सत्यमेव जयते

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

विषय: प्रचालन समन्वय उप-समिति की 228 वीं बैठक की कार्यसूची।

Subject: Agenda of the 228th OCC meeting.

प्रचालन समन्वय उप-समिति की **228 वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **14.02.2025** को **10:30** बजे से किया जायेगा । उक्त बैठक की कार्यसूची उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है ।

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

कृपया बैठक में उपस्थित होने की सुविधा प्रदान करें।

The **228th** meeting of the Operation Co-ordination sub-Committee will be conducted through Video Conferencing on **14.02.2025** from **10:30 Hrs**. The agenda of this meeting has been uploaded on the NRPC web-site http://164.100.60.165.

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

Kindly make it convenient to attend the meeting.

Signed by Dharmendra Kumar Meena
Date: 11-02-2025 12:44:06

(डी. के. मीना)
निदेशक (प्रचालन)

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

List of addressee (via mail)

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

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

Contents

खण्ड-क: उ.क्षे.वि.स. Part-A: NRPC

A.1. Confirmation of Minutes

227th OCC meeting was held on 17.01.2025. Minutes of the meeting were issued vide letter dt. 07.02.2025. No comments received till now.

Decision required from Forum:

Forum may approve the minutes of 227th OCC meeting.

A.2. Status of action taken on decisions of 227th OCC meeting of NRPC

A.2.1. Status of action taken on decisions of 227th NRPC meeting is attached as **Annexure- A.0**.

A.3. Review of Grid operations

A.3.1. **Power Supply Position (Provisional) for January 2025**

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

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	120	138	14.7%	300	312	4.0%
	(Req)	164	138	-16.0%	314	312	-0.8%
DELHI	(Avl)	3628	2586	-28.7%	5900	5655	-4.2%
	(Req)	2800	2586	-7.6%	5900	5655	-4.2%
HARYANA	(Avl)	6839	4725	-30.9%	9192	9157	-0.4%
	(Req)	5119	4725	-7.7%	9170	9157	-0.1%
HIMACHAL PRADESH	(Avl)	1221	1174	-3.8%	2150	2273	5.7%
	(Req)	1251	1175	-6.1%	2268	2273	0.2%
J&K and LADAKH	(Avl)	1230	2076	68.8%	3130	3200	2.2%
	(Req)	2240	2080	-7.2%	3455	3200	-7.4%
PUNJAB	(Avl)	6200	4696	-24.3%	10840	10142	-6.4%
	(Req)	5142	4696	-8.7%	10401	10142	-2.5%
RAJASTHAN	(Avl)	8480	10124	19.4%	17790	18752	5.4%
	(Req)	10385	10124	-2.5%	18400	18752	1.9%
UTTAR PRADESH	(Avl)	12400	11251	-9.3%	23800	22034	-7.4%
	(Req)	12059	11253	-6.7%	23800	22034	-7.4%
UTTARAKHAN	(Avl)	1426	1364	-4.4%	2550	2568	0.7%

D	(Req)	1442	1364	-5.4%	2600	2568	-1.2%
NORTHERN REGION	(Avl)	41544	38133	-8.2%	77600	69100	-11.0%
	(Req)	40601	38140	-6.1%	70800	69200	-2.3%

As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of January-2025 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, UP and Uttarakhand and in terms of Peak Demand similar variation is noted for Chandigarh, Delhi, Haryana, UTs of J&K and Ladakh, Punjab, UP, and Uttarakhand. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

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

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

A.4.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of March-2025 is scheduled on 13-February-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 March-2025 is scheduled on 13-February-2025 via Video conferencing.

A.5. Planning of Grid Operation

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	130	330	No Revision submitted
	Requirement	128	289	
	Surplus / Shortfall	2	41	
	% Surplus / Shortfall	1.3%	14.4%	
DELHI	Availability	3380	5960	No Revision submitted

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Requirement	2296	4794	
	Surplus / Shortfall	1084	1166	
	% Surplus / Shortfall	47.2%	24.3%	
HARYANA	Availability	5880	10500	No Revision submitted
	Requirement	5136	8504	
	Surplus / Shortfall	744	1996	
	% Surplus / Shortfall	14.5%	23.5%	
HIMACHAL PRADESH	Availability	780	2560	No Revision submitted
	Requirement	1071	2058	
	Surplus / Shortfall	-291	502	
	% Surplus / Shortfall	-27.2%	24.4%	
J&K and LADAKH	Availability	1370	3240	No Revision submitted
	Requirement	1977	3634	
	Surplus / Shortfall	-607	-394	
	% Surplus / Shortfall	-30.7%	-10.8%	
PUNJAB	Availability	6610	10860	No Revision submitted
	Requirement	5203	9629	
	Surplus / Shortfall	1407	1231	
	% Surplus / Shortfall	27.0%	12.8%	
RAJASTHAN	Availability	8790	18020	No Revision submitted
	Requirement	10008	18666	
	Surplus / Shortfall	-1218	-646	
	% Surplus / Shortfall	-12.2%	-3.5%	
UTTAR PRADESH	Availability	11100	23300	07-Feb-25
	Requirement	10950	23300	
	Surplus / Shortfall	150	0	
	% Surplus / Shortfall	1.4%	0.0%	
UTTARAKHAND	Availability	1280	2300	07-Feb-25
	Requirement	1287	2350	
	Surplus / Shortfall	-6	-50	
	% Surplus / Shortfall	-0.5%	-2.1%	
NORTHERN REGION	Availability	39320	72600	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Requirement	38056	69000	
	Surplus / Shortfall	1264	3600	
	% Surplus / Shortfall	3.3%	5.2%	

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

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

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

All utilities are requested to update the status.

A.7. NR Islanding scheme

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

Members may kindly deliberate.

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

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

A.8.2 Accordingly, coal stock position of generating stations in northern region during current month (till 08th February 2025) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
ANPARA C TPS	1200	0.62	16	16.5
ANPARA TPS	2630	0.47	16	22.0
BARKHERA TPS	90	0.25	24	24.2
DADRI (NCTPP)	1820	0.55	24	13.3
GH TPS (LEH.MOH.)	920	0.55	24	32.8
GOINDWAL SAHIB TPP	540	0.54	24	29.9
HARDUAGANJ TPS	1265	0.15	24	22.0
INDIRA GANDHI STPP	1500	0.51	24	33.3
KAWAI TPS	1320	0.79	24	17.5
KHAMBARKHERA TPS	90	0.27	24	20.0

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
KOTA TPS	1240	0.76	24	20.6
KUNDARKI TPS	90	0.27	24	22.1
LALITPUR TPS	1980	0.69	24	16.2
MAHATMA GANDHI TPS	1320	0.37	24	22.7
MAQSOODPUR TPS	90	0.20	24	19.9
MEJA STPP	1320	0.70	24	21.5
OBRA TPS	1094	0.56	24	9.2
PANIPAT TPS	710	0.69	24	31.8
PARICHHA TPS	1140	0.65	24	19.3
PRAYAGRAJ TPP	1980	0.65	24	23.9
RAJIV GANDHI TPS	1200	0.38	24	31.9
RAJPURA TPP	1400	0.78	24	24.7
RIHAND STPS	3000	0.86	16	16.1
ROPAR TPS	840	0.54	24	43.6
ROSA TPP Ph-I	1200	0.57	24	24.2
SINGRAULI STPS	2000	0.81	16	18.2
SURATGARH TPS	1500	0.52	24	15.6
TALWANDI SABO TPP	1980	0.55	24	6.6
TANDA TPS	1760	0.44	24	21.7
UNCHAHAR TPS	1550	0.60	24	19.0
UTRAULA TPS	90	0.27	24	24.6
YAMUNA NAGAR TPS	600	0.43	24	35.2
CHHABRA-I PH-1 TPP	500	0.84	24	12.4
KALISINDH TPS	1200	0.76	24	13.2
SURATGARH STPS	1320	0.69	24	12.1
CHHABRA-I PH-2 TPP	500	0.54	24	14.2
CHHABRA-II TPP	1320	0.78	24	11.0
JAWAHARPUR STPP	660	0.04	24	14.3

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

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

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

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

A.9.3. In this regard, list of Planned Maintenance schedules versus actual maintenance availed for the year 2024-25 for the month of January 2025 is attached as **Annexure-A.III.**

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

Generating utilities of NR to update status.

