2 * 500 + 5 * 200 )	2000	2000	1869.00	19:00	1869-1678	0	0	
<b>Total</b>						<b>1201</b>		
<b>Regional IPP</b>								
SHREE CEMENT (IPP) TPS( 2 * 150 )	342	342	342.27	20:48	342-319	0	0	
<b>Total</b>						<b>0</b>		
				Grand Total		<b>4453</b>		

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 behalf 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 commission 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.

<b>31.1(c)</b>	NLDC/RLDC	<p>Procedure and data format by NLDC/RLDC for following activity</p> <ul style="list-style-type: none"> <li>•Operational planning analysis</li> <li>•Real-time monitoring,</li> <li>•Real-time assessments.</li> </ul> <p>Format is available at <a href="https://posoco.in/wp-content/uploads/2024/03/Final-NLDC-Operating-Procedure_as-submitted-to-CERC-dated-290923.pdf">https://posoco.in/wp-content/uploads/2024/03/Final-NLDC-Operating-Procedure_as-submitted-to-CERC-dated-290923.pdf</a></p>
<b>31.1(d)</b>	SLDC	SLDC may also issue procedures and formats for data collection for the above purposes.
<b>31.2(a)</b>	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.
<b>31.2(b)</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
<b>31.2(c)</b>	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
<b>31.2(d)</b>	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
<b>31.2(e)</b>	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
<b>31.2(f)</b>	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
<b>31.2(g)</b>	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
<b>31.2(h)</b>	SLDC	<p>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 :</p> <ul style="list-style-type: none"> <li>- Daily: 10:00 hrs of previous day</li> <li>- Weekly: First workinh day of previus week</li> <li>- Monthtly: Fifth day of previous month</li> <li>- Yearly: 30th September of the previous year</li> </ul>

<b>31.2(i)</b>	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.
<b>31.3(a)</b>	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
<b>31.3(b)</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
<b>31.4(a)</b>	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
<b>31.4(b)</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.
<b>33.1</b>	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
<b>33.2</b>	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.

<b>33.3</b>	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.
<b>33.4</b>	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
<b>33.5</b>	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.
<b>33.6</b>	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.
<b>33.7</b>	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.
<b>33.8</b>	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.
<b>33.9</b>	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

<b>33.10</b>	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
<b>33.11</b>	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.
<b>33.12</b>	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
<b>33.13</b>	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-B.V

Grid Event summary for April 2025																			
S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revised		Duration (hr:mm)	Event (As reported)	Energy Unsummed due to Generation loss (MW)	Energy Unsummed due to Load loss (MW)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation Load in the Regional Grid during the Grid Disturbance		Antecedent Generation Load in the Regional Grid		Fault Clearance time (in ms)
	Date				Time	Date	Time	Generation Loss(MW)					Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)		
1	GD-1	1) 400 KV AYANA1 SL_BKN_PG (ABRPL1)ABRPL1_SL_BIK_PG (Ayana_RPPL1) Ckt 2) 400KV SVN Solar-Bikaner2(PG) Ckt	Rajasthan	Ayana_RPPL1(AR P1PL1) PGCL, SGL	2-Apr-25	14:45	2-Apr-25	16:22	01:37	(i)Generation of 400/33 KV Ayana_RPPL1(ABRPL1) station evacuates through 400KV ARP1PL1-RP3PL1 line at 765/400/220KV Bikaner(PG) pooling station and of 400/233V SVN solar RE station through 400KV SVN Solar-Bikaner(PG) line at 400/220KV Bikaner2(PG) Pooling station. (ii)During antecedent condition, ABRPL1 and SVN solar were generating ~298MW and ~138MW respectively. (iii)As reported, at 14:45hrs, 400 KV ANA1 SL_BKN_PG (ABRPL1)ABRPL1_SL_BIK_PG (Ayana_RPPL1) Ckt tripped on R-N phase to earth fault. (iv)At the same time, 400KV SVN Solar-Bikaner2(PG) Ckt also tripped from SVN Solar end on operation of directional earth fault protection operation at SVN Solar end. (v)Due to tripping of both the lines, complete solar generation of ABRPL1 and SVN Solar got affected due to loss of evacuation path. (vi)As reported by SVN solar, Directional E/F pick up setting at SVN solar was sensitive and same has been revised from 0.3pu to 0.2 pu (CT ratio 2000/1). (vii)As per PMU at Ayana(RPPL1) Bikaner line (ABRPL1) end, R-N phase to earth fault with no A/R operation is observed. (viii)per SCADA, drop in total MW solar generation of ~1060MW is observed. RE plants i.e., ABRPL1 (carrying ~298MW) and SVN solar (carrying ~138MW) tripped during the event.	0	0	1060	0	1.976	0.000	53641	45158	120
2	GI-2	1) 125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS) 2) 400 KV Rankon-Jaisalmer (RS) Ckt 3) 400 KV Jaisalmer(RS) M/s Renew Hans urja prvt Ltd (RS) (RHUPL1) Ckt-1 4) 400/220 KV 500 MVA CT 1 at Jaisalmer(RS) 5) 400/220 KV 500 MVA CT 2 at Jaisalmer(RS) 6) 400/220 KV 500 MVA CT 3 at Jaisalmer(RS) 7) 400KV Bus-2 at Jaisalmer(RS)	Rajasthan	RVPL, Renew Hans Urja	2-Apr-25	17:26	2-Apr-25	20:01	02:35	(i)400/220V Jaisalmer(RS) has one and half breaker bus scheme at 400KV level and double main and transfer bus scheme at 220KV level. (ii)During antecedent condition, 400 KV Jaisalmer(RS) M/s Renew Hans urja prvt Ltd (RS) (RHUPL1) Ckt-1 was carrying approx. 140 MW (as per SCADA). (iii)As reported, at 17:26 hrs, R-Phase CB pole of 125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS) damaged/ blast which further led to LBB protection operation. (iv)Due to LBB operation, all the elements connected to 400KV Bus-2 at Jaisalmer(RS) tripped and Bus-2 became dead. (v)As Jaisalmer(RS) has one and half breaker scheme at 400KV level, elements should not have tripped due to LBB protection operation. However, as reported, due to operation of all the tie Cbs, all the 400KV elements connected to 400 KV Jaisalmer(RS) Bus-2 tripped (LBB relay logic need to be reviewed). (vi)As per PMU at Jaisalmer2(PG), R-N phase to earth fault is observed with fault clearing time of 80 ms. (vii)As per SCADA, solar generation loss of approx. 140 MW is observed in Rajasthan control area.	0	0	140	0	0.276	0.000	50787	49293	80
3	GD-1	1) 220 KV Bhadi(PG)-Azura Power 34 Solar(APTFL1) (APTFL1) Ckt	Rajasthan	PGCL, APTFL	6-Apr-25	13:47	6-Apr-25	22:40	08:53	(i)Generation of 220 KV Auzara4 (APTFL1) (PTFL1) station evacuates through 220 KV Bhadi(PG)-Azura Power 34 Solar(APTFL1) (APTFL1) Ckt. During antecedent condition, 220 KV Auzara4 (APTFL1) (PTFL1) was generating approx. 130 MW (as per PMU). (ii)As reported, at 13:47hrs, 220 KV Bhadi(PG)-Azura Power 34 Solar(APTFL1) (APTFL1) Ckt tripped on R-N phase to earth fault (exact nature, location and reason of fault yet to be received). (iii)As per CR at Bhadi(PG) end, 220 KV Bhadi(PG)-Azura Power 34 Solar(APTFL1) (APTFL1) Ckt tripped on Y-N phase to earth fault with fault current of 5.949KA, fault sensed in zone-2 at Bhadi(PG) end. Fault clearing time was ~100ms. (iv)Due to tripping of 220 KV Bhadi(PG)-Azura Power 34 Solar(APTFL1) (APTFL1) Ckt, 220 KV Auzara4 (APTFL1) (PTFL1) S/L lost its connectivity from grid and blackout occurred at 220 KV Auzara4 (APTFL1) (PTFL1) S/L. (v)As per PMU at 220KV Bhadi(PG), R-N phase to phase fault (voltage dipped upto 0.847 p.u.) is observed with fault clearing time of 120ms. (vi)As per PMU, solar generation loss of approx. 130 MW was observed at 220 KV Auzara4 (APTFL1) (PTFL1).	0	0.00	130	0	0.253	0.000	51481	41494	120
4	GD-1	1) 220/33 KV 160 MVA CT 1 at Thar Surya1 SL_BKN_PG (TS1PL1)	Rajasthan	Thar Surya2(UP)	7-Apr-25	10:02	7-Apr-25	11:44	01:42	(i)Generation of 220/33 KV Thar Surya1 (PTFL1) station evacuates via 220 KV Bikaner(PG) Thar Surya1(PTFL1) Ckt through 220/33 KV 160 MVA CT 1 & 2 at Thar Surya1 SL_BKN_PG (TS1PL1). During antecedent condition, 220/33 KV 160 MVA CT 2 at Thar Surya1 SL_BKN_PG (TS1PL1) was shared and tripped due to pressure release valve operation. 220 KV Thar Surya1 (PTFL1) was generating approx. 155 MW (as per PMU). (ii)As reported, at 10:02hrs, 220/33 KV 160 MVA CT 1 at Thar Surya1 SL_BKN_PG (TS1PL1) tripped due to heavy sparking on LV side bay 309 (exact nature, location and reason of fault yet to be received). (iii)Due to tripping of 220/33 KV 160 MVA CT 1 at Thar Surya1 SL_BKN_PG (TS1PL1), 220 KV Thar Surya1 (PTFL1) S/L lost its connectivity from grid and blackout occurred at 220 KV Thar Surya1 (PTFL1) S/L. (iv)As per PMU at 400KV Bikaner(PG), R-N phase to phase fault is observed with delayed fault clearing time of 240ms. (v)As per PMU, solar generation loss of approx. 155 MW was observed at 220 KV Thar Surya1 (PTFL1).	0	0.00	155	0	0.280	0.000	55428	53839	240
5	GD-1	1) 220 KV Moga(PG)-Mehal kalan (PS) (PSTCL) Ckt-1 2) 220 KV Moga(PG)-Mehal kalan (PS) (PSTCL) Ckt-2 3) 220 KV Pahnwal-Mehal kalan (PS) (PSTCL) Ckt-1 4) 220 KV Pahnwal-Mehal kalan (PS) (PSTCL) Ckt-2 5) 220/66 KV CT 1 at MehalKalan(PS) 6) 220/66 KV CT 2 at MehalKalan(PS)	Punjab	PGCL, PSTCL	8-Apr-25	22:20	8-Apr-25	22:48	00:28	(i)220/66KV MehalKalan(PS) has double main bus scheme at 220KV level. (ii)As reported, at 22:20 hrs, R-phase CT of 220KV bus-coupler damaged which further led to bus bar protection operation at both the 220KV buses of MehalKalan(PS). (iii)Due to busbar operation, all the elements connected to 220KV Bus-1 & 2 at MehalKalan(PS) tripped and complete blackout occurred at 220/66KV MehalKalan(PS). (iv)As per PMU at Moga(PG), R-N phase to earth fault is observed with fault clearing time of 80 ms. (v)As per SCADA, change in demand of approx. 85 MW is observed in Punjab control area.	0	0.04	0	85	0.000	0.139	53868	60992	80
6	GD-1	1) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL1) Ckt-1 2) 220 KV Fatehabad(PG)-Fatehabad(HV) (HVPNL1) Ckt-2 3) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL1) Ckt-1 4) 220 KV Hissar(PG)-Fatehabad(HV) (HVPNL1) Ckt-2 5) 220 KV Rania - Fatehabad(HV) (HVPNL1) Ckt 6) 220/132 KV 200 MVA CT 1 at Fatehabad(HV) 7) 220/132 KV 200 MVA CT 2 at Fatehabad(HV) 8) 220/132 KV 200 MVA CT 3 at Fatehabad(HV)	Haryana	PGCL, HVPNL	9-Apr-25	02:06	9-Apr-25	03:36	01:30	(i)220/132KV Fatehabad(HV) has double main bus scheme at 220KV level. (ii)As reported, at 22:20 hrs, R-phase CT of 220KV bus-coupler damaged which further led to bus bar protection operation at both the 220KV buses of Fatehabad(HV). (iii)Due to busbar operation, all the elements connected to 220KV Bus-1 & 2 at Fatehabad(HV) tripped and complete blackout occurred at 220/132KV Fatehabad(HV). (iv)As per PMU at Fatehabad(PG), R-N phase to earth fault is observed with delayed fault clearing time of 480 ms. (v)As per SCADA, change in demand of approx. 85 MW is observed in Haryana control area.	0	0.13	0	85	0.000	0.153	48256	55656	480
7	GD-1	1) 220 KV Singoli Bhatawari (Singoli)(TUHP1)-Srinagar(UK) (PTCL1) Ckt-1 2) 220 KV Singoli Bhatawari (Singoli)(TUHP1)-Srinagar(UK) (PTCL1) Ckt-2 3) 33MW Unit 1 at Singoli Bhatawari HEP	Uttarakhand	Singoli, PTCL	9-Apr-25	13:58	9-Apr-25	15:05	01:07	(i)During antecedent condition, only 33MW Unit-1 at Singoli Bhatawari HEP was generating approx. 32MW. Total generation of 32 MW of Singoli Bhatawari was evacuating through 220 KV Singoli Bhatawari (Singoli)(TUHP1)-Srinagar(UK) (PTCL1) Ckt-1 & 2. (ii)As reported, at 13:58 hrs, 220 KV Singoli Bhatawari(Singoli)(TUHP1)-Srinagar(UK) (PTCL1) Ckt-1 tripped on R-Y-N double phase to ground fault with fault distance of 0.197km from Singoli Bhatawari end and 63.98km from Srinagar end. As per CR, fault current was I=2.877KA and I=1.79KA and fault distance was 63.1 (85.1 %) from Srinagar(UK) end; fault sensed in zone-2 and fault clearing time was ~10 ms. (iii)During the same time, 220 KV Singoli Bhatawari (Singoli)(TUHP1)-Srinagar(UK) (PTCL1) Ckt-2 also tripped on R-Y-N double phase to ground fault with fault distance of 24.8km from Singoli Bhatawari end and 77km from Srinagar end. As per CR, fault current was I=1.073KA and I=0.963KA and fault distance was 77.0 (100.0%) from Srinagar(UK) end; fault sensed in zone-3 and fault clearing time was ~130 ms. (iv)Due to tripping of 220 KV Singoli Bhatawari (Singoli)(TUHP1)-Srinagar(UK) (PTCL1) Ckt-1 & 2, 33MW Unit-1 at Singoli Bhatawari HEP tripped due to loss of evacuation path and blackout occurred at 220KV Singoli Bhatawari HEP. (v)As per PMU at Musaffarnagar(UP), R-Y-N double phase to ground fault is observed with fault clearing time of 120 ms. (vi)As per SCADA, generation loss of approx. 32MW at Singoli Bhatawari HEP is observed.	0	0.00	32	0	0.054	0.000	59159	53172	120
8	GD-1	1) 400 KV Kala Amba(PTCL1)-Sorang(Greenko) (Greenko) Ckt 2) 50 MW Units 1 at Sorang (Greenko) 3) 50 MW Unit 2 at Sorang (Greenko)	Himachal Pradesh	PKTL, Greenko	10-Apr-25	17:29	10-Apr-25	20:04	02:35	(i)During antecedent condition, 50MW Units 1 & 2 at Sorang(Greenko) HEP was generating approx. 26MW. (ii)As reported, at 17:29 hrs, 400 KV Kala Amba(PTCL1)-Sorang(Greenko) (Greenko) Ckt tripped on earth fault (exact reason, location and nature of fault yet to be shared). (iii)During the same time, 50MW Units 1 & 2 at Sorang(Greenko) HEP tripped (exact nature of protection operation yet to be shared) and complete blackout occurred at 400KV Sorang(Greenko) HEP. (iv)As per PMU at Abdullahpur(PG), no fault is observed in the system, however fluctuation in voltage is observed. (v)As per SCADA, generation loss of approx. 26MW at Sorang(Greenko) HEP is observed.	0	0.00	26	0	0.054	0.000	48099	50692	NA
9	GD-1	1) 220 KV DandharKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-1 2) 220 KV DandharKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-2	Punjab	PGCL, PSTCL	11-Apr-25	14:19	11-Apr-25	18:02	03:43	(i)During antecedent condition, 220KV Jalandhar(BB)-DandharKalan(PS) (PSTCL) Ckt-1 and 2 were under planned shutdown. (ii)As reported, at 14:19 hrs, 220 KV DandharKalan(PS)-Ludhiana(PG) (PSTCL) Ckt-1 and 2 tripped on R-N phase to earth fault (exact nature, location and reason of fault yet to be shared). (iii)Due to tripping of all the 220KV elements complete blackout occurred at 220/66KV DandharKalan(PS). (iv)As per PMU at Ludhiana(PG), two consecutive R-N phase to earth fault is observed with fault clearing time of 120ms and 560ms (delayed) respectively. (v)As per SCADA, change in demand of approx. 180 MW is observed in Punjab control area.	0	0.67	0	180	0.000	0.380	55223	47335	560
10	GD-1	1) 220 KV Renew SunBright SL_FGARH_PG (RSBPL1)-Fatehgarh_H(PG) (RENEW SUN BRIGHT (RSBPL1) Ckt	Rajasthan	PGCL, Renew Sun Bright	11-Apr-25	10:48	11-Apr-25	12:46	01:58	(i)During antecedent condition, 220KV Renew Sun Bright(UP) was generating approx. 50 MW (as per SCADA). Total generation of 220KV Renew Sun Bright(UP) evacuates through 220 KV Renew SunBright SL_FGARH_PG (RSBPL1)-Fatehgarh_H(PG) (RENEW SUN BRIGHT (RSBPL1) Ckt. (ii)As reported, at 10:48 hrs, 220 KV Renew SunBright SL_FGARH_PG (RSBPL1)-Fatehgarh_H(PG) (RENEW SUN BRIGHT (RSBPL1) Ckt tripped on R-N phase to earth fault (exact nature, location and reason of fault yet to be shared). (iii)Due to tripping of 220 KV Renew SunBright SL_FGARH_PG (RSBPL1)-Fatehgarh_H(PG) (RENEW SUN BRIGHT (RSBPL1) Ckt, complete blackout occurred at 220KV Renew Sun Bright(UP). (iv)As per PMU at Fatehgarh2(PG), R-N phase to earth fault with unsuccessful A/R is observed with fault clearing time of 120ms. (v)As per SCADA, generation loss of approx. 50 MW is observed at Renew Sun Bright(UP).	0	0	50	0	0.094	0.000	53307	50965	120
11	GI-1	1) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 2) 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-2 3) 220 KV Unchahar(NT)-Raebarli(NT) (PG) Ckt-3 4) 220/6 KV 50 MVA ST 3 at Unchahar(NT) 5) 210 MW Unchahar II TPS - UNIT 1 6) 210 MW Unchahar II TPS - UNIT 1	Uttar Pradesh	PGCL, NTPC	13-Apr-25	05:54	13-Apr-25	07:43	01:49	(i)During antecedent condition, 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar II TPS - UNIT 1 were generating approx. 185 MW and 135 MW respectively (as per SCADA). (ii)As reported, at 05:54 hrs, line CB at Unchahar end of 220 KV Kanpur(PG)-Unchahar(NT) (PG) Ckt-1 failed and LBB protection operated. This led to tripping of 220KV Bus-3 at Unchahar TPS. (iii)Due to LBB protection operation 210 MW Unchahar II TPS - UNIT 1 and 210 MW Unchahar II TPS - UNIT 1 also tripped. (iv)During the same time, 220 KV Unchahar(NT)-Raebarli(NT) (PG) Ckt-3 tripped on directional earth fault protection operation (exact reason yet to be shared). (v)As per PMU at Kanpur(PG), R-N phase to earth fault is observed with delayed fault clearing time of 640ms. (vi)As per SCADA, generation loss of approx. 185 MW at Unchahar-II TPS and approx. 135 MW at Unchahar-II TPS is observed.	0	0.00	320	0	0.796	0.000	40195	49692	640
12	GD-1	1) 400 KV Musaffarnagar(UP)-Vishnuprayag(UP) (UP) Ckt ii) 110 MW Vishnuprayag HPS - UNIT 2 iii) 110 MW Vishnuprayag HPS - UNIT 3	Uttar Pradesh	UPPTCL	16-Apr-25	03:16	16-Apr-25	04:37	01:21	(i)During antecedent condition, 110 MW Unit 2 & 3 at Vishnuprayag(UP) were generating approx. ~80 MW & 70 MW respectively (as per SCADA). (ii)As reported, at 03:16 hrs, 400 KV Musaffarnagar(UP)-Vishnuprayag(UP) (UP) Ckt tripped on Y-B phase to phase fault with fault distance of 216.7km (76.4%) from Musaffarnagar end and 51.35km (18.1%) from Vishnuprayag end. As per CR, fault current was I=1.78KA and I=1.88KA from Musaffarnagar end and fault sensed in zone-1 at Musaffarnagar. (iii)With the tripping of 400 KV Musaffarnagar(UP)-Vishnuprayag(UP) (UP) Ckt, 110 MW Unit-2 & 3 at Vishnuprayag(UP) also tripped due to loss evacuation path and complete blackout occurred at 400KV Vishnuprayag (UP) S/L. (iv)As per PMU at Musaffarnagar(UP), Y-B phase to phase fault is observed with fault clearing time of 120 ms. (v)As per SCADA, generation loss of ~150MW occurred at Vishnuprayag HEP.	0	0.00	150	0	0.341	0.000	44821	52826	120
13	GD-1	1) 220 KV Salal(NH)-Jammu(PG) (PG) Ckt-1 ii) 220 KV Salal(NH)-Jammu(PG) (PG) Ckt-2 iii) 220 KV Kishnupur(PG)-Salal(NH) (PG) Ckt-1 iv) 220 KV Kishnupur(PG)-Salal(NH) (PG) Ckt-2 v) 220 KV Kishnupur(PG)-Salal(NH) (PG) Ckt-3 vi) 220 KV Kishnupur(PG)-Salal(NH) (PG) Ckt-4 vii) 115 MW Salal HPS - UNIT 1 viii) 115 MW Salal HPS - UNIT 2 ix) 115 MW Salal HPS - UNIT 4 x) 115 MW Salal HPS - UNIT 6	J&K	NHPC, PGCL and JPCPD	16-Apr-25	19:43	16-Apr-25	21:40	01:57	(i)220V Salal(NHPC) has double main bus scheme at 220KV level. During antecedent condition, 115 MW Salal HPS - UNIT 1, 2, 4 and 6 were generating approx. ~116 MW, 115MW, 111 MW & 113 MW respectively (as per SCADA). (ii)As reported, at 19:43 hrs, Y-B Line CT conductor of 220 KV Salal(NH)-Jammu(PG) (PG) Ckt-1 broke and the line tripped on R-Y phase to phase fault (exact nature, location and reason of fault yet to be shared). (iii)During the same time, busbar protection operated at both the 220KV buses of Salal(NH) (exact reason of same yet to be shared) and all the elements connected to Salal(NH) tripped and complete blackout occurred at 220V Salal(NH) S/L. (iv)As per PMU at Anargah(NIGDR), R-Y phase to phase fault is observed with fault clearing time of 120 ms. (v)As per SCADA, generation loss of approx. 455 MW is observed at Salal HEP.	0	0.00	455	0	0.851	0.000	53474	66415	120
14	GI-1	1) 220 KV JESSORE(HF)-PONG(BB) (PG) Ckt-1 ii) 220KV BUS 2 at PONG(BB) iii) 220 KV JALANDHAR PONG(BB) Ckt-1 iv) 220 KV PONG(BB)-DASU/NA(PS) (BBM8) Ckt-2 v) 220KV PONG(BB)-DASU/NA(PS) (BBM8) Ckt-1 vi) 66MW Unit-1 at Pong(BB)	Himachal Pradesh	BBMB & HPSEB	16-Apr-25	21:18	16-Apr-25	23:47	02:29	(i)During antecedent condition, the following elements were connected to 220KV Bus 2 at Pong : 220 KV JESSORE(HF)-PONG(BB) (PG) Ckt-1, 220 KV JALANDHAR PONG(BB) Ckt-2, 220 KV PONG(BB)-DASU/NA(PS) (BBM8) Ckt-2 and Unit-1, 66MW Unit-1, 5 & 6 at Pong HEP were generating approx. 52MW respectively (as per SCADA). 66MW Unit-2, 3 & 4 at Pong HEP were not in service. (ii)As reported, at 21:18 hrs, Bus bar protection operated at 220KV Bus-2 at Pong(BBMB) on account of severe thunderstorm. (iii)Due to 220KV Bus Bar 2 operation at Pong, all the above-mentioned elements tripped and Bus-2 became dead (exact reason of Bus Bar protection needs to be shared). (iv)As per PMU at Jalandhar(PG), R-N phase to earth fault was observed with fault clearing time of 120ms. (v)As per SCADA, generation loss of approx. 52 MW at Pong HEP (BB) is observed.	0	0.00	52	0	0.102	0.000	50950	64771	120