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

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

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

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

A.10.3. In 226th OCC and 227th OCC meeting, aforementioned relief was communicated to respective SLDC's of NR and forum asked States/UTs of NR to communicate feeder-wise, Stage-wise AUFLS quantum to NRPC/NRLDC before next OCC meeting.

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

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

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

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

Respective SLDC's of NR to update the status.

A.11. Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh (Agenda by NRPC Sectt.)

A.11.1. A meeting was held in CEA on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh (copy of MoM of the meeting is attached as **Annexure-A.IV**)

Background:

The transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)" is currently under bidding. The broad scope of the transmission scheme is given below:

- Establishment of 2x315 MVA 400/220 kV GIS Pooling Station at Jhangi
- 400 kV Jhangi PS – Wangtoo (Quad) D/c line
- LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP
- Wangtoo (HPPTCL) – Panchkula (PG) 400 kV D/c line

The above transmission scheme in under bidding with implementation timeframe of 30 months.

A.11.2. In the said meeting HPPTCL informed that HPPCL has intimated scheduled commissioning of Shongtong HEP in November 2026 and transmission scheme (under TBCB) for evacuation of power from Shongtong HEP has not yet been awarded for execution. As only 22 months are left for the proposed commissioning of Shongtong HEP, HPPTCL had proposed following interim arrangement for evacuation of power from Shongtong HEP:

- LILO of one circuit of Baspa-II – Karcham Wangtoo 400 kV line (Triple snowbird) at Shongtong HEP

A.11.3. Further, HPPTCL mentioned that as there is limited corridor in the narrow valley, the LILO portion may be constructed on Quad configuration under ISTS and the same would become part of the final transmission scheme.

A.11.4. In the said meeting after detailed deliberation following was agreed:

(i) HPPTCL is requested to take the matter in the coming meeting of NRPC for consultation with all the stakeholders.

(ii) Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

Members may kindly deliberate.

A.12. Periodic testing of generators and FACTS/HVDC Devices

A.12.1. 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.12.2. 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.12.3. 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.12.4. In accordance with above, Generators and HVDC/FACT owners were supposed to furnish the Testing schedule for 2025-26 by 31st October 2024.

A.12.5. In 73rd 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.12.6. In 226 OCC meeting, NRLDC representative stated that as the testing plan is yet to be received from utilities, a google sheet has been prepared and it is requested that testing plan for 2024-25 and 2025-26 may be updated in the sheet provided at the earliest as per the requirement of IEGC 2023 and decision of 73 NRPC meeting.

Google sheet link is:

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

A.12.7. In 227 OCC meeting, MS NRPC stated that the above agenda would be included in follow up agenda of NRPC for regular monitoring in OCC Meetings.

A.12.8. In view of the above Generators and HVDC/FACT owners are requested to furnish Testing schedule for 2024-25 and 2025-26 in the format attached as **Annexure-A.V**

Utilities to update status.

A.13. Implementation of SPS arrangement at Jhatikra for load shedding is required to ensure stable transmission in case of contingency of 765/400 kV ICTs in

upcoming summer loading (Agenda by Powergrid NR-1)

A.13.1. Powergrid NR-1 has informed that severe N-1 contingency at 765/400 ICTs at Jhatikra has been observed in last peak loading season of 2024. The matter has been taken up in 224th & 225th OCC meeting wherein detailed study report from CTU regarding N-1 contingency has been directed by forum.

A.13.2. During CMETS meeting dt. 5.01.2025, 400 kV bus sectionaliser for connecting 400 kV buses in case of contingency with implementation timeline of 18 months has been agreed.

A.13.3. As the proposed arrangement is not expected before Oct'26, SPS arrangement at Jhatikra for load shedding is required to ensure stable transmission in case of contingency of 765/400 kV ICTs in upcoming summer loading.

Members may kindly deliberate.

A.14. 220kV Agra (PG)-Bharatpur (RVVNL) Line Shutdown required for Line Impedance Measurement (Agenda by Powergrid NR-3)

A.14.1. Powergrid NR-3 has mentioned that 220 kV Agra-Bharatpur total line length is 84 Km & POWERGRID Agra Jurisdiction is looking after 55.812 KM (from Agra (PG) up to LILO point).

A.14.2. Powergrid NR-3 has stated that in past line trippings, it has been observed that line fault was at the boundary of Agra & Rajasthan Jurisdiction. However, during patrolling nothing abnormal is found in Agra jurisdiction & these boundary faults are found in Rajasthan jurisdiction.

A.14.3. Further, it has mentioned that for fine-tuning the settings of Distance Protection Relays at Agra, the impedance measurement of 220kV Agra (PG)-Bharatpur (Raj.) line is to be carried from Agra (PG) end in upcoming S/D.

A.14.4. Powergrid has submitted that S/D of the said line is already proposed in OCC-227 on 6th February by Agra TLM & 20th February by Bharatpur end. PG-AGRA team is following up for S/D of the line, but RVVNL is denying the same.

A.14.5. **Powergrid has requested forum to kindly allow shutdown of 220KV Agra-Bharatpur Line for minimum two to three hours to carry out the impedance measurement at PG-AGRA end and subsequent to impedance measurement, relay settings may be modified at both ends of above line by POWERGRID (at Agra) and Bharatpur (by RVPNL).**

A.14.6. The details of faults in this line in 2025 is as below:

S. No.	Date of Tripping due to Line Fault	Time of Fault	Distance Protection Relays Details from Agra End	Restoration Time	Fault Under
01.	01.01.2025	01:48	Zone-1, Y-N, FC=3.537 kA, FL= 55.74 Km	02:43	Agra Jurisdiction

			Zone-1, Y-N, FC= 3.466 kA, FL=55.7 Km		
02.	21.01.2025	05:15	MAIN 1 (P444) - Zone-1, R-N, FC=3.292 kA, FL= 52.29 Km & MAIN 2 (REL670) - Zone-1, R-N, FC=3.203 kA, FL= 59.2 Km	06:43	Agra Jurisdiction (Main-1) Rajasthan (RRVNL) (Main-2)
03.	22.01.2025	04:55	MAIN 1 (P444) : Zone-1, Y-Nph, FC=3.414 kA,FL=58.07Km MAIN2 (REL670) : Zone-1, Y-Nph, FC=3.3 kA, FL= 57.7 Km	06:34	Rajasthan (RRVNL)
04.	23.01.2025	04:43	MAIN 1 (P444) - Zone-1, B-Nph, FC=2.915 kA, FL= 61.94 Km & MAIN2 (REL670) - Zone-1, B-Nph, FC= 3.1 kA, FL=62.2 Km	05:35	Rajasthan (RRVNL)
05.	01.02.2025	05:45	MAIN 1 (P444) - Zone-1, Y-Nph, FC=3.288 kA, FL=56.75Km MAIN2 (REL670) - Zone-1, Y-Nph, FC=3.352 kA, FL= 56.6 Km	06:36	Rajasthan (RRVNL)

Members may kindly deliberate.

A.15. First Time Charging (FTC) of Future Bays at 765/400/220kV GIS, Rampur and 400/220/132kV GIS, Sambhal under PRSTL (Agenda by Powergrid NR-3)

A.15.1. Powergrid NR-3 has mentioned that POWERGRID Rampur Sambhal Transmission Limited (PRSTL) has been entrusted with the work of Transmission Services for transmission of Electricity through Tariff based Competitive bidding for Construction of 765/400/220kV GIS Substation Rampur with associated lines and 400/220/132 kV GIS Substation, Sambhal vide Transmission Service agreement (TSA) dt. 07.08.2019.

A.15.2. PRSTL has completed its scope of work as per TSA for 400/220/132 kV GIS Substation, Sambhal and system is commissioned successfully in March'22 except

future bays as 05(Five) Nos. 400 kV Bays, 04(Four) Nos. 220 kV Bays and 01(One) Nos. 132 kV Bay.

A.15.3. PRSTL has completed its scope of work as per TSA for 765/400/220kV GIS Substation Rampur with associated lines and system is commissioned successfully in March'23 except future bays as 04(Four) Nos. 765 kV Bays, 07(Seven) No. 400 kV Bays and 07(Seven) No. 220 kV Bays.

A.15.4. Powergrid has requested forum for granting permission for FTC of above cited bays was submitted to SLDC, Lucknow vide email dated 14,09.2024 which was turned down for 765kV and 400kV bays due to non-availability of CEA standing committee approval for these elements.

A.15.5. Further, Powergrid has also requested forum to review the issue and agree for allowing charging of such future bays, which is technically desirable to increase reliability and availability of the system. However, no financial implication / O&M charges etc will be payable to concerned utilities for such future/ spare bays.

Members may kindly deliberate.

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

B.1. NR Grid Highlights for January 2025

Detailed presentation on grid highlights of January'20245 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	312	01.01.25 at 10:00	5.2	01.01.25	4.4
2	Delhi	5655	01.01.25 at 11:44	91.3	17.01.25	83.4
3	Haryana	9157	30.01.25 at	167.2	29.01.25	152.5

			10:00			
4	H.P.	2273	17.01.25 at 09:00	40.4	16.01.25	38.0
5	J&K	3200	07.01.25 at 10:00	69.3	10.01.25	67.0
6	Punjab	10142	29.01.25 at 10:30	175.1	29.01.25	153.5
7	Rajasthan	18572	28.01.25 at 09:00	352.8	30.01.25	326.3
8	U.P	22034	03.01.25 at 19:11	387.6	07.01.25	364.5
9	Uttarakhand	2568	10.01.25 at 09:00	47.5	10.01.25	44.4
10	**Northern Region**	**69109**	**10.01.25 at 10:00**	**1294.4**	10.01.25	**1233.9**

***As per SCADA**

- In Jan'25, the Maximum energy consumption of Northern Region was **1294 MUs** on 10th Jan'25 and it was 1.8 % lower than Jan'24 (1318 MU 19th Jan'24)

- In Jan'25, the Average energy consumption per day of Northern Region was **1234 MUs** and it was 1.9 % Lower than Jan'24 (1257 MUs/day)

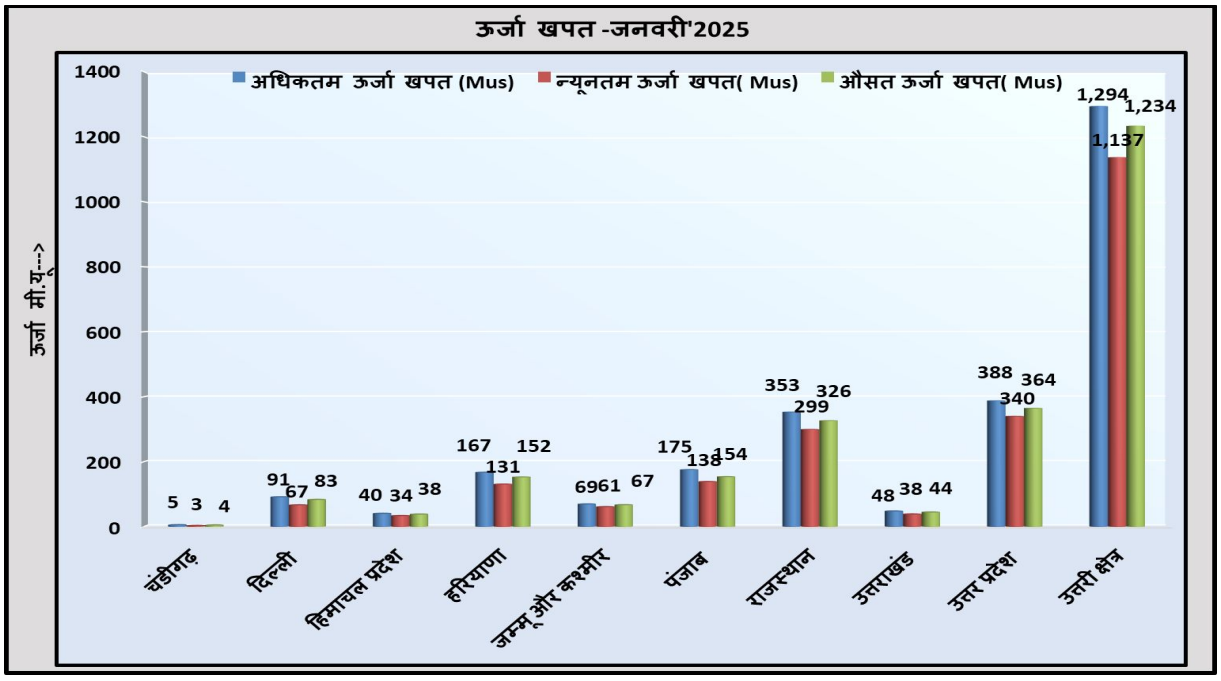
- In Jan'25, the Maximum Demand met of Northern Region was **69109 MW** on 10th Jan'25 @10:00 hours (*as per SCADA data)* as compared to **69327** MW on 22nd Jan'24 @12:00hours.

- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the Jan'24 vs Jan'25**

क्षेत्र/राज्य	जनवरी- 2024	जनवरी- 2025	% अंतर
चंडीगढ़	5.1	4.4	-12.9%
दिल्ली	88.1	83.4	-5.4%
हिमाचल प्रदेश	36.8	38.0	3.1%

हरियाणा	158.5	152.5	-3.8%
जम्मू और कश्मीर	64.4	67.0	4.0%
पंजाब	159.4	153.5	-3.7%
राजस्थान	324.7	326.3	0.5%
उत्तराखंड	45.7	44.4	-3.0%
उत्तर प्रदेश	373.9	364.5	-2.5%
उत्तरी क्षेत्र	**1256.7**	**1233.9**	**-1.8%**

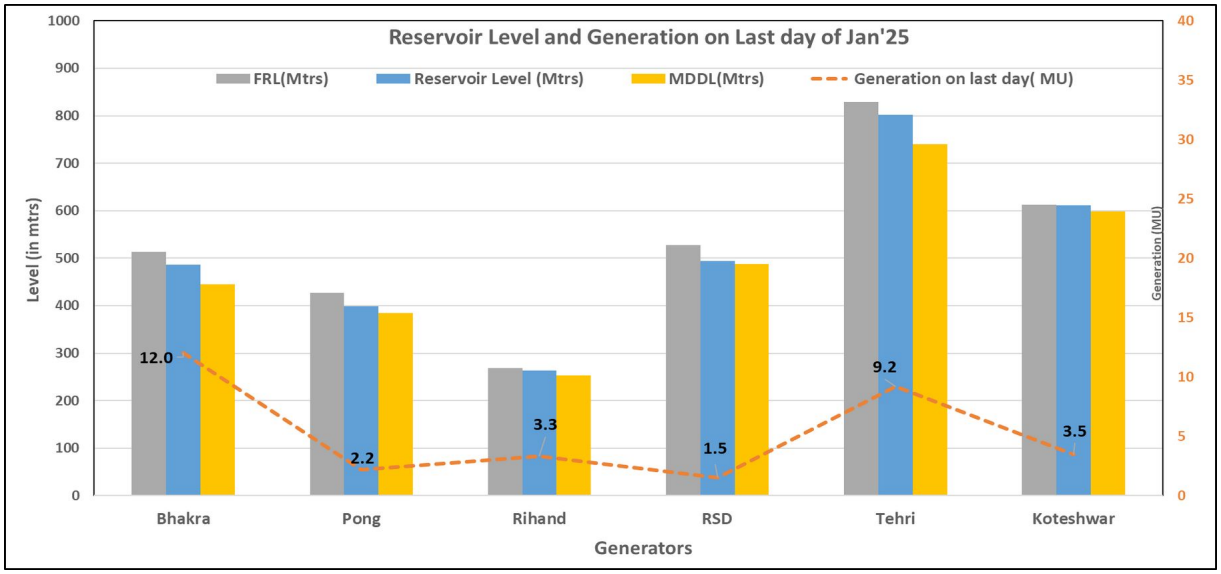
Energy Consumptions



Frequency profile

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Jan'25	50.001	50.309 (26.01.25 at 14:01:10 hrs)	49.600 (11.01.25 at 09:07:30 hrs)	5.23	76.05	18.72
Jan'24	49.99	50.33 (21.01.24 at 06:03:30 hrs)	49.52 (17.01.24 at 09:09:00 hrs)	6.80	75.83	17.37