S.No.	Category of Grid Incident/ Disturbance  (CL-1 to GD-5)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revisit		Duration (In:mm)	Event (As reported)	Energy Unreserved due to Generation loss (MW)	Energy Unreserved due to Load loss (MW)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation and in the Regional Grid during the Grid Disturbance		Antecedent Generation and Load in the Regional Grid		Fault Clearance time (in:ms)
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
15	GD-1	(I)220 KV Bairasul(NH)-Pong(BB) (PG) Ckt (II)60 MW Bairasul HPS - UNIT 1 (III)60 MW Bairasul HPS - UNIT 2 (IV)60 MW Bairasul HPS - UNIT 3	Himachal Pradesh	NHPC & BMBM	16-Apr-25	21:28	16-Apr-25	22:24	00:56	(I)During antecedent condition, 220kV Jessor(HPP)-Pong(BB) (PG) Ckt and 220kV Jessor(HPP)-RSDPH Ckt were not in service. 60 MW Bairasul HPS - UNIT 1, 2 and 3 were generating 60 MW each (as per SCADA). (II)As reported, at 21:28 hrs, 220 KV Bairasul(NH)-Pong(BB) (PG) Ckt tripped on R-N phase to ground fault with fault distance of 79km from Bairasul end due to Inclement weather conditions. (III)Due to tripping of 220 KV Bairasul(NH)-Pong(BB) (PG) Ckt and 220kV Jessor(HPP)-Pong(BB) (PG) Ckt and 220kV Jessor(HPP)-RSDPH Ckt already not in service, 60 MW Bairasul HPS - UNIT 1, 2 and 3 tripped on over-speeding due to loss of excitation path and complete blackout occurred at 220kV Bairasul(NH) s/s. (IV)Further at 22:06 hrs, Ckt of 220 KV Bairasul(NH)-Jessor(HPP) (PG) Ckt were manually opened (no power flow). (V)As per PMU at Pong(BB), two consecutive R-N phase to earth faults were observed with fault clearing time of 80ms and 400ms (delayed) respectively. (VI)As per SCADA, generation loss of approx. 180 MW at Bairasul HEP (NH) is observed.	0	0.00	180	0	0.352	0.000	51097	64539	400
16	GD-1	(I)220 KV Sec 72 - Sec52 (HVPNL) (II)400/220KV 315 MVA ICT 1 at Gurgaon(PG) (III)400/220KV 315 MVA ICT 2 at Jaipur(PG) (IV)400/220KV 500 MVA ICT 3 at Gurgaon(PG) (V)400/220KV 500 MVA ICT 4 at Gurgaon(PG) (VI)220 KV Gurgaon(PG)-GurgaonSec72(HV)(HVPNL) 3	Haryana	HVPNL & PGCL	17-Apr-25	13:59	17-Apr-25	15:13	01:14	(I)400/220KV Gurgaon(PG) and 220/16/13KV Gurgaon Sec72 has double main bus system in 220KV side. 220KV Sec72 Gurgaon(HR) has source from 400/220KV Gurgaon(PG) station through four 220KV feeders. 220KV Gurgaon(PG)-Sec72 Gurgaon Ckt-4 was under shutdown since 02.12.2024. (II)As reported, at 13:59 hrs, Y fault occurred on 220 KV Sec72 Gurgaon -Sec52 Gurgaon (HR) line. Fault occurred due to fire incident due to blast in HCG (Haryana City Gas) pipeline under the line(tower no 45-46), leading to melting of Y R-B ph conductor. At the same time R-ph CT of 220 KV Sec72 Gurgaon -Sec52 Gurgaon (HR) line at Sec72 Gurgaon(HR) end also got damaged (blat). (III)As per PMU at Gurgaon(PG), R-N phase to earth fault converted into Y-B fault with delayed clearance of ~1800msec is observed. (IV)On this fault, distance protection as well as back up On: EP-GC protection at Sec72 Gurgaon(HR) end didn't operate. (V)Fault cleared with the tripping of all four 400/220KV Ckts (P+315 + 3500MVA) at Gurgaon(PG) on back up overcurrent protection operation. 220KV Gurgaon(PG)-Gurgaon72 Ckt 3 also tripped from Gurgaon(PG) end on overcurrent protection. (VI)With the tripping of all four Ckts at Gurgaon(PG), supply to 220KV Sec72 Gurgaon(HR) got lost. (VII)As per SCADA, change in demand of approx. ~815MW in Haryana control area is observed. (VIII)400/220KV Ckts at Gurgaon(PG) restored back between 15:13 hrs- 15:50 hrs and supply to Sec72 Gurgaon(HR) restored.	0	1.00	0	815	0.000	1.524	60558	53466	1800
17	GI-1	(I)220 Akal-Lala(RS) line (II)220 Akal-Sulton(RS) line	Rajasthan	RVNL	18-Apr-25	12:51	18-Apr-25	20:25	07:34	(I)400/220KV Akal(PG) has one and half breaker scheme at 400KV level and double main and transfer bus scheme at 220KV level. (II)During antecedent condition, 220 Akal-Lala and 220 Akal-Sulton ckt were carrying 55MW and 18MW of load respectively. (III)As reported, at 12:51 hrs, 220KV Akal-Lala line tripped due to R phase fault. 2-1 distance protection operated and fault current was 25KA. Fault occurred due to damage of R-ph wavetrap at Akal end. (IV)Consequently, at the same time 220 Akal-Sulton ckt also tripped from Sulton end only. Further details are still awaited. (V)During this event, a dip in Rajasthan wind generation of approx. 865 MW is observed. Appx. 550MW recovered completely within 10 minutes. (As per SCADA). As informed by SLDC Rajasthan, 213MW loss in Rajasthan wind generation occurred. (VI)As per PMU, R-N phase to earth-fault was observed with fault clearance time of 120msec .	0	0	865	0	1.441	0.000	60036	53768	120
18	GI-1	(I)400/220 KV 315 MVA ICT 1 AT JAIPUR (UP) (II)220/132 KV 160 MVA ICT-II AT JAIPUR (UP) (III)220KV Bus Coupler (IV)220KV BUS 2 at Jaipur	Uttar Pradesh	UPPTCL	21-Apr-25	14:06	21-Apr-25	15:01	00:55	(I)400/220/132KV Jaipur(UP) has one and half breaker scheme in 400KV and double main and transfer scheme in 220KV. (II)During antecedent condition, 400/220 KV 315 MVA ICT 1 and 220/132 KV 160 MVA ICT-I JAIPUR(UP) were carrying 173MW and 92MW of load respectively. 400/220 KV 315 MVA ICT 2 and ICT 3 were out of service. (III)As reported, at 14:06 hrs, 400/220 KV 315 MVA ICT 1 tripped due to R-N phase to earth fault. B phase EMTP protection operated. (IV)Consequently, at the same time 220KV BUS 2 at Jaipur, 220KV Bus Coupler, 220/132 KV 160 MVA ICT-II at Jaipur (UP), also tripped (tripping details awaited). This led to the tripping of 132KV system in Jaipur s/s/in. (V)During this event, change in demand of 211 MW was observed in SLDC UP control area as per SCADA. (VI)As per PMU, R-N phase to earth-fault was observed and fault clearance time of upto 120msec observed.	0	0.19	0	211	0.000	0.372	61201	56777	120
19	GI-2	(I)765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 (II)765 KV Ghatampur_TPS(UP) - Bus 2 (III)765 KV Ghatampur_TPS(UP) - Bus 1 (IV)330 MAAR Bus Reactor No 1 at 765 KV Ghatampur_TPS(UP) (V)330MAAR Line Reactor of 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 at Ghatampur (VI)660MW GHATAMPUR TPS - UNIT 1	Uttar Pradesh	NUPPL & UPPTCL	23-Apr-25	12:45	23-Apr-25	17:01	04:16	(I)765/400/132KV Ghatampur(UP) has one and half breaker scheme in 765KV, 400KV and double main bus scheme in 220KV. It comprises of 3 X 660MW of generation. (II)During antecedent condition, 660MW GHATAMPUR TPS - UNIT 1 was generating 387MW and Unit 2 and Unit 3 are yet to be commissioned. 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 was carrying 387MW of load. (III)As reported, at 12:45 hrs, 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 tripped due to R-N phase to earth fault. 2-1 distance protection operated and fault current was $I_r = 1.92KA$ . (IV)At the same time 660MW GHATAMPUR TPS - UNIT 1, kept feeding Y and B phases. As a result of current flow in the neutral phase, REF of GT1 at HV side operated. This led to tripping of Unit 1. (V)Despite of operation in 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1, the line tripped due fault sensed from Rampur end during reclaim time. As a result 765KV Bus 1 & 2 along with 765KV Bus Reactor, and 330MAAR Line Reactor of 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 at Ghatampur tripped. (VI)During this event, change in generation of 387 MW was observed in SLDC UP control area as per SCADA. (VII)As per PMU, R-N phase to earth-fault was observed and fault clearance time of upto 120msec observed.	0	0.00	387	0	0.653	0.000	59626	52773	120
20	GI-2	(I)765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 (II)765 KV Ghatampur_TPS(UP) - Bus 2 (III)765 KV Ghatampur_TPS(UP) - Bus 1 (IV)330MAAR Line Reactor of 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 at Ghatampur (V)660MW GHATAMPUR TPS - UNIT 1	Uttar Pradesh	NUPPL & UPPTCL	24-Apr-25	11:45	24-Apr-25	16:55	05:10	(I)765/400/132KV Ghatampur(UP) has one and half breaker scheme in 765KV, 400KV and double main bus scheme in 220KV. It comprises of 3 X 660MW of generation. (II)During antecedent condition, 660MW GHATAMPUR TPS - UNIT 1 was generating 387MW and Unit 2 and Unit 3 are yet to be commissioned. 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 was carrying 387MW of load. (III)As reported, at 12:45 hrs, 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 tripped due to R-N phase to earth fault. 2-1 distance protection operated and fault current was $I_r = 1.92KA$ . (IV)At the same time 660MW GHATAMPUR TPS - UNIT 1, kept feeding Y and B phases. As a result of current flow in the neutral phase, EP of GT1 at HV side operated. (V)Despite of A/R operation in 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1, the line tripped due fault sensed from Rampur end during reclaim time. As a result 765KV Bus 1 & 2 along with 330MAAR Line Reactor of 765 KV RAMPUR_PRESTI -GHATAMPUR_TPS (UP) CKT-1 at Ghatampur tripped. (VI)As per SCADA, generation loss of approx. 317 MW at Ghatampur TPS. However, Generation loss was 380MW as per UP SLDC. (VII)As per PMU, R-N phase to earth-fault was observed and fault clearance time of upto 120msec observed.	0	0.00	380	0	0.623	0.000	59998	55495	120
21	GI-1	(I)220 KV BHIWANI-CHARKHEDI DADRI (BB) CKT-1 (II)220 KV BHIWANI-CHARKHEDI DADRI (BB) CKT-2 (III)220 KV BHIWANI-CHARKHEDI DADRI (BB) CKT-3 (IV)220 KV BHIWANI-CHARKHEDI DADRI (BB) CKT-4 (V)220 KV CHARKHEDI DADRI-SAMARPUR (BB) CKT-1 (VI)220 KV BALLABHAGHARI-CHARKHEDI DADRI (BB) CKT-1 (VII)220 KV PANPURI-CHARKHEDI DADRI (BB) CKT-1	Haryana	BMBM	25-Apr-25	16:52	25-Apr-25	18:26	01:34	(I)220KV Charkhdi_Dadri(HR) has double main scheme in 220KV. (II)During antecedent condition, 220 KV BHIWANI-CHARKHEDI DADRI (BB) Ckt 1, 2, 3, 4, were carrying 50MW, 51MW, 52MW and 49MW respectively. (III)As reported, at 16:49 hrs, 220 KV BALLABHAGHARI-CHARKHEDI DADRI (BB) CKT-1 tripped due to R-N phase to earth fault. 2-2 distance protection operated and fault Location = 129 KM from Ballabhaghar end. (IV)At 16:52 hrs, 220 KV PANPURI-CHARKHEDI DADRI (BB) CKT-1 tripped due to R-N fault. 2-2 distance protection operated, the fault current is 1.72KA and fault location is 130KM from Panipat(BMBM) s/s/in. (V)At 16:53 hrs, 220 KV CHARKHEDI DADRI-SAMARPUR (BB) CKT-1 tripped due to R-N fault. 2-1 protection operated, fault current = 4.8KA and the fault distance was 118KM from Samarpur end. (VI)At 16:53 hrs, 220 KV BHIWANI-CHARKHEDI DADRI (BB) CKT-1, Ckt-2, Ckt-3 and Ckt-4 were hand tripped due to fire at Charkhdi Dadri s/s/in. Exact cause of fire is s/s/in needs to be shared. (VII)During this event, change in demand of 509 MW was observed in SLDC Haryana control area as per SCADA. (VIII)As per PMU, R-N phase to earth-fault was observed and delayed fault clearance time of upto 360msec observed.	0	0.17	0	109	0.000	0.182	59862	59932	360
22	GD-1	(I)220 KV Lalot(RS) Ckta(RS) (PG) Ckt-1 (II)220 KV Anip(NY)-Lalot(RS) (PG) Ckt-1	Rajasthan	PGCL, NTPC & RVNL	26-Apr-25	17:06	26-Apr-25	20:30	03:24	(I)220/132KV Lalot(RS) has double main bus scheme at both 220KV and 132KV voltage level. (II)During antecedent condition, 220 KV Lalot(RS)-Daus(RS) (PG) Ckt-1 and 220 KV Anip(NY)-Lalot(RS) (PG) Ckt-1 were carrying 30MW and 49MW of load respectively. (III)As reported, at 17:06 hrs, 220 KV Lalot(RS)-Daus(RS) (PG) Ckt-1 tripped due to R-N phase to earth fault. 2-2 distance protection operated and fault current was 4.55KA. It is interesting to note that 2-4 protection for the same line operated after 2-2 distance protection operated. (IV)Consequently, at the same time 220 KV Anip(NY)-Lalot(RS) (PG) Ckt-1 also tripped due R-N phase to earth fault only. The fault current observed was 5.84KA. (V)Following these events due to loss of both transmission line in 220KV side, complete blackout of 132KV Lalotue s/s/in occurred. (VI)During this event, change in demand of 116 MW was observed in Rajasthan control area as per SCADA. (VII)As per PMU, R-N phase to earth-fault was observed with unsuccessful A/R and delayed fault clearance time of upto 360msec observed.	0	0.39	0	116	0.000	0.199	57010	58250	360
23	GD-1	(I)400 KV ROPAR(PSTCL) - BUS 2 (II)400/220 KV 500 MVA ICT-1 AT ROPAR(PSTCL) (III)400/220 KV 500 MVA ICT 2 AT ROPAR(PSTCL) (IV)400 MAAR BAR -400 KV KOLDAMANTY(KORHPA(PSTCL) (PTCL) CKT-1 (PSTCL) AT 400 KV ROPAR(PSTCL)	Punjab	PSTCL & PTCL	28-Apr-25	19:08	28-Apr-25	22:16	03:08	(I)400/220KV Ropar has one and half breaker scheme while 220KV has double main and transfer bus scheme. (II)As reported, at 19:08 hrs, 400KV Bus 2 tripped due to B-phase CVT damage. Following this 400/220 KV 500 MVA ICT 1 AT ROPAR(PSTCL), 400/220 KV 500 MVA ICT 2 AT ROPAR(PSTCL) and 404 MAIN BAR - 400 KV KOLDAMANTY(KORHPA(PSTCL) (PTCL) CKT-1 (PSTCL) AT 400 KV ROPAR(PSTCL) tripped. (III)As per DR of 400KV Ropar Bus-2 and 500MVA ICT-1 at Ropar, differential protection operated. However, the DR is not time synched (IV)Following these events, 400/220 KV 500 MVA ICT 2 AT ROPAR(PSTCL) also tripped. As a result both 400KV and 220KV systems tripped in Ropar sub-station and blackout occurred. (V)During this event, Punjab SLDC reported a load loss of 368MW. (VI)As per PMU, multiple B-N phase to earth-fault was observed and fault clearance time of upto 120msec observed.	0	1.15	0	368	0.000	0.568	55942	64737	120
24	GD-1	(I)220 KV GrianPSS_BIK2(AMPLUS)-Bikaner_2 (PTSL) (GRAN ENERGY PRIVATE LIMITED) Ckt (II)220/33 KV 100 MVA ICT 1 at GrianPSS_BIK2 (AMPLUS) (III)220/33 KV 100 MVA ICT 2 at GrianPSS_BIK2 (AMPLUS) (IV)220/33 KV 100 MVA ICT 3 at GrianPSS_BIK2 (AMPLUS)	Rajasthan	AMPLUS	28-Apr-25	15:11	28-Apr-25	17:34	02:23	(I)Generation of GEPL(GrianPSS(P)) station (which is summation of generation of AAPL(UP), GEPL(UP) and One volt(P)) evacuates through 220 KV GrianPSS_BIK2(AMPLUS)-Bikaner_2 (PTSL) (GRAN ENERGY PRIVATE LIMITED) Ckt which is further connected to 3 RE plants at 33KV level through 3 nos of 220/33KV 100MVA ICT-1, 2 & 3 are connected to AAPL(UP), GEPL(UP) and One volt(P) respectively at 33KV level. During antecedent condition, 220 KV GEPL(GrianPSS(P)) was generating total approx. 263 MW (as per PMU). (II)As reported, at 15:11hrs, 220 KV GrianPSS_BIK2(AMPLUS)-Bikaner_2 (PTSL) (GRAN ENERGY PRIVATE LIMITED) Ckt tripped on R-N phase to earth fault (exact location, location and reason of fault to be received). (III)Due to tripping of 220 KV GrianPSS_BIK2(AMPLUS)-Bikaner_2 (PTSL) (GRAN ENERGY PRIVATE LIMITED) Ckt, AAPL(UP), GEPL(UP) and One volt(P) i.e., 220KV GEPL(GrianPSS(P)) s/s lost its connectivity from grid and blackout occurred at 220KV GEPL(GrianPSS(P)) s/s. (IV)As per PMU at Bikaner, R-N phase to phase fault with unsuccessful A/R (voltage dipped upto 0.646 pu.) was observed with fault clearing time of 80ms. (V)As per PMU at GEPL(GrianPSS(P)), solar generation loss of approx. 263 MW was observed at 220 KV GEPL(GrianPSS(P)). (VI)As per SCADA, change in total NR solar generation of approx. 284 MW was observed.	0	0	263	0	0.417	0.000	63009	60970	80

Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal														
Time Period: 1st April 2025 - 30th April 2025														
S. No.	Utility	Total No. of tripping	First Informati on 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	4	4	100	4	0	100	4	0	100	4	0	100	DR, EL & Tripping report not submitted
2	AD HYDRO	1	0	0	0	0	0	0	0	0	0	0	0	Details received
3	ADANI GREEN ENERGY TWENTY FIVE LIMITED	1	0	0	0	0	0	0	0	0	1	0	100	DR, EL & Tripping report not submitted
4	AHEJ2L	1	1	100	1	0	100	1	0	100	1	0	100	
5	AHEJ3L	2	2	100	2	0	100	2	0	100	2	0	100	
6	ANTA-NT	7	7	100	7	0	100	7	0	100	7	0	100	
7	AP43L	2	2	100	2	0	100	2	0	100	2	0	100	
8	APTFL	1	1	100	1	0	100	1	0	100	1	0	100	
9	ARP1PL	1	1	100	1	0	100	1	0	100	1	0	100	
10	AURAIYA-NT	4	4	100	3	0	75	4	0	100	3	0	75	
11	AYANA RENEWABLE POWER THREE PRIVATE LIMITED	1	1	100	1	0	100	1	0	100	1	0	100	
12	BAIRASUIL-NH	5	3	60	3	0	60	3	0	60	3	0	60	
13	BBMB	96	31	32	48	24	67	50	20	66	46	9	53	
14	CHAMERA-III-NH	4	3	75	3	1	100	3	1	100	3	0	75	
15	CHAMERA-II-NH	1	1	100	1	0	100	1	0	100	1	0	100	
16	CPCC1	73	3	4	18	13	30	7	15	12	7	2	10	
17	CPCC2	59	3	5	1	10	2	1	9	2	1	1	2	
18	CPCC3	32	27	84	29	0	91	29	0	91	29	0	91	
19	DADRIGAS-NT	1	1	100	1	0	100	1	0	100	1	0	100	
20	DADRI-NT	4	4	100	4	0	100	4	0	100	4	0	100	
21	DULHASTI-NH	1	1	100	1	0	100	1	0	100	1	0	100	