Reservoir Level and Generation on Last Day of Month



Reservoir Level on last day of Dec month				(Low: -ve)		(High: +ve)
Year	**Bhakra**	**Pong**	**Rihand**	**RSD**	**Tehri**	**Koteshwar**
2025	487	399	263	494	802	611
2024	491	411	263	500	794	609
Diff (in m)	-4	-12	0	-6	8	2

B.2. Demand forecasting and resource adequacy related

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

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

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

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

c) The State Load Despatch Centres or Regional Load Despatch Centres, as the case may be, should assess their demand-generation scenario in the upcoming months, ensure the optimum generation, avoid undesirable planned outages, and advise the generating company to offer their availability. The State Load Despatch Centre or Regional Load Despatch Centre shall ensure the optimum scheduling during the shortage period and surplus power to get despatched during the deficit period.

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

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

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

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

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

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

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

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

In 225 OCC meeting, NRLDC representative mentioned that:

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

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

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

In 226 OCC meeting,

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

In 227 OCC meeting,

NRLDC representative requested UP, Haryana and Chandigarh may provide update.

SLDC Haryana representative informed that they have submitted their reply to CERC dated 30.12.2024.

No response could be received from UP SLDC and Chandigarh.

Subsequently, UP SLDC had informed that they have submitted their reply dated 31.01.2025.

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

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

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

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

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

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

Self-audit report has been received from NHPC.

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

In 227 OCC meeting, NRLDC representative expressed concern on the non-submission of data by NR states. It was highlighted that most SLDCs in other region are providing required data within the timelines as per IEGC and requested that NR SLDCs also submit data as per regulatory requirement. Further, it was mentioned that a workshop was organized recently by FOLD subgroup.

SLDCs were asked to share actions being taken at their end to ensure compliance of above listed clauses of IEGC 2023. Further, report of self-audit carried out as per compliance of IEGC 2023 may also be submitted to NRLDC/ NRPC.

NHPC representative stated that report submitted by NHPC may also be shared with other Hydro stations for their inputs.

THDC has also submitted self-audit report of Koteshwar to NRLDC/ NRPC on 21.01.2025.

OCC asked all states to take actions at their end to ensure compliance of all regulations and guidelines w.r.t. resource adequacy framework.

Members may please discuss.

B.3. Compliance verification and Monitoring of intrastate renewable plants

The Government of India has set an ambitious target of integrating 500 GW of non-fossil fuel capacity by the year 2030. The solar and wind generation resources are expected to constitute a majority (~400 GW) of this non-fossil installed capacity. In line with this target, the generation capacity addition of solar and wind generation in the Indian power system is being facilitated by SLDC/STU at the intra-state and RLDC/CTUIL at the inter-state level. This rapid integration may require the processing of a large number of first-time charging applications in a short time.

Central Electricity Authority (CEA) has specified the necessary technical requirements to be complied with by the RE plants in its "Technical Standards for Connectivity to the Grid" regulations. The regulations are available at:

https://cea.nic.in/regulations-category/connectivity-to-the-grid/?lang=en.

Prior to the interconnection of any new RE plant to the grid, it is crucial to verify the plant’s compliance against these technical requirements so as to ensure the desired performance during the operation phase. For the RE plants getting connected to the inter-state transmission system (ISTS), this compliance verification is being carried out by Central Transmission Utility of India Ltd. (CTUIL) and Grid-India (RLDCs/NLDC). Comprehensive procedures for this purpose have already been developed and implemented by Grid-India and CTUIL, thereby ensuring systematic integration of RE into the grid while adhering to the technical and regulatory standards.

We are sure that similar procedures would be in place for grant of connectivity and approval of first-time energization of new VRE plants at the intra-state level. The procedure developed by Grid-India in consultation with all stakeholders for inter-state RE integration can be accessed through the following link:

https://posoco.in/wp-content/uploads/2023/09/Final-draft-NLDC-FTEI-Procedure-submitted-to-CERC-for-kind- approval.pdf**.**

The broad checklist is presented below:

S. No.	Description	Remarks
1	General Details	General details such as connectivity quantum (MW), connectivity agreement, IBR make/model. registration details etc.
2	Technical Details	Technical details such as capability curve, SLD, equipment (IBR/PPC, IDT etc.) technical datasheet etc.
3	Certification Details	Details such as: a) Type certificate of IBR/SVG/other equipment etc. b) Evaluation report of IBR/SVG/other equipment etc. c) Statement of Compliance of IBR/SVG/other equipment etc. d) Other reports/certificates as per requirement
4	IBR Single Unit - Benchmarked Simulation Model and Report	a) Benchmarked RMS and EMT model of single IBR unit b) Benchmarked simulation report of single IBR unit covering all the technical requirements specified in CEA Connectivity Standards. Specific tests are specified in Grid-India's FTE&I procedure.
5	Renewable Plant Mathmatical Models along with compliance report	a) Aggregated and detailed RMS model of RE plant b) Aggregated EMT model of RE plant c) Power quality model of RE plant d) Simulation report of the RE plant covering all the technical requirements specified in CEA Connectivity Standards. Specific tests are specified in Grid-India's FTE&I procedure.
6	Others (Required at the time of First Time Charging Only)	Other details such as installation of PMU, DR/EL, protection and control settings etc.

It is suggested that the procedure may be referred to and suitably considered while revising and updating the prevailing procedure at STU/SLDC to align it with CEA Technical Standards for Connectivity to the Grid and CERC Indian Electricity Grid Code 2023. NLDC/GRID-INDIA procedure is available at https://posoco.in/wp-content/uploads/2023/09/Final-draft-NLDC-FTEI-Procedure-submitted-to-CERC-for-kind-approval.pdf

Post interconnection with the grid, the performance of the plant vis-à-vis the technical standards and grid code needs to be monitored particularly with respect to fault ride-through, reactive power support, power quality, protection coordination, and controller settings. Any grid event involving VRE plants needs to be carefully studied by STU/SLDC, and operational feedback shall be provided to the plant owners to align the plant performance as per grid requirements.

Adopting a proactive and uniform approach for compliance verification and performance monitoring of Variable Renewable Energy resources at the intrastate as well as interstate level will significantly enhance the reliability and sustainability of the Indian power system. Cooperation of all stakeholders is therefore sought in this regard.

Letter from Director (System Operation), GRID-INDIA to all SLDCs is attached as **Annexure-B.II.**

Members may please discuss.

B.4. Reactive power injection from LV side to HV side by state transmission network

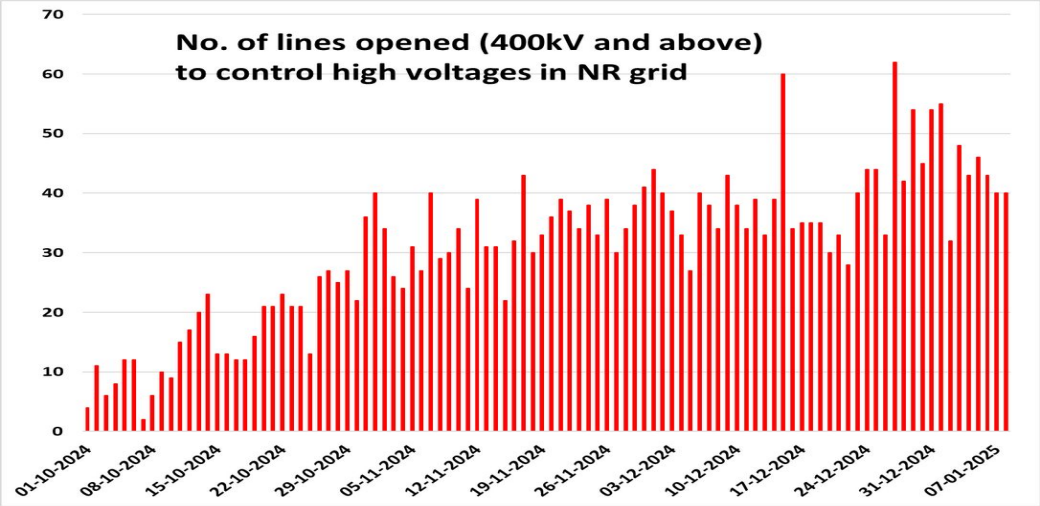
As it is well known that Northern region faces issues related to severe high voltages in the grid in winter months due to less demand as the transmission system remains lightly loaded. A number of measures are already being taken to control high voltages in the grid such as:

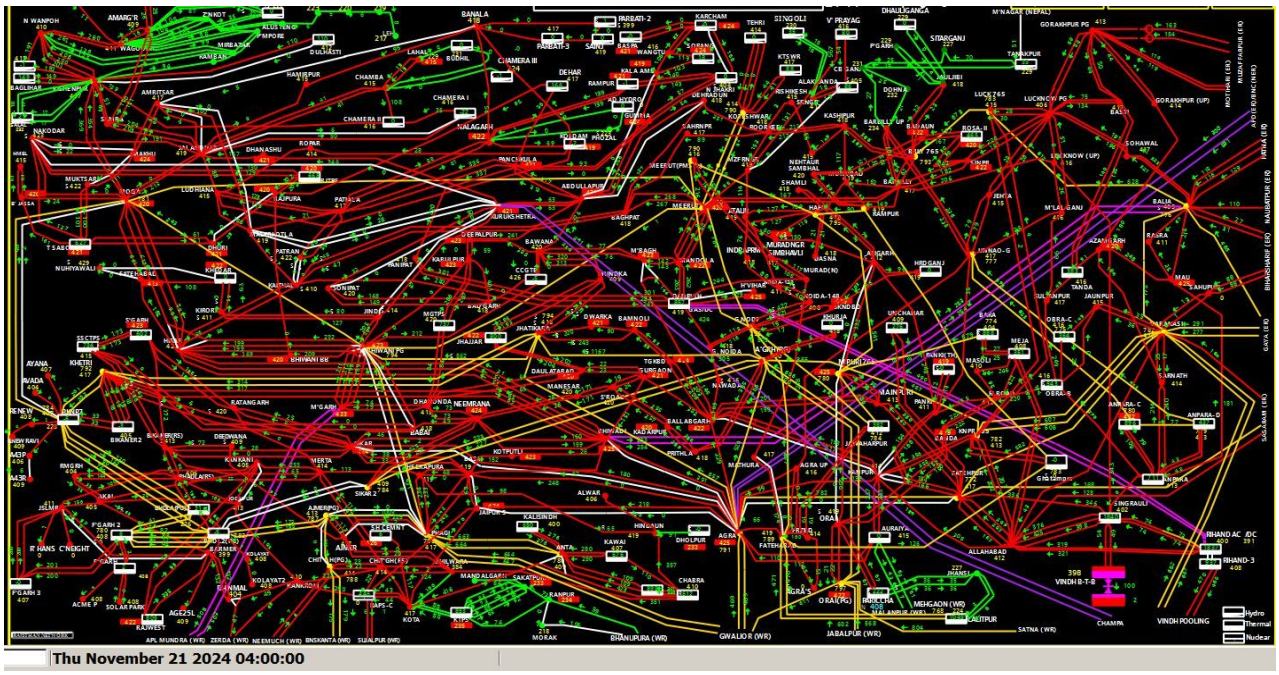
- Ensuring to switch off capacitors & switch on reactors.
- Ensuring healthiness of all commissioned reactors in the system
- Monitoring of reactive power through SCADA displays.
- Reactive power support (absorption) by generating stations as per the capability curve.

- Synchronous condenser operation especially of hydro units during night hours for dynamic voltage support.
- ICT Tap Optimization at 400kV & above is carried out by NRLDC.
- Utilisation of line reactors as bus reactor incase of opening of EHVAC transmission lines.
- Opening of EHV lines based on expected voltage reduction and also considering security & reliability of system

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

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





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

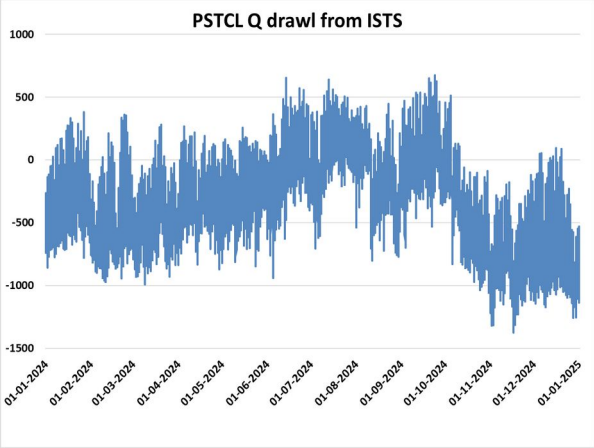
This point was also highlighted from NRLDC side in 226 OCC meeting, wherein following was discussed:

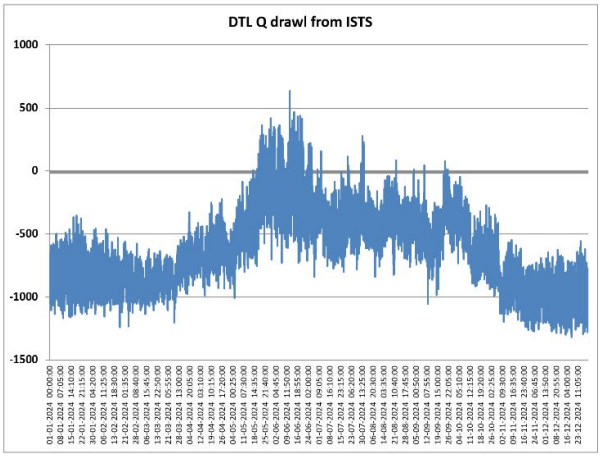
CTUIL representative stated that in NR, around 60-80% reactive compensation has been provided at ISTS level. Reactive compensation planning and implementation at intrastate level needs to be expedited to cater low/high voltage scenarios.

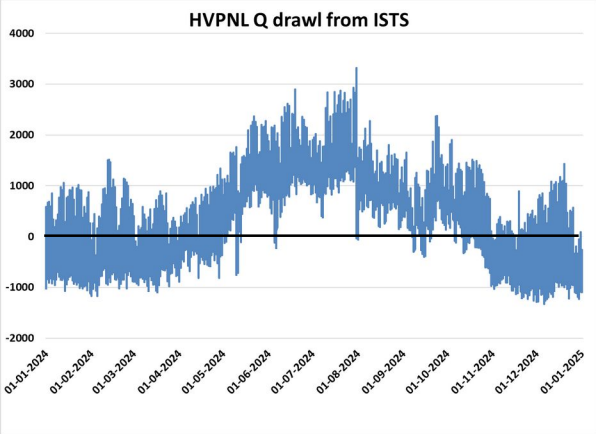
OCC asked all SLDCS to analyse reactive power change with ISTS grid and accordingly plan reactive power devices at intrastate level. This would also help to minimize opening/closing of EHVAC lines in winter months.