<b>Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal</b>	
<b>Time Period: 1st April 2025 - 30th April 2025</b>	

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

Time Period: 1st April 2025 - 30th April 2025

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		%	
41	SAURYA	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
42	SEWA-2-NH	6	3	50	3	2	75	3	2	75	3	0	50	
43	SHREE CEMENT	2	2	100	2	0	100	2	0	100	2	0	100	
44	SINGOLI	3	3	100	2	0	67	3	0	100	3	0	100	
45	SJVN GREEN ENERGY LIMITED	3	3	100	3	0	100	3	0	100	3	0	100	
46	SLDC-DV	19	4	21	4	0	21	4	0	21	4	0	21	Details received
47	SLDC-HP	12	0	0	4	5	57	4	5	57	0	0	0	
48	SLDC-HR	28	12	43	15	5	65	15	8	75	13	0	46	DR, EL & Tripping report not submitted
49	SLDC-JK	21	0	0	21	0	100	21	0	100	21	0	100	
50	SLDC-PS	45	16	36	34	1	77	33	1	75	38	0	84	
51	SLDC-RS	134	22	16	45	16	38	45	17	38	59	0	44	
52	SLDC-UK	23	6	26	6	4	32	6	7	38	9	0	39	
53	SLDC-UP	110	24	22	24	10	24	24	10	24	27	4	25	
54	SORANG	1	1	100	1	0	100	1	0	100	1	0	100	
55	STERLITE	6	1	17	1	0	17	1	1	20	3	2	75	Details received
56	TANAKPUR-NH	1	0	0	0	0	0	0	0	0	0	0	0	
57	TANDA-NT	3	1	33	1	0	33	1	0	33	1	0	33	DR, EL & Tripping report not submitted
58	THAR SURYA 1 PRIVATE LIMITED	2	2	100	2	0	100	2	0	100	2	0	100	
59	UNCHAHAHAR-NT	11	4	36	4	1	40	4	0	36	4	1	40	
Total in NR Region		791	243	31	346	92	49	338	96	49	349	19	45	

## **Proposed overvoltage protection setting for 400kV & 765kV lines in NR (approved in 58<sup>th</sup> PSC meeting held on 26.03.2025)**

**The philosophy to decide the overvoltage protection setting was finalised by the committee formed by NRPC to review the over voltage protection settings. The philosophy is as follows:**

- I. Pick up voltage & time delay setting of Antitheft lines to be kept low with sufficient time gap from other lines at S/s. In case of 400kV lines, it may be kept as 105%-107% pick up with 3-4 secs time delay and in case of 765kV lines, it may be kept as 104%-106% pick up with 3-4 secs time delay. Further, it may be decided on case-to-case basis.
- II. Parallel lines grading to be done such that one line should trip early by setting at low voltage and other line should trip last by keeping setting at high voltage. Stage-1 of over voltage protection setting in all the 400kV lines to be kept as 110 % with 5 sec delay and stage-2 setting to be kept as 140-150 % with 100msec delay.
- III. In case of parallel lines, both voltage and time grading need to be done (in line with the NRPC protection philosophy of lines). Voltage grading (110% & 112% with 5 & 6 sec time delay for double circuits and 110%, 111% & 112% with 5,6 & 7 sec time delay for triple circuits).
- IV. Highly loaded lines should be given last priority in tripping.
- V. Net MVAR relief (based on the line charging MVAR & MVAR compensation in line) based on the simulation to be considered for arriving at the priority of line tripping. Lines providing high net MVAR relief to be tripped early.
- VI. Grading to be done in such a manner that one major incoming and outgoing line shall remain connected after tripping of lines at any node.
- VII. Protection setting of remote end station of a line need to be coordinated so as to avoid tripping of line from the other end.
- VIII. Drop-off to pick-up ratio of relays implemented for overvoltage protection shall be more than 99%. In case of old relays in which there is no option for changing this setting, utilities may take up this issue with OEM for increasing this setting to 99% or higher.

S. No	Name of the Line	Circuit ID	Proposed Over Voltage protection setting							
			End I				End II			
			stage I pick up(%)	time (s)	stage II pick up(%)	time (s)	stage I pick up(%)	time (s)	stage II pick up(%)	time (s)
1. 765kV Transmission Line										
A. POWERGRID										
1	Agra-Aligarh	1	108	5	150	0.1	108	5	150	0.1
2	Agra-Fatehpur	1	107	5	150	0.1	107	5	150	0.1
3	Agra-Fatehpur	2	108	9	150	0.1	108	9	150	0.1
4	Agra-Gwalior IR	1	108	5	150	0.1	WR			
5	Agra-Gwalior IR	2	109	9	150	0.1	WR			
6	Agra-Jhatikara	1	106	5	140	0.1	106	5	140	0.1
7	Ajmer(PG)-Bhadla_2(PG)	1	109	8	140	0.1	109	8	140	0.1
8	Ajmer(PG)-Bhadla_2(PG)	2	110	15	140	0.1	110	15	140	0.1
9	Ajmer(PG)-Chittorgarh(PG)	1	110	9	140	0.1	110	9	140	0.1
10	Ajmer(PG)-Chittorgarh(PG)	2	110	15	140	0.1	110	15	140	0.1
11	Ajmer(PG)-Phagi(RS)	1	108	7	140	0.1	108	7	140	0
12	Ajmer(PG)-Phagi(RS)	2	110	12	140	0.1	110	12	140	0
13	Aligarh(PG) - Sikar_2(PSTL)	1	108	5	150	0.1	108	5	140	0.1
14	Aligarh(PG) - Sikar_2(PSTL)	2	108	9	150	0.1	108	9	140	0.1
15	Aligarh-Gr.Noida	1	109	7	150	0.1	109	7	140	0.1
16	Balia-Gaya IR	1	108	7	150	0.1	ER			
17	Balia-Lucknow_2(PG)	1	108	9	150	0.1	108	9	150	0.1
18	Bhadla_II(PG)-Sikar_2(PG)	1	109	6	150	0.1	109	6	150	0.1
19	Bhadla_II(PG)-Sikar_2(PG)	2	110	15	150	0.1	110	15	150	0.1
20	Bhiwani-Jhatikara	1	109	10	140	0.1	109	10	140	0.1
21	Bhiwani-Meerut	1	109	7	140	0.1	109	7	140	0.1
22	Bhiwani-Phagi	1	109	5	140	0.1	109	5	140	0
23	Bhiwani-Phagi	2	109	7	140	0.1	109	7	140	0
24	Bikaner(PG) - Bhadla(PG)	1	109	8	140	0.1	109	8	140	0.1

25	Bikaner(PG) - Bhadla(PG)	2	110	15	140	0.1	110	15	140	0.1
26	Bikaner(PG)-Bhadla_2(PG)	1	108	7	140	0.1	108	7	140	0.1
27	Bikaner(PG)-Bhadla_2(PG)	2	110	15	140	0.1	110	15	140	0.1
28	Bikaner(PG)-Moga	1	108	5	140	0.1	108	5	140	0.1
29	Bikaner(PG)-Moga	2	110	13	140	0.1	110	13	140	0.1
30	Chittorgarh(PG)-Banaskantha IR	1	110	9	140	0.1	WR			
31	Chittorgarh(PG)-Banaskantha IR	2	110	15	140	0.1	WR			
32	Fatehpur- Sasaram IR	1	108	5	150	0.1	ER			
33	Fatehgarh_2(PG)-Bhadla_2(PG)	1	109	9	140	0.1	109	9	140	0.1
34	Fatehgarh_2(PG)-Bhadla_2(PG)	2	110	15	140	0.1	110	15	140	0.1
35	Fatehgarh_2(PG)-Bhadla_2(PG)	3	107	5	140	0.1	107	5	140	0.1
36	Fatehgarh_2(PG)-Bhadla_2(PG)	4	108	8	140	0.1	108	8	140	0.1
37	Jhatikara-Aligarh	1	107	7	140	0.1	107	7	150	0.1
38	Jhatikara(PG)-Khetri(PKTSL)	1	108	5	140	0.1	108	5	140	0.1
39	Jhatikara(PG)-Khetri(PKTSL)	2	109	6	140	0.1	109	6	140	0.1
40	Kanpur(GIS)-Aligarh	1	109	9	150	0.1	109	9	150	0.1
41	Lucknow_2(PG)-Bareilly_2(PG)	1	109	5	150	0.1	109	5	150	0.1
42	Meerut-G. Noida	1	109	7	140	0.1	109	7	140	0.1
43	Meerut-Koteshwar(PG)	1	107	7	140	0.1	107	7	140	0.1
44	Meerut-Koteshwar(PG)	2	109	9	140	0.1	109	9	140	0.1
45	Moga-Bhiwani(PG)	1	109	5	140	0.1	109	5	140	0.1
46	Moga-Meerut	1	108	5	140	0.1	108	5	140	0.1
47	Orai-Aligarh	1	107	5	150	0.1	107	5	150	0.1
48	Orai-Aligarh	2	108	7	150	0.1	108	7	150	0.1
49	Orai-Jabalpur IR	1	107	5	150	0.1	WR			
50	Orai-Jabalpur IR	2	109	5	150	0.1	WR			
51	Orai-Satna IR	1	108	5	150	0.1	WR			
52	Orai-Gwalior IR	1	108	6	150	0.1	WR			
53	Phagi-Gwalior IR	1	110	5	140	0.1	WR			
54	Phagi-Gwalior IR	2	110	7	140	0.1	WR			
55	Varanasi-Balia	1	109	5	150	0.1	109	5	150	0.1

56	Varanasi-Fatehpur	1	109	5	150	0.1	109	5	150	0.1
57	Varanasi-Gaya IR	1	108	5	150	0.1	ER			
58	Varanasi-Gaya IR	2	109	9	150	0.1	ER			
59	Varanasi-Kanpur	1	108	5	150	0.1	108	5	150	0.1
60	Varanasi-Kanpur	2	110	5	150	0.1	110	5	150	0.1
61	Varanasi-Vindhyachal Pooling	1	108	5	150	0.1	WR			
62	Varanasi-Vindhyachal Pooling	2	109	9	150	0.1	WR			
B. Adani Transmission India Ltd. (ATIL) (BKTL, FBTL)										
1	Bikaner(PG)-Khetri(PKTSL)	1	109	9	140	0.1	109	9	140	0.1
2	Bikaner(PG)-Khetri(PKTSL)	2	110	15	140	0.1	110	15	140	0.1
3	Fatehgarh_II(PG)-Bhadla(PG)	1	108	6	140	0.1	108	6	140	0.1
4	Fatehgarh_II(PG)-Bhadla(PG)	2	110	12	140	0.1	110	12	140	0.1
C. UPPTCL										
1	Agra Fatehabad-Ghatampur	1	108	7	140	0.1	108	7	140	0.1
2	Agra Fatehabad-Gr. Noida	1	109	5	140	0.1	109	5	140	0.1
3	Anpara C-Anpara D	1	108	5	140	0.1	108	5	140	0.1
4	Anpara C-Unnao	1	109	5	140	0.1	110	7	140	0.1
5	Anpara D-Obra_C	1	110	7	140	0.1	110	7	140	0.1
6	Bara-Mainpuri	2	108	7	140	0.1	108	7	140	0.1
7	Ghatampur-Rampur_PRSTL	1	109	5	140	0.1	109	5	140	0.1
8	Hapur(UP)-Meerut_PMSTL	1	110	7	140	0.1	110	7	140	0.1
9	Hapur(UP)-Rampur_PRSTL	1	108	5	140	0.1	108	5	140	0.1
10	Hapur-Mainpuri	1	109	7	140	0.1	109	7	140	0.1
11	Jawaharpur-Gr.NOIDA	1	110	5	140	0.1	110	5	140	0.1
12	Lalitpur - Agra Fatehabad	1	108	5	140	0.1	108	5	150	0.1
13	Lalitpur - Agra Fatehabad	2	110	9	140	0.1	110	9	140	0.1
14	Meerut_PMSTL-G.Noida	1	110	5	140	0.1	110	5	140	0.1
15	Mainpuri(UP)-Jawaharpur	1	110	9	140	0.1	110	9	140	0
16	Obra_C-Unnao	1	110	5	140	0.1	110	5	140	0.1