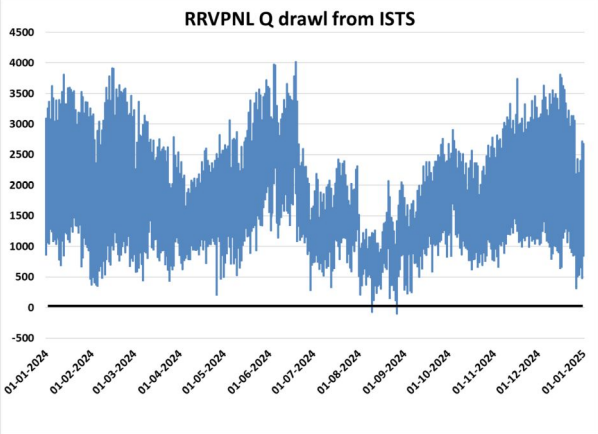
NRLDC has analysed reactive power flow of all states of NR for last year i.e. 2024. The points which are used to calculate MW drawl of state from ISTS have been used to calculate the MVAr drawl by state from ISTS.

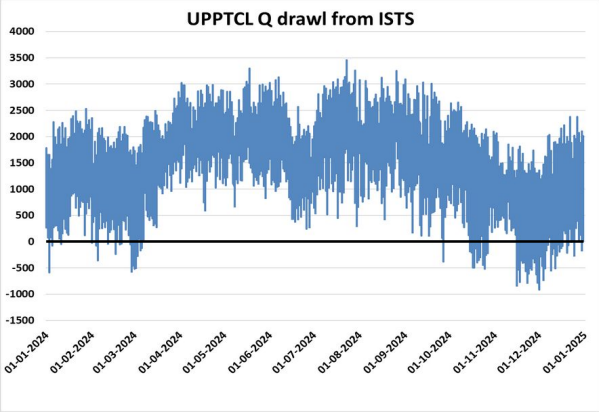
Following is the result of such analysis:

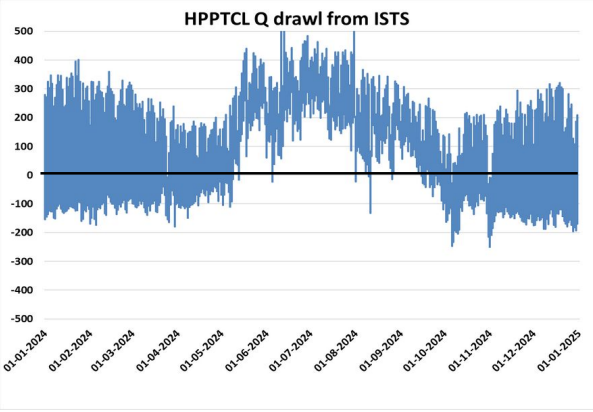


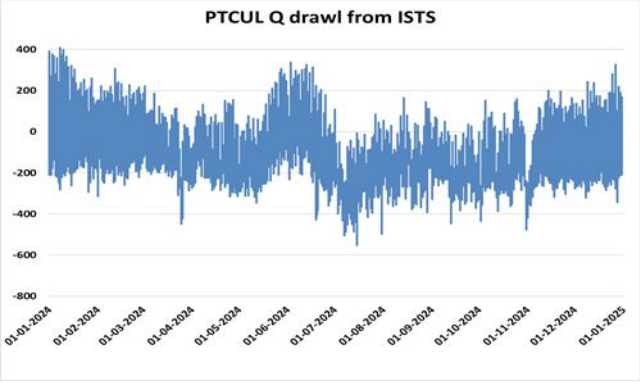








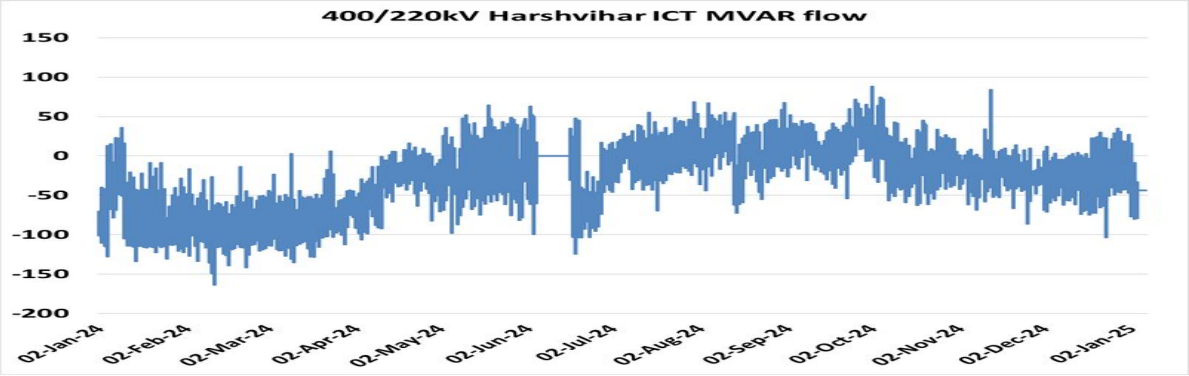


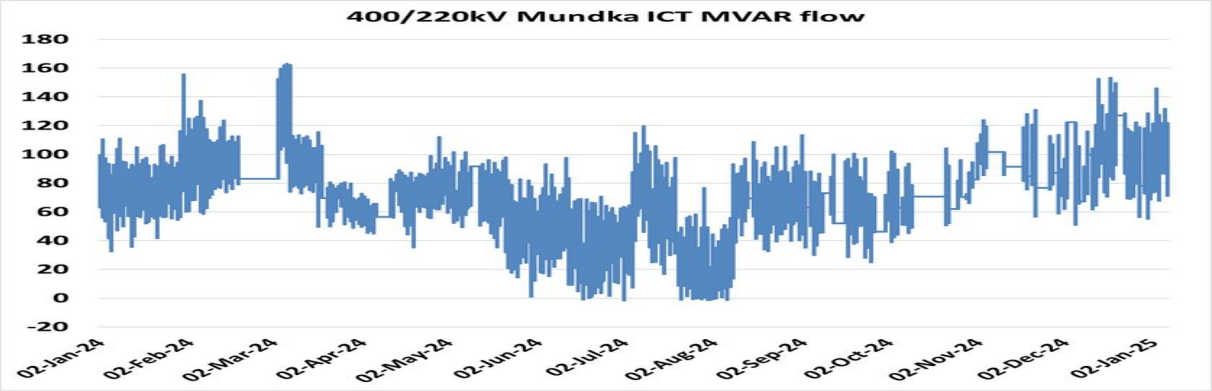


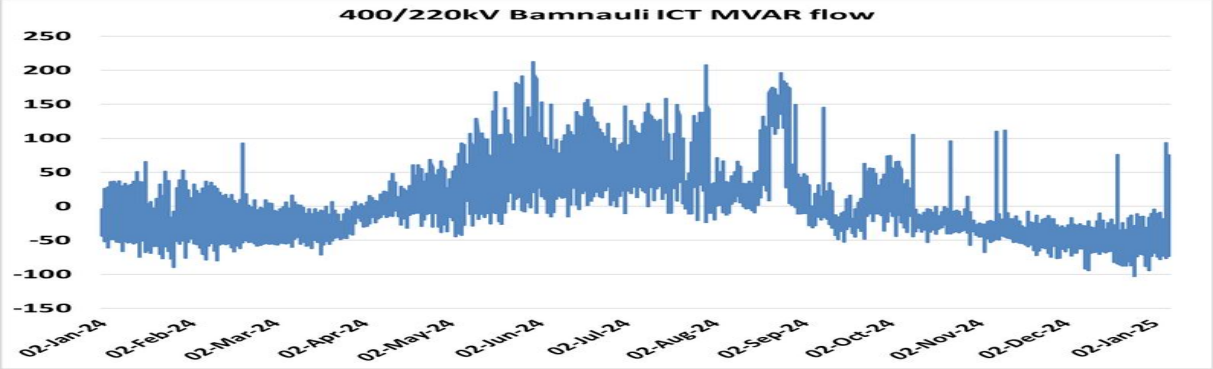
State	MVar Variations	Proposed solutions in

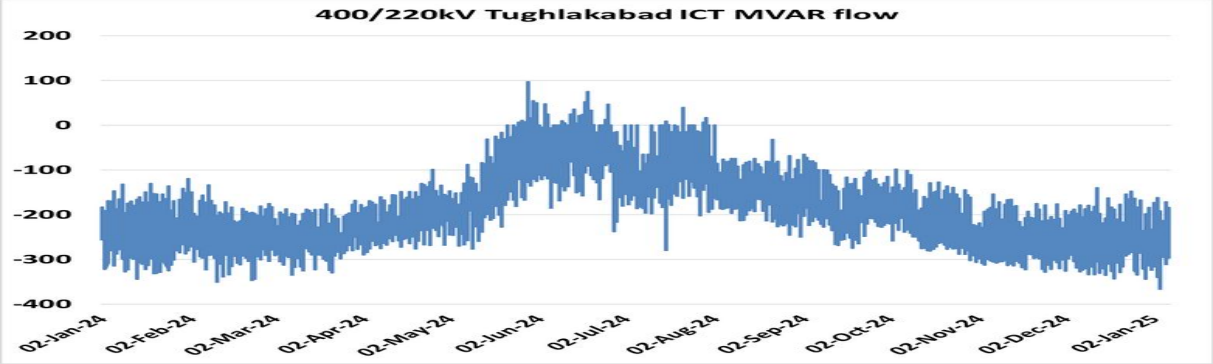
		intrastate
Punjab	**-1300 to 600**	**Bus reactors required**
Delhi	**-1200 to 500**	**Bus reactors & STATCOM required**
Haryana	**-1000 to 3000**	**Bus reactors & capacitors required**
Rajasthan	**0 to 4000**	**Capacitor requirement**
UP	**-500 to 3000**	**Capacitor requirement**
Uttarakhand	**-500 to 400**	**Bus reactors & capacitors required**
HP	**-200 to 400**	**Capacitor requirement**

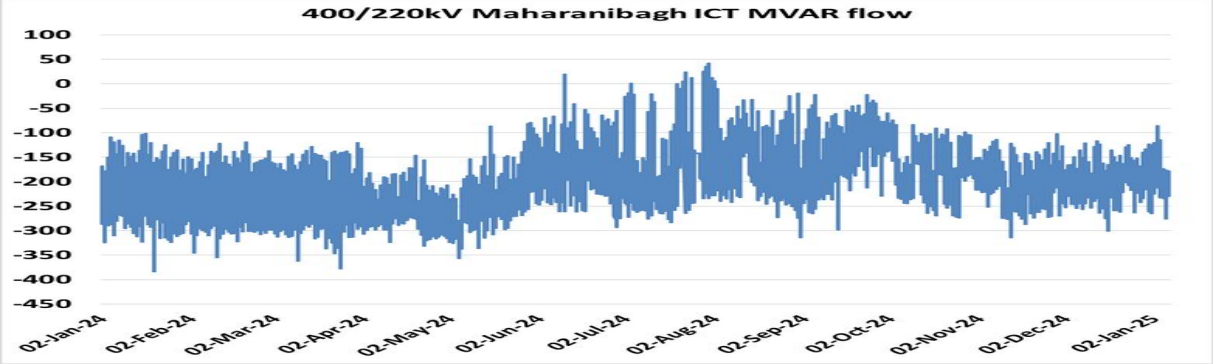
Further, station-wise MVAr flow has been assessed for 400/220kV substations in Delhi state control area. Delhi state control area having high network of cables, generates high reactive power and suggests that there is huge MVAr flow from Low voltage side to High voltage side. Station-wise MVAR flow pattern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

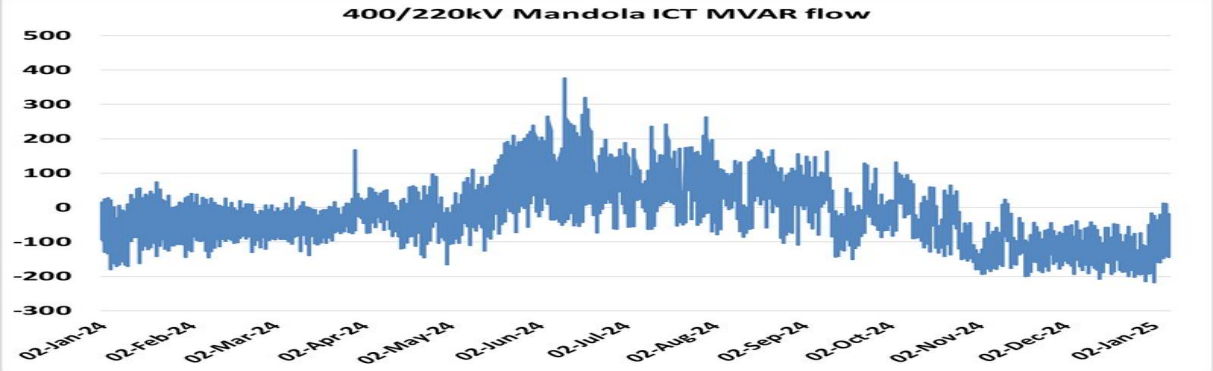


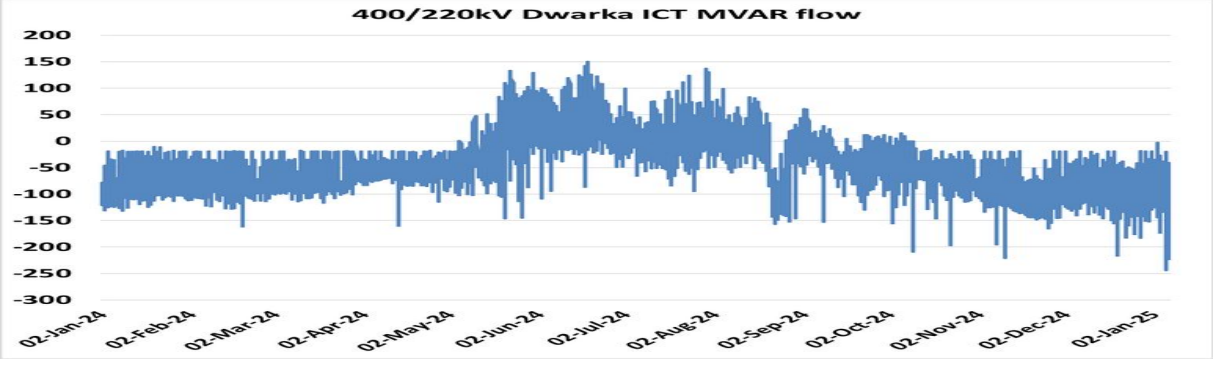



400/220kV Bamnauli ICT MVAR flow
250
200
150
100
50
0
-50
-100
-150
02-Jan-24
02-Feb-24
02-Mar-24
02-Apr-24
02-May-24
02-Jun-24
02-Jul-24
02-Aug-24
02-Sep-24
02-Oct-24
02-Nov-24
02-Dec-24
02-Jan-25


400/220kV Tughlakabad ICT MVAR flow
200
100
0
-100
-200
-300
-400
02-Jan-24
02-Feb-24
02-Mar-24
02-Apr-24
02-May-24
02-Jun-24
02-Jul-24
02-Aug-24
02-Sep-24
02-Oct-24
02-Nov-24
02-Dec-24
02-Jan-25