<b>D. Rajasthan</b>										
1	Anta-Phagi	1	110	5	140	0.1	110	5	140	0.1
2	Anta-Phagi	2	110	7	140	0.1	112	6	140	0.1
<b>2. 765kV Transmission Line charged at 400kV</b>										
<b>A. POWERGRID</b>										
1	Kishenpur-Moga	1	110	5	150	0.1	110	5	150	0.1
2	Kishenpur-Moga	2	112	6	150	0.1	112	6	150	0.1
3	Tehri(TH)- Koteshwar(PG)	1	110	5	140	0.1	110	5	150	0.1
4	Tehri(TH)- Koteshwar(PG)	2	112	6	140	0.1	111	6	150	0.1
<b>B. Adani Transmission India Ltd. (ATIL) ( FBTL)</b>										
1	Fatehgarh Pooling- Fatehgarh_II	1	110	5	150	0.1	110	5	150	0.1
2	Fatehgarh Pooling- Fatehgarh_II	2	112	6	150	0.1	111	5	150	0.1
<b>3. 400kV HVAC Transmission Line</b>										
<b>A. POWERGRID</b>										
2	Abdullapur(PG)- Deepalpur(JHKT)	1	112	6	150	0.1	112	6	150	0.1
1	Abdullapur(PG)- Bawana(DV)	1	110	5	150	0.1	110	5	150	0.1
3	Abdullapur- Kala Amb	1	110	5	150	0.1	110	5	150	0.1
4	Abdullapur- Kala Amb	2	112	6	150	0.1	112	6	150	0.1
5	Abdullapur- Kurukshetra	1	110	5	150	0.1	110	5	150	0.1
6	Abdullapur- Kurukshetra	2	112	6	150	0.1	112	6	150	0.1
7	Agra(PG)-Agra(UP)	1	110	5	150	0.1	111	6	150	0.1
8	Agra-Ballabgarh	1	110	5	150	0.1	110	5	150	0.1
9	Agra-Bassi	1	110	5	150	0.1	110	5	150	0.1
10	Agra-Bhiwadi	1	110	5	150	0.1	110	5	150	0.1
11	Agra-Bhiwadi	2	112	6	150	0.1	112	6	150	0.1
12	Agra PG- Fatehabad (765kV Agra UP)	1	112	6	150	0.1	110	5	150	0.1
13	Agra-Jaipur South	1	110	5	150	0.1	110	5	150	0.1
14	Agra-Jaipur South	2	112	6	150	0.1	112	6	150	0.1
15	Agra-Sikar	1	110	5	150	0.1	110	5	150	0.1
16	Agra-Sikar	2	112	6	150	0.1	112	6	150	0.1
17	Ajmer(RS)- Ajmer(PG)	1	110	5	150	0.1	110	5	150	0.1
18	Ajmer(RS)- Ajmer(PG)	2	112	6	150	0.1	112	6	150	0.1

19	Allahabad-Fatehpur	3	110	5	150	0.1	110	5	150	0.1
20	Allahabad-Fatehpur	1	111	6	150	0.1	111	6	150	0.1
21	Allahabad-Fatehpur	2	112	7	150	0.1	112	7	150	0.1
22	Allahabad-Kanpur	1	110	5	150	0.1	110	5	150	0.1
23	Allahabad-Kanpur_GIS(765/400kV)	1	112	6	150	0.1	111	6	150	0.1
24	Allahabad-Kanpur_GIS(765/400kV)	2	110	5	150	0.1	111	7	150	0.1
25	Allahabad(PG)-Meja(NT)	1	110	5	150	0.1	110	5	140	0.1
26	Allahabad(PG)-Meja(NT)	2	112	6	150	0.1	110	5	140	0.1
27	Allahabad-Sasaram IR	1	110	5	150	0.1	ER			
28	Allahabad-Varanasi	1	110	6	150	0.1	110	5	150	0.1
29	Amritsar-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
30	Amritsar-Jalandhar	2	112	6	150	0.1	112	6	150	0.1
31	Amritsar-Parbati Pool Banala	1	110	5	150	0.1	110	5	150	0.1
32	Auraiya(NT)-Agra(PG)	1	110	5	140	0.1	110	5	150	0.1
33	Auraiya(NT)-Agra(PG)	2	112	5	140	0.1	112	6	150	0.1
34	Baghpat-Kaithal	1	110	5	150	0.1	110	5	150	0.1
35	Baghpat-Kaithal	2	112	6	150	0.1	112	6	150	0.1
36	Baghpat-Saharanpur	1	110	6	150	0.1	110	5	150	0.1
37	Bahadurgarh(PG)-Kabulpur(HV)	1	110	6	150	0.1	110	5	150	0.1
38	Bahadurgarh-Sonepat	1	110	5	150	0.1	110	5	150	0.1
39	Bahadurgarh-Sonepat	2	112	6	150	0.1	112	6	150	0.1
40	Balia-Biharshariff IR	1	110	5	150	0.1	ER			
41	Balia-Biharshariff IR	1	112	6	150	0.1	ER			
42	Balia(PG)-Mau(UP)	1	110	5	150	0.1	110	5	150	0.1
43	Balia-Naubatpur IR	1	111	6	150	0.1	ER			

44	Balia-Patna IR	1	110	5	150	0.1	ER			
45	Balia-Patna IR	2	112	6	150	0.1	ER			
46	Balia-Patna IR	3	110	6	150	0.1	ER			
47	Balia-Rasra	1	112	6	150	0.1	110	5	140	0.1
48	Balia-Sohawal	1	110	5	150	0.1	110	5	150	0.1
49	Balia-Sohawal	2	112	6	150	0.1	112	6	150	0.1
50	Ballabgarh-Gurgaon	1	110	5	150	0.1	110	5	150	0.1
51	Ballabgarh(PG)-Nawada(HV)	1	110	6	150	0.1	110	6	---	---
52	Bamnoli(DV)-Dwarka(PG)	1	110	5	150	0.1	110	5	150	0.1
53	Bareilly PG-Lucknow (UP)	1	111	6	150	0.1	110	5	150	0.1
54	Bareilly(PG)-Meerut	1	110	5	150	0.1	110	5	150	0.1
55	Bareilly(PG)-Meerut	2	112	6	150	0.1	112	6	150	0.1
56	Bareilly(PG)-Moradabad(UP)	1	110	5	150	0.1	110	5	150	0.1
57	Bareilly(PG)-Rampur_PRSTL	1	111	6	150	0.1	111	6	150	0.1
58	Bareilly(UP)-Bareilly(PG)	1	110	5	150	0.1	110	5	150	0.1
59	Bareilly(UP)-Bareilly(PG)	2	112	6	150	0.1	112	6	150	0.1
60	Bareilly_2(765/400)(PG)-Bareilly(PG)	1	110	5	150	0.1	110	5	150	0.1
61	Bareilly_2(765/400)(PG)-Bareilly(PG)	2	112	6	150	0.1	112	6	150	0.1
62	Bareilly_2(765/400)(PG)-Jauljivi(PG)	1	110	5	150	0.1	110	5	150	0.1
63	Bareilly_2(765/400)(PG)-Jauljivi(PG)	2	112	6	150	0.1	112	6	150	0.1
64	Bareilly_2(765/400)(PG)-Kashipur(UK)	1	110	5	150	0.1	110	5	150	0.1
65	Bareilly_2(765/400)(PG)-Kashipur(UK)	2	112	6	150	0.1	112	6	150	0.1
66	Baspa-Karcham Wangtoo	1	110	5	140	0.1	110	5	140	0.1
67	Baspa-Karcham Wangtoo	2	112	6	140	0.1	112	6	140	0.1
68	Bassi-Bhiwadi	1	110	6	150	0.1	110	5	150	0.1
69	Bassi(PG)-Heerapura(RS)	1	110	5	150	0.1	110	5	150	0.1
70	Bassi(PG)-Heerapura(RS)	2	112	6	150	0.1	112	6	150	0.1

71	Bassi-Kotputli	1	110	6	150	0.1	110	5	150	0.1
72	Bassi(PG)- Phagi(RS)	1	110	5	150	0.1	110	5	140	0.1
73	Bassi(PG)- Phagi(RS)	2	112	6	150	0.1	112	6	140	0.1
74	Bassi-Sikar	1	110	5	150	0.1	110	5	150	0.1
75	Bassi-Sikar	2	112	6	150	0.1	112	6	150	0.1
76	Basti (UP)- Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
77	Basti (UP)- Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
78	Bawana(CCGTB)(D TL)- Bahadurgarh(PG)	1	110	5	150	0.1	110	5	150	0.1
79	Bawana(CCGTB)(D TL)-Bhiwani(PG)	1	112	6	150	0.1	112	6	150	0.1
80	Bhadla(PG)- Bhadla(RS)	1	110	5	150	0.1	110	5	150	0.1
81	Bhadla(PG)- Bhadla(RS)	2	112	6	150	0.1	112	6	150	0.1
82	Bhensra (Jaisalmer2)(RS)- Fatehgarh_III(PG)	1	110	5	150	0.1	110	5	150	0.1
83	Bhensra (Jaisalmer2)(RS)- Fatehgarh_III(PG)	2	112	6	150	0.1	112	6	150	0.1
86	Bhiwadi-Gurgaon	1	110	6	150	0.1	110	5	150	0.1
87	Bhiwadi-Hissar	1	110	5	150	0.1	110	5	150	0.1
88	Bhiwadi-Hissar	2	111	6	150	0.1	111	6	150	0.1
89	Bhiwadi-Hissar	3	112	7	150	0.1	112	7	150	0.1
90	Bhiwadi- Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1
91	Bhiwadi- Neemrana(PG)	2	112	6	150	0.1	112	6	150	0.1
92	Bhiwani(PG)- Bhiwani(BB)	1	110	5	150	0.1	110	5	150	0.1
93	Bhiwani(BB)- Hissar(PG)	1	110	5	150	0.1	110	5	150	0.1
94	Bhiwani(PG)-Jind	1	110	5	150	0.1	110	5	150	0.1
95	Bhiwani(PG)-Jind	2	112	6	150	0.1	112	6	150	0.1
96	Bhiwani(PG)- Kabulpur(HV)	1	110	6	150	0.1	110	7	150	0.1
97	Bhiwani(PG)- Hissar-Moga(PG)	1	110	5	150	0.1	110	5	150	0.1
98	Bikaner_2- Bikaner(PG)	1	110	5	150	0.1	110	5	150	0.1
99	Bikaner_2- Bikaner(PG)	2	112	6	150	0.1	112	6	150	0.1

100	Bikaner_2(PG)- Khetri(PG)	1	110	5	150	0.1	110	5	150	0.1
101	Bikaner_2(PG)- Khetri(PG)	2	111	6	150	0.1	111	6	150	0.1
102	Bikaner_2(PG)- Khetri(PG)	3	112	6	150	0.1	112	6	150	0.1
103	Bikaner_2(PG)- Khetri(PG)	4	112	7	150	0.1	112	7	150	0.1
104	Chamera-II - Chamba(GIS)	1	110	5	150	0.1	110	5	150	0.1
105	Chamera-II- Chamera-I	1	111	6	150	0.1	111	6	150	0.1
106	Chamera-II- Kishenpur	1	112	7	150	0.1	112	7	150	0.1
107	Chamera-I- Jalandhar	1	110	5	150	0.1	110	5	150	0.1
108	Chamera-I- Jalandhar	2	112	6	150	0.1	112	6	150	0.1
109	Chittorgarh(RS)- Kankroli	2	110	6	150	0.1	110	6	150	0.1
110	Chittorgarh(PG)- Chittorgarh(RS)	1	110	5	150	0.1	110	5	150	0.1
111	Chittorgarh(PG)- Chittorgarh(RS)	2	112	6	150	0.1	112	6	150	0.1
112	Dadri NCTPP-G. Noida	1	110	5	140	0.1	110	5	150	0.1
113	Dadri(NT)- Maharanibagh(PG) -Ballabhgahr(PG)	1	110	5	140	0.1	110	5	150	0.1
114	Dadri(NT)- Mandola	1	110	5	140	0.1	110	5	150	0.1
115	Dadri(NT)- Mandola	2	112	6	140	0.1	112	6	150	0.1
116	Dadri(NT)- Muradnagar_2(UP)	1	110	5	140	0.1	110	5	140	0.1
117	Dadri(NT)- Panipat(BB)	1	110	5	140	0.1	110	5	150	0.1
118	Dadri(NT)- Panipat(BB)	2	112	6	140	0.1	112	6	150	0.1
119	Dadri(NT)-Kaithal	1	110	6	140	0.1	110	5	150	0.1
120	Deepalpur(JHKT)- Bawana(DV)	1	112	6	150	0.1	112	6	150	0.1
121	Dehradun(PG)- Abdullapur	1	110	5	150	0.1	110	5	150	0.1
122	Dehradun(PG)- Abdullapur	2	112	6	150	0.1	112	6	150	0.1
123	Dehradun-Baghpatt	1	110	5	150	0.1	110	5	150	0.1

124	Dehradun(PG)- Roorkee(PG)	1	110	6	150	0.1	110	5	150	0.1
125	Dulhasti-Kishenpur	1	110	5	150	0.1	110	5	150	0.1
126	Dulhasti-Kishenpur	2	111	6	150	0.1	111	6	150	0.1
127	Dwarka-Jhatikra	1	110	5	150	0.1	110	5	150	0.1
128	Fatehabad-Hissar- Bhiwani	1	110	5	150	0.1	110	5	150	0.1
129	Fatehgarh_II(PG)- Fatehgarh_III(PG)	1	110	5	150	0.1	110	5	150	0.1
130	Fatehgarh_II(PG)- Fatehgarh_III(PG)	2	112	6	150	0.1	112	6	150	0.1
131	Fatehpur-Kanpur- Panki	1	112	6	150	0.1	112	6	150	0.1
132	Fatehpur-Kanpur- Panki	2	110	5	150	0.1	110	5	150	0.1
133	Fatehpur-Mainpuri (PG)	1	110	5	150	0.1	110	5	150	0.1
134	Fatehpur-Mainpuri (PG)	2	112	6	150	0.1	112	6	150	0.1
135	Fatehpur - Unchahar	1	110	5	150	0.1	110	5	140	0.1
136	Fatehpur - Unchahar	2	112	6	150	0.1	112	6	140	0.1
137	G.Noida-Nawada	1	110	5	140	0.1	110	5	140	0.1
138	Gorakhpur(PG)- Gorakhpur(UP)	1	110	5	150	0.1	110	5	150	0.1
139	Gorakhpur(PG)- Gorakhpur(UP)	2	112	6	150	0.1	112	6	150	0.1
140	Gorakhpur PG- Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
141	Gorakhpur PG- Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
142	Gorakhpur PG- LUCKNOW7 PG	1	110	5	150	0.1	110	5	150	0.1
143	Gorakhpur PG- LUCKNOW7 PG	2	112	6	150	0.1	112	6	150	0.1
144	Gorakhpur- Motihari IR	1	110	5	150	0.1	ER			
145	Gorakhpur- Motihari IR	2	112	6	150	0.1	ER			
146	Gorakhpur- Muzaffarpur IR	1	110	5	150	0.1	ER			
147	Gorakhpur- Muzaffarpur IR	2	112	6	150	0.1	ER			
148	Gorakhpur(PG)- Basti(UP)	1	110	5	150	0.1	110	5	150	0.1
149	Gorakhpur(PG)- Basti(UP)	2	112	6	150	0.1	112	6	150	0.1

150	Gumma(HP)- Panchkula(PG)	1	110	5	150	0.1	110	5	150	0.1
151	Gumma(HP)- Panchkula(PG)	2	112	6	150	0.1	112	6	150	0.1
152	Gurgaon-Sohna Road	1	110	5	150	0.1	110	5	140	0.1
153	Gurgaon-Sohna Road	2	112	6	150	0.1	112	6	140	0.1
154	Hamirpur-Parbati Pool Banala	1	112	6	150	0.1	112	6	150	0.1
155	Hamirpur- Jalandhar	1	112	6	150	0.1	112	6	150	0.1
156	Jaipur South-Bassi	1	110	5	150	0.1	110	5	150	0.1
157	Jaipur South-Bassi	2	112	6	150	0.1	112	6	150	0.1
158	Jaipur South(PG)- RAPP D(NP)	1	110	5	150	0.1	110	5	150	0.1
159	Jalandhar- Chamba(GIS)	1	110	5	150	0.1	110	5	150	0.1
160	Jalandhar- Chamba(GIS)	2	112	6	150	0.1	112	6	150	0.1
161	Jalandhar- Dhanansu(PS)	1	110	5	150	0.1	110	5	150	0.1
162	Jalandhar-Nakodar	1	112	6	150	0.1	112	6	150	0.1
163	Kaithal-Hissar	1	110	5	150	0.1	110	5	150	0.1
164	Kaithal-Hissar	2	112	6	150	0.1	112	6	150	0.1
165	Kankroli-Jodhpur	1	110	5	150	0.1	110	5	140	0.1
166	Kankroli-Zerda IR	1	110	5	150	0.1	WR			
166	Kankroli-Zerda IR	2	112	6	150	0.1	WR			
167	Kanpur - Kanpur GIS(765/400)	1	110	5	150	0.1	110	5	150	0.1
168	Kanpur - Kanpur GIS(765/400)	2	112	7	150	0.1	112	6	150	0.1
169	Kanpur-Agra	1	111	6	150	0.1	110	5	150	0.1
170	Kanpur- Auraiya(NT)	1	110	5	150	0.1	110	5	140	0.1
171	Kanpur- Auraiya(NT)	2	112	6	150	0.1	112	6	140	0.1
172	Kanpur-Ballabgarh	1	110	5	150	0.1	110	5	150	0.1
173	Kanpur-Ballabgarh	2	111	6	150	0.1	111	6	150	0.1
174	Kanpur-Ballabgarh	3	112	7	150	0.1	112	7	150	0.1
175	Karcham Wangtoo-Nathpa Jhaki	1	110	5	140	0.1	110	5	150	0.1
176	Karcham Wangtoo-Nathpa Jhaki	2	112	6	140	0.1	112	6	150	0.1

177	Karcham Wangtoo-Wangtoo(HP)	1	110	5	140	0.1	110	5	140	0.1
178	Karcham Wangtoo-Wangtoo(HP)	2	112	6	150	0.1	112	6	140	0.1
179	Khetri- Bhiwadi	1	110	5	150	0.1	110	5	150	0.1
180	Khetri- Bhiwadi	2	112	6	150	0.1	112	6	150	0.1
181	Kishenpur-New Wanpoh	1	110	5	150	0.1	110	5	150	0.1
182	Kishenpur-New Wanpoh	3	110	5	150	0.1	110	5	150	0.1
183	Kishenpur-New Wanpoh	4	111	6	150	0.1	111	6	150	0.1
184	Kishenpur-Samba	1	110	5	150	0.1	110	5	150	0.1
185	Kishenpur-Samba	2	111	6	150	0.1	111	6	150	0.1
186	Koldam-Nallagarh	1	112	6	150	0.1	112	6	150	0.1
187	Kota-Jaipur South	1	111	6	150	0.1	111	6	150	0.1
188	Kota-Merta(RS)	1	110	5	150	0.1	110	5	150	0.1
189	Koteswar(PG)-Koteswar(TH)	1	110	5	150	0.1	110	5	140	0.1
190	Koteswar(PG)-Koteswar(TH)	2	112	6	150	0.1	112	6	140	0.1
191	Kotputli-Bhiwadi	1	110	5	150	0.1	110	5	150	0.1
192	Kurukshetra-Dhanansu(PS)	1	110	5	150	0.1	110	5	140	0.1
193	Kurukshetra-Jind	1	110	5	150	0.1	110	5	150	0.1
194	Kurukshetra-Jind	2	112	6	150	0.1	112	6	150	0.1
195	Kurukshetra-Nakodar(PS)	1	110	6	150	0.1	110	6	140	0.1
196	Kurukshetra-Sonipat	1	110	5	150	0.1	110	5	150	0.1
197	Kurukshetra-Sonipat	2	112	6	150	0.1	112	6	150	0.1
198	Lucknow(PG)-Lucknow UP	1	111	6	150	0.1	111	6	150	0.1
199	Lucknow(PG)-Jehta	1	110	5	150	0.1	110	5	140	0.1
200	Lucknow(PG)-Jehta	2	112	6	150	0.1	112	6	140	0.1
201	Jehta-Unnao	1	110	5	140	0.1	110	5	150	0.1
202	Jehta-Unnao	2	112	6	140	0.1	112	6	150	0.1
203	Lucknow_2(765/400)(PG) - Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
204	Lucknow_2(765/400)(PG) - Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1

205	Lucknow_2(765/400) - Kanpur GIS(765/400)	1	110	5	150	0.1	110	5	150	0.1
206	Lucknow_2(765/400) - Kanpur GIS(765/400)	2	112	6	150	0.1	112	6	150	0.1
207	Ludhiana-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
208	Ludhiana-Malerkotla	1	112	6	150	0.1	112	6	150	0.1
209	Ludhiana-Patiala	1	110	5	150	0.1	110	5	150	0.1
210	Ludhiana-Patiala	2	112	6	150	0.1	112	6	150	0.1
211	Mahendergarh-Bhiwani(PG)-Hissar	3	111	5	150	0.1	111	5	150	0.1
212	Mahendergarh-Bhiwani(PG)-Hissar	4	112	6	150	0.1	112	6	150	0.1
213	Mainpuri-Ballabgarh	1	110	5	150	0.1	110	5	150	0.1
214	Mainpuri-Ballabgarh	2	112	6	150	0.1	112	6	150	0.1
215	Malerkotla-Kaithal	1	110	5	150	0.1	110	5	150	0.1
216	Malerkotla-Patiala	1	112	6	150	0.1	112	6	150	0.1
217	Manesar-Sohna Road	1	110	5	150	0.1	110	5	140	0.1
218	Manesar-Sohna Road	2	112	6	150	0.1	112	7	140	0.1
219	Meerut-Baghat	1	110	5	150	0.1	110	5	150	0.1
220	Meerut-Baghat	2	112	6	150	0.1	112	6	150	0.1
221	Meerut-Mandola	1	112	5	150	0.1	112	5	150	0.1
222	Meerut-Mandola	2	112	6	150	0.1	112	6	150	0.1
223	Meerut-Mandola	3	110	5	150	0.1	110	5	150	0.1
224	Meerut-Mandola	4	111	6	150	0.1	111	6	150	0.1
225	Meerut(PG)-Muzaffarnagar(UP)	1	110	5	150	0.1	110	5	150	0.1
226	Moga-Fatehabad	1	110	5	150	0.1	110	5	150	0.1
227	Moga-Hissar	2	110	5	150	0.1	110	5	150	0.1
228	Moga-Hissar	3	112	6	150	0.1	112	6	150	0.1
229	Moga-Jalandhar	1	110	5	150	0.1	110	5	150	0.1
230	Moga-Jalandhar	2	112	6	150	0.1	112	6	150	0.1
231	Moradabad(UP)-Hapur(UP)	1	110	5	150	0.1	110	5	140	0.1
232	Muradnagar(UP)-Hapur(UP)	1	110	5	150	0.1	112	6	150	0.1
233	Nallagarh-Patiala	1	110	5	150	0.1	110	5	150	0.1
234	Nallagarh-Patiala	2	112	6	150	0.1	112	6	150	0.1

235	Nathpa Jhakri(SJ)- Rampur(SJ)	1	110	5	150	0.1	110	5	140	0.1
236	Nathpa Jhakri(SJ)- Rampur(SJ)	2	112	6	150	0.1	112	6	140	0.1
237	Nathpa Jhakri(SJ)- Gumma(HP)	1	110	5	140	0.1	110	5	140	0.1
238	Nathpa Jhakri(SJ)- Gumma(HP)	2	112	6	140	0.1	112	6	140	0.1
239	Neemrana(PG)- Manesar	1	110	5	150	0.1	110	5	150	0.1
240	Neemrana(PG)- Manesar	2	112	6	150	0.1	112	6	150	0.1
241	Neemrana(PG)- Dhanonda(HV)- Mohindergarh(APL )	1	110	5	150	0.1	110	5	150	0.1
242	Neemrana(PG)- Dhanonda(HV)- Mohindergarh(APL )	2	112	6	150	0.1	112	6	150	0.1
243	Neemrana(PG)- Sikar	2	111	6	150	0.1	111	6	150	0.1
244	New Wanpoh- Wagoora	1	110	5	150	0.1	110	5	150	0.1
245	New Wanpoh- Wagoora	2	111	6	150	0.1	111	6	150	0.1
246	Orai(PG)-Orai (UP)	1	110	5	150	0.1	110	5	150	0.1
247	Orai(PG)-Orai (UP)	2	112	7	150	0.1	112	7	150	0.1
248	Panchkula - Abdullapur	1	110	5	150	0.1	110	5	150	0.1
249	Panchkula - Abdullapur	2	112	6	150	0.1	112	6	150	0.1
250	Patiala-Panchkula	1	110	5	150	0.1	110	5	150	0.1
251	Patiala-Panchkula	2	112	6	150	0.1	112	6	150	0.1
252	Patiala-Patran	1	110	5	150	0.1	110	5	150	0.1
253	Patiala-Patran	2	112	6	150	0.1	112	6	150	0.1
254	Patran-Kaithal	1	110	5	150	0.1	110	5	150	0.1
255	Patran-Kaithal	2	112	6	150	0.1	112	6	150	0.1
256	Rampur(SJ)- Nallagarh(PG)	1	110	5	150	0.1	110	5	150	0.1
257	Rampur(SJ)- Nallagarh(PG)	2	112	6	150	0.1	112	6	150	0.1
258	Rampur_PRSTL- Moradabad(UP)	1	111	6	150	0.1	111	6	150	0.1
259	RAPP-D(NP)- Kota(PG)	1	110	5	150	0.1	110	5	150	0.1
260	RAPS-C(NP)- Chittorgarh(RS)	2	110	5	150	0.1	110	5	150	0.1

261	RAPS-C(NP)- Kankroli(PG)	1	111	6	150	0.1	111	6	150	0.1
262	RAPS-C(NP)- Kota(PG)	1	110	6	150	0.1	110	6	150	0.1
263	Rihand(NT)- Allahabad(PG)	1	110	5	140	0.1	110	5	150	0.1
264	Rihand(NT)- Allahabad(PG)	2	112	6	140	0.1	112	6	150	0.1
265	Rihand3- Vindhyachal IR	1	110	5	150	0.1	WR			
266	Rihand3- Vindhyachal IR	2	112	6	150	0.1	WR			
267	Roorkee(PG)- Kashipur(UK)	1	110	5	150	0.1	110	5	150	0.1
268	Roorkee(PG)- Kashipur(UK)	2	112	6	150	0.1	112	6	150	0.1
269	Roorkee- Saharanpur	1	111	6	150	0.1	111	6	150	0.1
270	Sambhal(UP)- Rampur(PRSTL)	1	110	5	150	0.1	110	5	140	0.1
271	Sambhal(UP)- Rampur(PRSTL)	2	112	6	150	0.1	112	7	140	0.1
272	Sarnath(UP)- Varanasi(PG)	1	110	5	150	0.1	110	5	150	0.1
273	Sarnath(UP)- Varanasi(PG)	2	112	6	150	0.1	112	6	150	0.1
274	Shahjahanpur(PG)- Bareilly(PG)	1	110	5	150	0.1	110	5	150	0.1
275	Shahjahanpur(PG)- Bareilly(PG)	2	112	6	150	0.1	112	6	150	0.1
276	Shahjahanpur(PG)- Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
277	Shahjahanpur(PG)- Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
278	Shahjahanpur PG- Rosa	1	110	5	150	0.1	110	5	140	0.1
279	Shahjahanpur PG- Rosa	2	112	6	150	0.1	112	6	140	0.1
280	Shree Cement(SCL)- Kota(PG)	1	110	5	150	0.1	110	5	150	0.1
281	Shree Cement- Merta	2	111	6	150	0.1	111	6	150	0.1
282	Sikar-Khetri	1	110	5	150	0.1	110	5	150	0.1
283	Sikar-Khetri	2	112	6	150	0.1	112	6	150	0.1
284	Sikar(PG)- Ratangarh(RS)	1	110	5	150	0.1	110	5	150	0.1

285	Sikar(PG)- Ratangarh(RS)	2	112	6	150	0.1	112	6	150	0.1
286	Sikar_2(PSTL)- Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1
287	Sikar_2(PSTL)- Neemrana(PG)	2	112	6	150	0.1	112	6	150	0.1
288	Singrauli(NT)- Allahabad(PG)	1	110	5	140	0.1	110	5	150	0.1
289	Singrauli(NT)- Allahabad(PG)	2	111	6	140	0.1	111	6	150	0.1
290	Singrauli(NT)- Allahabad(PG)	3	112	7	150	0.1	112	7	150	0.1
291	Singrauli(NT)- Anpara(UP)	1	110	6	140	0.1	110	6	140	0.1
292	Singrauli(NT)- Fatehpur(PG)	1	110	5	140	0.1	110	5	150	0.1
293	Singrauli(NT)- Lucknow(UP)	1	111	6	140	0.1	111	6	150	0.1
294	Singrauli(NT)- Rihand(NT)	1	110	5	140	0.1	110	5	140	0.1
295	Singrauli(NT)- Rihand(NT)	2	112	6	140	0.1	112	6	140	0.1
296	Singrauli(NT)- Vindhyachal(PG)	1	110	5	140	0.1	110	5	150	0.1
297	Singrauli(NT)- Vindhyachal(PG)	2	112	6	140	0.1	112	6	150	0.1
298	Sohawal- Lucknow(PG)	1	110	5	150	0.1	110	5	150	0.1
299	Sohawal- Lucknow(PG)	2	112	6	150	0.1	112	6	150	0.1
300	Sorang(Greenko)- Kala Amb	1	112	6	150	0.1	112	6	150	0.1
301	Tehri(THDC)- Koteshwar(PG)	3	112	7	150	0.1	112	7	150	0.1
302	Uri-II(NH) - Uri- I(NH)	1	111	6	140	0.1	111	6	140	0.1
303	Uri-II(NH) - Wagoora(PG)	1	110	5	150	0.1	110	5	150	0.1
304	Uri-I(NH) - Amargarh(INDIGRI D)	1	110	5	150	0.1	110	5	150	0.1
305	Uri-I(NH) - Amargarh(INDIGRI D)	2	111	6	150	0.1	111	6	150	0.1
306	Varanasi(PG)- Sahupuri(UP)	1	110	5	150	0.1	110	5	140	0.1
307	Varanasi(PG)- Sahupuri(UP)	2	112	6	150	0.1	112	6	150	0.1

308	varanasi-Sasaram IR	1	111	6	150	0.1	ER			
309	varanasi-Biharshariff IR	1	110	5	150	0.1	ER			
310	varanasi-Biharshariff IR	2	112	6	150	0.1	ER			
311	Wagoora-Amargarh	1	110	5	150	0.1	110	5	150	0.1
312	Wagoora-Amargarh	2	111	6	150	0.1	111	6	150	0.1
313	Wangtoo(HP)-Kala Amb	1	110	5	150	0.1	110	5	150	0.1
314	Wangtoo(HP)-Sorang(Greenko)	1	112	6	150	0.1	112	6	150	0.1
<b>B. Adani Transmission India Ltd. (ATIL) (FBTL)</b>										
1	Alwar(ATIL)-Hindaun(RS)	1	110	5	150	0.1	110	5	150	0.1
2	Bhiwani(PG) - Mohindergarh(APL )	1	110	5	150	0.1	110	5	150	0.1
3	Bhiwani(PG) - Mohindergarh(APL )	2	112	6	150	0.1	112	6	150	0.1
4	Bhadla(PG)-Bhadla_II	1	110	5	150	0.1	110	5	150	0.1
5	Bhadla(PG)-Bhadla_II	2	112	6	150	0.1	112	6	150	0.1
<b>C. UPPTCL (Uttar Pradesh)</b>										
1	Agra UP-Fatehabad (765kV Agra UP)	1	110	5	140	0.1	110	5	140	0.1
2	Agra UP-Fatehabad (765kV Agra UP)	2	112	6	150	0.1	112	6	150	0.1
3	Agra Fatehabad(UP)-Firozabad	1	110	6	150	0.1	110	6	140	0.1
4	Agra UP-Unnao	1	110	5	140	0.1	110	5	140	0.1
5	Alakhnanda-Vishnuprayag	1	110	5	140	0.1	110	5	140	0.1
6	Aligarh-Mainpuri765 (UP)	1	110	5	150	0.1	110	5	140	0.1
7	Aligarh-Mainpuri765 (UP)	2	112	6	150	0.1	112	6	140	0.1
8	Aligarh-Muradnagar	1	110	6	150	0.1	110	6	150	0.1
9	Aligarh-Panki	1	110	6	140	0.1	110	6	140	0.1

10	Aligarh(UP)- Shamli(UP)	1	110	5	150	0.1	110	5	140	0.1
11	Aligarh(UP)- Shamli(UP)	2	112	6	150	0.1	112	6	140	0.1
12	Aligarh- Sikandrabad	1	111	6	140	0.1	111	6	140	0.1
13	Aligarh- Harduaganj	1	111	6	150	0.1	111	6	150	0.1
14	AnparaB-AnparaC	1	Only a Extension of Bus therefore overvoltage protection is not enable							
15	AnparaB-AnparaC	2								
16	AnparaB-AnparaD	1	110	5	140	0.1	110	5	140	0.1
17	AnparaB-AnparaD	2	112	6	140	0.1	112	6	140	0.1
18	AnparaB-Mau	1	110	6	140	0.1	110	6	140	0.1
19	AnparaB-Obra	1	111	6	140	0.1	111	6	140	0.1
20	AnparaB-Sarnath	1	110	5	140	0.1	110	5	140	0.1
21	AnparaB-Sarnath	2	112	6	140	0.1	112	6	140	0.1
22	Ataur-Indirapuram	1	112	6	140	0.1	112	6	140	0.1
23	Ataur-Noida sec123	1	110	5	140	0.1	110	5	140	0.1
24	Azamgarh-Mau	1	110	5	150	0.1	110	5	140	0.1
25	Azamgarh-Tanda Stage-II	1	112	6	140	0.1	112	6	140	0.1
26	Badaun-Sambhal	1	110	6	140	0.1	110	5	150	0.1
27	Badaun-Sambhal	2	112	6	140	0.1	112	6	150	0.1
28	Banda-Orai	1	110	5	150	0.1	110	5	150	0.1
29	Banda-Orai	2	112	6	150	0.1	112	6	150	0.1
30	Banda-Rewa Road	1	110	5	140	0.1	110	5	140	0.1
31	Banda-Rewa Road	2	112	6	140	0.1	112	6	140	0.1
32	Bareilly(UP)-Unnao	1	112	6	145	0.1	112	6	140	0.1
33	Bareilly(UP)-Unnao	2	110	5	145	0.1	110	5	140	0.1
34	Fatehabad(UP)- Agra(South)-I	1	110	5	140	0.1	110	5	140	0.1
35	Fatehabad(UP)- Mathura	1	110	5	150	0.1	110	5	150	0.1
36	Fatehabad(UP)- Mathura	2	112	6	150	0.1	112	6	150	0.1
37	Firozabad- Agra(South)	1	111	6	140	0.1	112	6	150	0.1
38	Firozabad- Jawaharpur	1	110	5	150	0.1	110	5	150	0.1
39	Firozabad- Jawaharpur	2	112	6	150	0.1	112	6	150	0.1
40	Gorakhpur UP- Azamgarh	1	111	6	140	0.1	111	6	140	0.1
41	Gr.Noida4- Gr.Noida7	1	110	5	150	0.1	110	5	140	0.1

42	Gr.Noida4- Gr.Noida7	2	112	6	150	0.1	112	6	140	0.1
43	Gr.Noida7- Sikandrabad	1	110	5	140	0.1	110	5	140	0.1
44	Gr.Noida7- Sikandrabad	2	112	6	140	0.1	112	6	140	0.1
45	Gr.Noida(765kV)- Noida Sec 148	1	110	5	140	0.1	110	5	140	0.1
46	Gr.Noida(765kV)- Noida Sec 148	2	112	6	140	0.1	112	6	140	0.1
47	Hapur-Ataur	1	110	5	140	0.1	110	5	140	0.1
48	Hapur-Ataur	2	112	6	140	0.1	112	6	140	0.1
49	Hapur-Dasna	1	110	5	140	0.1	110	5	140	0.1
50	Hapur-Dasna	2	112	6	140	0.1	112	6	140	0.1
51	Harduaganj- Sikandrabad	1	110	5	150	0.1	110	5	150	0.1
52	Jaunpur- Obra C	1	110	5	140	0.1	110	5	140	0.1
53	Kanpur765- Ghatampur	1	110	5	150	0.1	110	5	150	0.1
54	Kanpur765- Ghatampur	2	112	6	150	0.1	112	6	150	0.1
55	Lucknow(PG)- Mohanlalganj(PGY TL)	1	110	5	150	0.1	110	5	150	0.1
56	Lucknow(UP)- Mohanlalganj(PGY TL)	1	110	5	150	0.1	112	6	150	0.1
57	Mainpuri(UP)- Mainpuri(PG)	1	110	5	140	0.1	110	5	150	0.1
58	Mainpuri(UP)- Mainpuri(PG)	2	112	6	140	0.1	112	6	150	0.1
59	Mainpuri(UP)-Orai- 1	1	110	5	140	0.1	110	5	140	0.1
60	Mainpuri(UP)-Orai- 2	2	112	6	140	0.1	112	6	140	0.1
61	Meja(NTPC)-Bara	1	110	5	140	0.1	110	5	140	0.1
62	Meja(NTPC)-Bara	2	112	6	140	0.1	112	6	140	0.1
63	Meja-Masauli	1	110	5	140	0.1	110	5	140	0.1
64	Meja(NTPC)-Rewa Road	1	111	6	140	0.1	111	6	140	0.1
65	Muradnagar-Ataur	1	110	5	150	0.1	110	5	140	0.1
66	Muradnagar New- Mathura	1	110	5	150	0.1	110	5	140	0.1
67	Muzaffarnagar- Ataur	1	111	6	150	0.1	111	6	140	0.1
68	Muzaffarnagar- Vishnuprayag	1	110	5	150	0.1	110	5	140	0.1

69	Muzaffarnagar-Alakhnanda	1	112	6	150	0.1	112	6	140	0.1
70	Noida sec123-Indirapuram	1	110	5	140	0.1	110	5	140	0.1
71	Noida Sec 148-Noida Sec 123	1	110	5	140	0.1	110	5	140	0.1
72	Noida Sec 148-Noida Sec 123	2	112	6	140	0.1	112	6	140	0.1
73	Obra-B-Sultanpur	1	110	5	140	0.1	110	5	140	0.1
74	Obra-B - Jaunpur	1	112	6	140	0.1	112	6	140	0.1
75	Orai-Paricha	1	110	5	140	0.1	110	5	140	0.1
76	Orai-Paricha	2	112	6	140	0.1	112	6	140	0.1
77	Panki- Panki TPS	1	110	5	140	0.1	110	5	140	0.1
78	Panki- Panki TPS	2	112	6	140	0.1	112	6	140	0.1
79	Rasra-Mau	1	112	6	150	0.1	112	6	150	0.1
80	Rewa Road-Masauli	1	110	5	140	0.1	110	5	140	0.1
81	Rewa road-Obra	1	110	6	140	0.1	110	6	140	0.1
82	Rewa road-Panki	1	111	6	140	0.1	111	6	140	0.1
83	Roorkee-Muzaffarnagar	1	111	6	150	0.1	111	6	150	0.1
84	Rosa-Badaun	1	110	5	140	0.1	110	5	140	0.1
85	Rosa-Badaun	2	112	6	140	0.1	112	6	140	0.1
86	Sarnath-Azamgarh	1	110	5	140	0.1	110	5	140	0.1
87	Simbholi-Muradnagar II	1	110	5	150	0.1	110	5	150	0.1
88	Simbholi-Muradnagar II	2	112	6	150	0.1	112	6	150	0.1
89	Simbholi-Meerut	1	110	5	150	0.1	110	5	150	0.1
90	Simbholi-Meerut	2	112	6	150	0.1	112	6	150	0.1
91	Sultanpur(UP)-Mohanlalganj(PGY TL)	1	110	5	140	0.1	110	5	150	0.1
92	Sultanpur-Tanda Stage II	1	111	6	150	0.1	111	6	150	0.1
93	Tanda-Basti	1	110	5	140	0.1	110	5	150	0.1
94	Tanda-Basti	2	112	6	140	0.1	112	6	150	0.1
95	Unnao(UP)-Mohanlalganj(PGY TL)	1	110	5	140	0.1	110	5	150	0.1
96	Unnao-Panki	1	111	6	140	0.1	111	6	140	0.1
97	Varanasi(PG)-Jaunpur	1	110	5	140	0.1	110	5	140	0.1
98	Varanasi(PG)-Jaunpur	2	112	6	140	0.1	112	6	141.8	0.1
<b>D. THDCIL</b>										

1	Aligarh(PG)-Khurja STPP(TH)	1	110	5	150	0.1	110	5	140	0.1
2	Aligarh(PG)-Khurja STPP(TH)	2	112	6	150	0.1	112	6	140	0.1
<b>E. Rajasthan</b>										
1	Ajmer-Bhilwara-I	1	110	5	140	0.1	110	5	140	0.1
2	Ajmer-Bhilwara-II	2	112	6	140	0.1	112	6	140	0.1
3	Ajmer-Deedwana	1	110	5	140	0.1	110	5	150	0.1
4	Akal-Barmer	1	110	5	150	0.1	110	5	150	0.1
5	Akal-Bhensra (Jaisalmer2)	1	111	6	150	0.1	111	6	150	0.1
6	Akal-Jodhpur	1	111	6	150	0.1	110	6	150	0.1
7	Akal-Kankani (Jodhpur New)	1	112	6	150	0.1	112	6	150	0.1
8	Akal-Ramgarh	1	110	5	148	0.1	110	5	148	0.1
9	Akal-Ramgarh	2	112	6	150	0.1	112	6	150	0.1
10	Anta-Chhabra SCTPS	1	110	5	140	0.1	110	5	140	0.1
11	Anta-Chhabra SCTPS	2	112	6	140	0.1	112	6	140	0.1
12	Anta-Kalisindh	1	110	5	140	0.1	110	5	140	0.1
13	Anta-Kalisindh	2	112	6	140	0.1	112	6	140	0.1
14	Anta-Kawai SCTPS	1	110	5	140	0.1	110	5	140	0.1
15	Anta-Kawai SCTPS	2	112	6	140	0.1	112	6	140	0.1
16	Babai - Suratgarh SCTPS	1	106	3	150	0.1	Both lines i.e. 400 KV Babai-SCTPS CKT-I &II CHARGED UP-TO 77 KM ON ANTI-THEFT BASIS FROM 400 KV GSS BABAI END ,SINCE DT. 06.01.2024.			
17	Babai - Suratgarh SCTPS	2	106	4	150	0.1				
18	Barmer-Bhinmal (PG)	1	110	5	150	0.1	110	5	150	0.1
19	Barmer-Bhinmal (PG)	2	112	6	150	0.1	112	6	150	0.1
20	Barmer-Rajwest	1	111	6	150	0.1	111	6	150	0.1
21	Barmer-Bhensra (Jaisalmer2)	1	110	5	150	0.1	110	5	150	0.1
22	Barmer-Bhensra (Jaisalmer2)	2	112	6	150	0.1	112	6	150	0.1
23	Bhadla(RS)-Jodhpur	1	110	5	140	0.1	110	5	140	0.1
25	Bikaner(RS)-Bhadla(RS)	1	110	5	150	0.1	110	5	140	0.1
26	Bikaner(RS)-Bhadla(RS)	2	112	6	150	0.1	112	6	140	0.1

27	Bikaner(RS)- Sikar(PG)	1	110	5	150	0.1	110	5	150	0.1
24	Bikaner(RS)- Deedwana	1	111	6	150	0.1	111	6	140	0.1
28	Bikaner(RS)- Sikar(PG)	2	112	6	150	0.1	112	6	150	0.1
29	Bikaner(RS)- Suratgarh SCTPP	1	110	5	150	0.1	110	5	150	0.1
30	Bikaner(RS)- Suratgarh SCTPP	2	112	6	150	0.1	112	6	150	0.1
31	Bhilwara-Chhabra	1	111	6	150	0.1	111	6	150	0.1
32	Bhilwara- Chittorgarh(RS)	1	110	5	150	0.1	110	5	150	0.1
33	Bhilwara- Chittorgarh(RS)	2	112	6	150	0.1	112	6	150	0.1
34	Chhabra-Chhabra SCTPS	1	Only an Extension of Bus therefore overvoltage protection is not enabled							
35	Chhabra-Chhabra SCTPS	2								
36	Chhabra-Kawai	1	110	5	140	0.1	110	5	140	0.1
37	Chhabra-Anta (RS) -Kota (PG)	1	112	6	140	0.1	112	6	150	0.1
38	Heerapura- Hindaun	1	110	5	150	0.1	110	5	150	0.1
39	Hindaun-Chabra TPS	1	112	7	150	0.1	112	7	150	0.1
40	Jaisalmer(RS)- Renew hans Urja Pvt Ltd	1	110	5	150	0.1	110	5	150	0.1
41	Jaisalmer(RS)- Corneight Parks Pvt. Ltd	1	111	6	150	0.1	111	6	150	0.1
42	Kankani (Jodhpur New)- Bhensra (Jaisalmer2)	1	111	5	148	0.1	111	5	148	0.1
43	Kankani (Jodhpur New)-Merta	1	110	5	150	0.1	110	5	150	0.1
44	Kankani (Jodhpur New)-Jodhpur	1	110	5	140	0.1	110	5	140	0.1
45	Kankani (Jodhpur New)-Jodhpur	2	112	6	140	0.1	110	5	140	0.1
46	Kankani (Jodhpur New)-Pachpadra	1	111	6	150	0.1	111	6	150	0.1
47	Rajwest-Pachpadra	1	111	5	150	0.1	110	5	150	0.1
48	Merta-Bikaner(RS)	1	110	5	150	0.1	110	5	150	0.1
49	Merta-Heerapura	1	111	6	150	0.1	111	6	150	0.1
50	Merta-Bhadla(RS)	1	112	5	150	0.1	112	6	150	0.1
51	Merta-Ratangarh	1	112	6	150	0.1	112	6	150	0.1

52	Phagi-Ajmer(RS)	1	110	5	140	0.1	110	5	140	0.1
53	Phagi-Ajmer(RS)	2	112	6	140	0.1	112	6	140	0.1
54	Phagi-Heerapura	1	110	5	140	0.1	110	5	150	0.1
55	Phagi-Heerapura	2	112	6	140	0.1	112	6	150	0.1
56	Rajwest-Jodhpur	1	110	5	150	0.1	110	5	140	0.1
57	Ramgarh-Bhadla(RS)	1	110	5	150	0.1	110	5	150	0.1
58	Ramgarh-Bhadla(RS)	2	112	6	150	0.1	112	6	150	0.1
59	Suratgarh-Bikaner(RS)	1	111	6	150	0.1	111	6	150	0.1
60	Suratgarh-Ratangarh	1	110	5	150	0.1	110	5	150	0.1
61	Suratgarh-Ratangarh	2	112	6	150	0.1	112	6	150	0.1
62	Suratgarh-Suratgarh SSCTPP	1	Only an Extension of Bus therefore overvoltage protection is not enabled							
63	Suratgarh-Suratgarh SSCTPP	2								
F. HVPNL (Haryana)										
1	CLP Jhajjar (MGSTPS) - Dhanonda	1	110	5	150	0.1	110	5	140	0.1
2	CLP Jhajjar (MGSTPS) - Dhanonda	2	112	6	150	0.1	112	6	140	0.1
3	CLP Jhajjar(MGSTPS)-Kabulpur	1	110	5	150	0.1	110	5	150	0.1
4	CLP Jhajjar(MGSTPS)-Kabulpur	2	112	6	150	0.1	112	6	150	0.1
5	Deepalpur-Kabulpur	1	110	5	150	0.1	110	5	150	0.1
6	Deepalpur-Kabulpur	2	112	6	150	0.1	112	6	150	0.1
7	Dhanonda-Daulatabad	1	110	5	140	0.1	110	5	150	0.1
8	Dhanonda-Daulatabad	2	112	6	140	0.1	112	6	150	0.1
9	Gurgaon-Daulatabad	1	110	5	150	0.1	110	5	150	0.1
10	Gurgaon-Daulatabad	2	112	6	150	0.1	112	6	150	0.1
11	Jhajjar(IGSTPS)-Daulatabad	1	110	5	150	0.1	110	5	150	0.1
12	Jhajjar(IGSTPS)-Daulatabad	2	112	6	150	0.1	112	6	150	0.1

13	Jind-Kirori	1	110	5	150	0.1	110	5	150	0.1
14	Jind-Kirori	2	112	6	150	0.1	112	6	150	0.1
15	Khedar-Fathehabad	1	111	6	150	0.1	111	6	150	0.1
16	Khedar-Kirori	1	110	5	150	0.1	110	5	150	0.1
17	Khedar-Kirori	2	112	6	150	0.1	112	6	150	0.1
18	Khedar-Nuhiyawali	1	111	6	150	0.1	111	6	150	0.1
19	Nuhiawali-Fathehabad	1	110	5	150	0.1	110	5	150	0.1
<b>G.APCPL</b>										
1	Jhajjar (IGSTPS)-Mundka	1	110	5	140	0.1	110	5	150	0.1
2	Jhajjar (IGSTPS)-Mundka	2	112	6	140	0.1	112	6	150	0.1
<b>H. DTL (Delhi)</b>										
1	Ballabgarh(PG)-Tughlakabad(PG)	1	110	5	150	0.1	110	5	150	0.1
2	Ballabgarh(PG)-Tughlakabad(PG)	2	112	6	150	0.1	112	6	150	0.1
3	Bamnoli-Jhatikra	2	111	6	150	0.1	111	6	150	0.1
4	Bamnauli(PG)-Tughlakabad(PG)	1	110	5	150	0.1	110	5	150	0.1
5	Bamnauli(PG)-Tughlakabad(PG)	2	112	6	150	0.1	112	6	150	0.1
6	Bawana(DV)-Maharanibagh(PG)	1	110	5	150	0.1	110	5	150	0.1
7	Bawana(DV)-Maharanibagh(PG)	2	112	6	150	0.1	112	6	150	0.1
8	Jhatikra(PG)-Mundka(DV)	1	110	5	150	0.1	110	5	150	0.1
9	Jhatikra(PG)-Mundka(DV)	2	112	6	150	0.1	112	6	150	0.1
10	Mandola(PG)-Maharanibagh(PG)	1	110	5	150	0.1	110	5	150	0.1
11	Mandola(PG)-Maharanibagh(PG)	2	112	6	150	0.1	112	6	150	0.1
12	Bawana-Mundka	1	110	5	150	0.1	110	5	150	0.1
13	Bawana-Mundka	2	112	6	150	0.1	112	6	150	0.1
<b>I. PDD (J&amp;K)</b>										
1	Baglihar-Kishenpur	1	110	5	150	0.1	110	5	150	0.1
2	Baglihar-Kishenpur	2	111	6	150	0.1	111	6	150	0.1
3	Baglihar-Kishenpur	3	112	7	150	0.1	112	7	150	0.1
4	New Wanpoh-Baglihar(JK)	1	111	6	150	0.1	111	6	150	0.1
<b>J. PSTCL (Punjab)</b>										
1	Behman Jassa Singh-HMEL	1	110	5	150	0.1	110	5	150	0.1

2	Behman Jassa Singh-HMEL	2	112	6	150	0.1	112	6	150	0.1
3	Behman Jassa Singh-Moga	1	112	6	150	0.1	112	6	150	0.1
4	Makhu-Amritsar	1	110	5	150	0.1	110	5	150	0.1
5	Makhu-Amritsar	2	112	6	150	0.1	112	6	150	0.1
6	Makhu-Mukatsar	1	110	5	150	0.1	110	5	150	0.1
7	Makhu-Mukatsar	2	112	6	150	0.1	112	6	150	0.1
8	Nakodar-Makhu	1	110	5	150	0.1	110	5	150	0.1
9	Nakodar-Makhu	2	112	6	150	0.1	112	6	150	0.1
10	Nakodar-Moga	1	110	5	150	0.1	110	5	150	0.1
11	Rajpura-Rajpura TPS	1	110	5	150	0.1	110	5	150	0.1
12	Rajpura-Dhuri	1	110	5	150	0.1	110	5	150	0.1
13	Rajpura-Rajpura TPS	2	112	6	150	0.1	112	6	150	0.1
14	Rajpura-Dhuri	2	112	6	150	0.1	112	6	150	0.1
15	Rajpura TPS-Nakodar	1	110	5	140	0.1	110	5	150	0.1
16	Rajpura TPS-Nakodar	2	112	6	140	0.1	112	6	150	0.1
17	Talwandi Sabo-Dhuri	1	110	5	140	0.1	110	5	150	0.1
18	Talwandi Sabo-Dhuri	2	112	6	140	0.1	112	6	150	0.1
19	Talwandi Sabo-Behman-Jassa	1	111	6	140	0.1	111	6	150	0.1
21	Talwandi Sabo-Nakodar	1	112	6	140	0.1	112	6	150	0.1
22	Talwandi Sabo-Mukatsar	1	110	5	140	0.1	110	5	150	0.1
23	Talwandi Sabo-Mukatsar	2	112	6	140	0.1	112	6	150	0.1
<b>K. PTCUL (Uttarakhand)</b>										
1	Muradabad-Kashipur	1	110	5	150	0.1	110	5	150	0.1
2	Rishikesh-Nehtaur	1	110	5	140	0.1	110	5	140	0.1
3	Kashipur-Nehtaur	1	110	5	140	0.1	112	6	140	0.1
4	Roorkee-Muzaffarnagar	1	110	5	150	0.1	110	5	150	0.1
5	Roorkee-Rishikesh	1	112	6	150	0.1	112	6	140	0.1
6	Srinagar-Alakhnanda (GVK)	1	110	5	150	0.1	110	5	150	0.1
7	Srinagar-Alakhnanda (GVK)	2	112	6	150	0.1	112	6	150	0.1
<b>L. HPPTCL</b>										

1	Chamba(PG)- Lahal(HP)	1	110	5	150	0.1	110	5	150	0.1
2	Chamba(PG)- Lahal(HP)	2	112	6	150	0.1	112	6	150	0.1
<b>M. BBMB</b>										
1	Bhiwani-Rajpura	1	110	5	150	0.1	110	5	150	0.1
2	Dehar-Rajpura	1	112	6	150	0.1	112	6	140	0.1
3	Dehar-Panchkula	1	110	5	150	0.1	110	5	150	0.1
4	Panchkula-Panipat	1	110	5	150	0.1	110	5	150	0.1
<b>N. INDIGRID</b>										
1	Amargarh-Samba	1	110	5	150	0.1	110	5	150	0.1
2	Amargarh-Samba	2	111	6	150	0.1	111	6	150	0.1
3	Jalandhar-Samba	1	110	5	150	0.1	110	5	150	0.1
4	Jalandhar-Samba	2	112	6	150	0.1	112	6	150	0.1
5	Koldam-Parbati Pooling Banala	2	112	6	150	0.1	112	6	150	0.1
6	Ludhiana-Koldam	1	110	5	150	0.1	110	5	150	0.1
7	Koldam-Ropar	1	112	6	140	0.1	112	6	140	0.1
8	Parbati Pool Banala-Nallagarh	1	110	5	150	0.1	110	5	150	0.1
9	Parbati-II- Parbati Pooling Banala	2	112	5	150	0.1	112	6	150	0.1
10	Parbati-III- Parbati Pooling Banala	2	112	6	150	0.1	112	6	150	0.1
11	Prithala(GPTL)- Kadarpur	1	110	5	150	0.1	110	5	140	0.1
12	Prithala(GPTL)- Kadarpur	2	112	6	150	0.1	112	6	140	0.1
13	Prithala(GPTL)- Aligarh(PG)	1	110	5	150	0.1	110	5	150	0.1
14	Prithala(GPTL)- Aligarh(PG)	2	112	6	150	0.1	112	6	150	0.1
15	RAPPC-Shujalpur IR	1	110	5	150	0.1	110	5	140	0.1
16	RAPPC-Shujalpur IR	2	112	6	150	0.1	112	6	140	0.1
17	Ropar(PS)- Ludhiana(PG)	1	112	6	150	0.1	112	6	150	0.1
18	Sainj(HP)-Parbati II	1	110	5	140	0.1	110	5	140	0.1
19	Sainj(HP)-Parbati III	1	110	5	140	0.1	110	5	140	0.1
20	Sohna Road(GPTL)- Kadarpur	1	110	5	150	0.1	110	5	140	0.1
21	Sohna Road(GPTL)- Kadarpur	2	112	6	150	0.1	112	6	140	0.1
<b>O. NTPC</b>										

1	Dadri(NT)-Loni Road/ Harsh Vihar	1	110	5	140	0.1	110	5	140	0.1
2	Dadri(NT)-Loni Road/ Harsh Vihar	2	112	6	140	0.1	112	6	140	0.1
<b>P. NRSS36</b>										
1	Babai(RS)-Bhiwani(PG)	1	110	5	150	0.1	110	5	150	0.1
2	Babai(RS)-Bhiwani(PG)	2	112	6	150	0.1	112	6	150	0.1
3	Babai(RS)-Neemrana(PG)	1	110	5	150	0.1	110	5	150	0.1
4	Babai(RS)-Sikar(PG)	1	112	6	150	0.1	112	6	150	0.1
<b>Q. NRSSXXI(B) (Sekura Energy)</b>										
1	Amritsar-Malerkotla	1	110	5	150	0.1	110	5	150	0.1
2	Amritsar-Malerkotla	2	112	6	150	0.1	112	6	150	0.1
3	Kurukshetra-Malerkotla	1	110	5	150	0.1	110	5	150	0.1
4	Kurukshetra-Malerkotla	2	112	6	150	0.1	112	6	150	0.1
<b>R. RENEW Power Limited</b>										
1	Bikaner(PG) - Bikaner (ReNew)	1	110	5	150	0.1	110	5	150	0.1
1	Renew SuryaRavi SL_BKN_PG-Bikaner RENEW Solar	1	110	5	150	0.1	110	5	150	0.1
<b>S. Azure</b>										
1	Bikaner(PG)-Azure43 PSS	1	110	5	150	0.1	110	5	150	0.1
2	Azure43 PSS-Azure43 RSS	1	110	5	150	0.1	110	5	150	0.1
<b>T. AEPL</b>										
1	Bikaner(PG)-Avada	1	110	5	150	0.1	110	5	150	0.1
<b>U. AYANA</b>										
1	Ayana-ARP3PL	1	110	5	150	0.1	110	5	150	0.1
2	Bikaner(PG)-Ayana	1	110	5	150	0.1	110	5	150	0.1
<b>V. ADANI GREEN</b>										
1	AGE25L-Bhadla2(PG)	1	110	5	150	0.1	110	5	150	0.1
2	AREPRL-Fatehgarh Pooling	1	110	5	150	0.1	110	5	150	0.1
3	AREPRL-Fatehgarh Pooling	2	112	6	150	0.1	112	6	150	0.1
<b>W. NTPC GREEN</b>										

1	Bhadla_2 (PG)- Kolayat Solar NTPC_1	1	110	5	150	0.1	110	5	150	0.1
2	Kolayat Solar NTPC_1 Kolayat Solar NTPC_2	1	110	5	150	0.1	110	5	150	0.1
<b>X. ACME</b>										
1	Fatehgarh Pooling(FBTL)- ACME Deoghar	1	110	5	150	0.1	110	5	150	0.1