400/220kV Maharanibagh ICT MVAR flow
100
50
0
-50
-100
-150
-200
-250
-300
-350
-400
-450
02-Jan-24
02-Feb-24
02-Mar-24
02-Apr-24
02-May-24
02-Jun-24
02-Jul-24
02-Aug-24
02-Sep-24
02-Oct-24
02-Nov-24
02-Dec-24
02-Jan-25


400/220kV Mandola ICT MVAR flow
500
400
300
200
100
0
-100
-200
-300
02-Jan-24
02-Feb-24
02-Mar-24
02-Apr-24
02-May-24
02-Jun-24
02-Jul-24
02-Aug-24
02-Sep-24
02-Oct-24
02-Nov-24
02-Dec-24
02-Jan-25


400/220kV Dwarka ICT MVAR flow
200
150
100
50
0
-50
-100
-150
-200
-250
-300
02-Jan-24
02-Feb-24
02-Mar-24
02-Apr-24
02-May-24
02-Jun-24
02-Jul-24
02-Aug-24
02-Sep-24
02-Oct-24
02-Nov-24
02-Dec-24
02-Jan-25

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

During 227 OCC meetings,

NRLDC expressed severe concern on reactive power drawl by HVPNL, RRVPNL, HPPTCL and suggested to take up for capacitor installation on war footing basis.

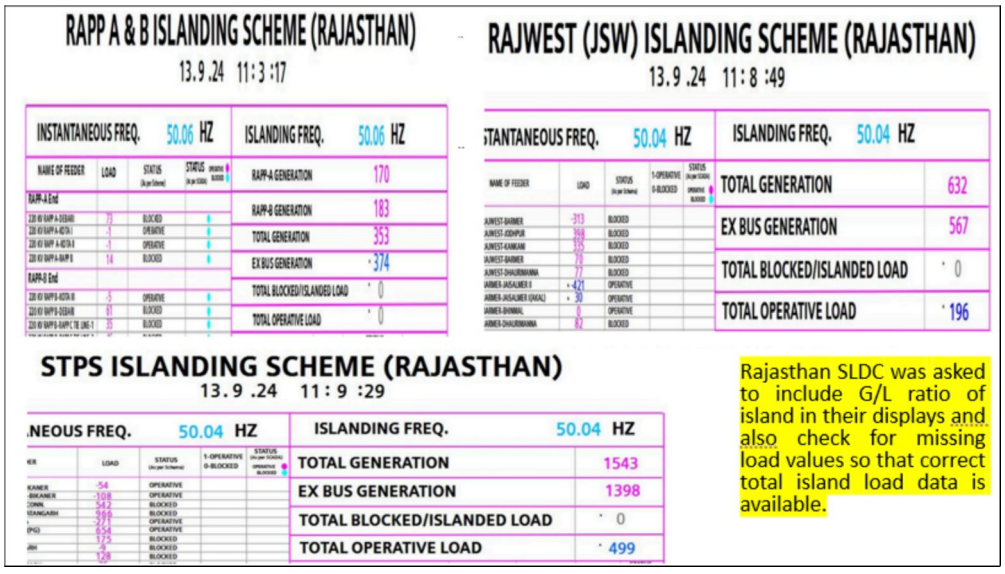
OCC forum appreciated the inputs shared by NRLDC and asked all SLDCs/STUs to analyse nodewise reactive power injection/absorption from ISTS and accordingly, take necessary measures. It was also highlighted that report was provided by CPRI based on work awarded by NRPC forum to assess capacitor requirement. Studies were done in the report based on 2019-2020 data and still it is being seen that capacitor commissioning has not progressed as was required.

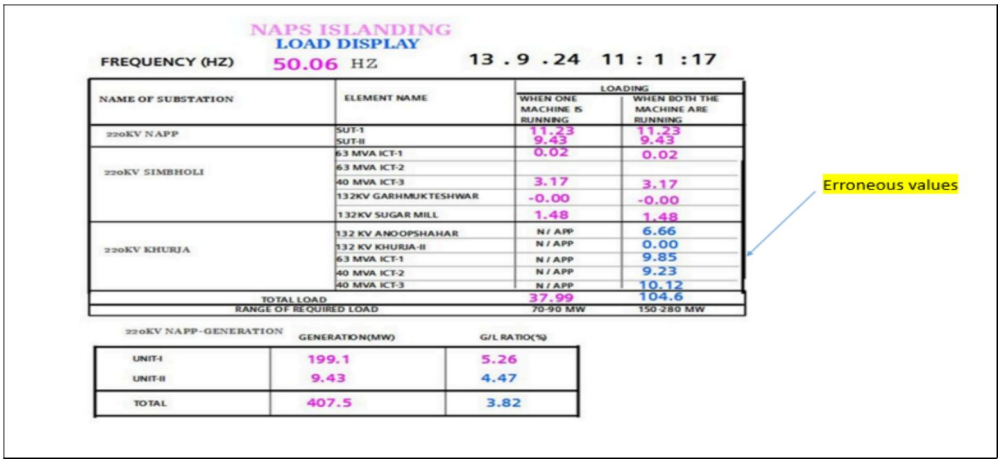
Respective STUs and SLDCs are requested to provide update. Members may please discuss.

B.5. 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.





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-I	11.23	11.23
	SUT-II	9.43	9.43
220KV SIMBHOLI	63 MVA ICT-1	0.02	0.02
	63 MVA ICT-2		
	40 MVA ICT-3	3.17	3.17
	132KV GARHMUKTESHWAR	-0.00	-0.00
	132KV SUGAR MILL	1.48	1.48
220KV KHURJA	132 KV ANOOPSHAHAR	N / APP	6.66
	132 KV KHURJA-II	N / APP	0.00
	63 MVA ICT-1	N / APP	9.85
	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

Erroneous values

220KV NAPP-GENERATION

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

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

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

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

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

No other update could be received from other SLDCs.

OCC asked all SLDCs to proactively take actions as discussed in the meeting.
Further, NRLDC had also conducted an online meeting on 03.12.2024 with all relevant stakeholders from UP, Rajasthan, Delhi and Punjab regarding any issues being faced in carrying out mock testing exercise of islanding scheme.

Following updates were received in the meeting:

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

3. Delhi (Bawana Islanding Scheme)
   - DTL will conduct field mock testing as per the SOP within one month and submit a detailed report accordingly.
   - PSSE basecase files will be shared within one month.
4. Punjab (RSD Islanding Scheme)
   - Field mock testing as per SOP will be conducted within one month, and a detailed report will follow.
   - PSSE basecase files will be submitted within one month.

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

Following was discussed during the meeting:

Updates from States:

1. Uttar Pradesh (NAPS Islanding Scheme)
   - Dynamic testing done on basecase shared by UP-SLDC.
   - UFR testing report submitted by UP-SLDC
   - SCADA display made by UP-SLDC, however some telemetry data is not coming in display.

2. Rajasthan (RAPS Islanding Scheme)
   - UFR testing report submitted on 06.02.2025 by Rajasthan SLDC
   - PSSE basecase files will be provided by 14.02.2025

3. Delhi (Bawana Islanding Scheme)
   - Mock testing of islanding scheme UFR relays was withheld due to scheduled assembly elections in Delhi. UFR testing report will be submitted by 14.02.2025
   - PSSE basecase files will be shared by 14.02.2025
   - SCADA display is outdated and new one will be made operational by 21.02.2025

4. Punjab (RSD Islanding Scheme)
   - Punjab SLDC is awaiting dynamic data of RSD and load data from site for islanding scheme and will be shared after receiving them. No firm timeline provided.
   - UFR testing report and SCADA display update will be provided on mail to NRLDC due to non-availability of concerned person in the meeting.

NLDC Recommendations:

The NLDC emphasized the urgency of receiving the PSSE files for the four scenarios to facilitate a dynamic health assessment of the islands and urged all NR states to prioritize sharing these files promptly.

Concerned SLDCs are requested to provide update.

B.6. Tap Optimization of 400/220kV ICTs at Bhadla-PG

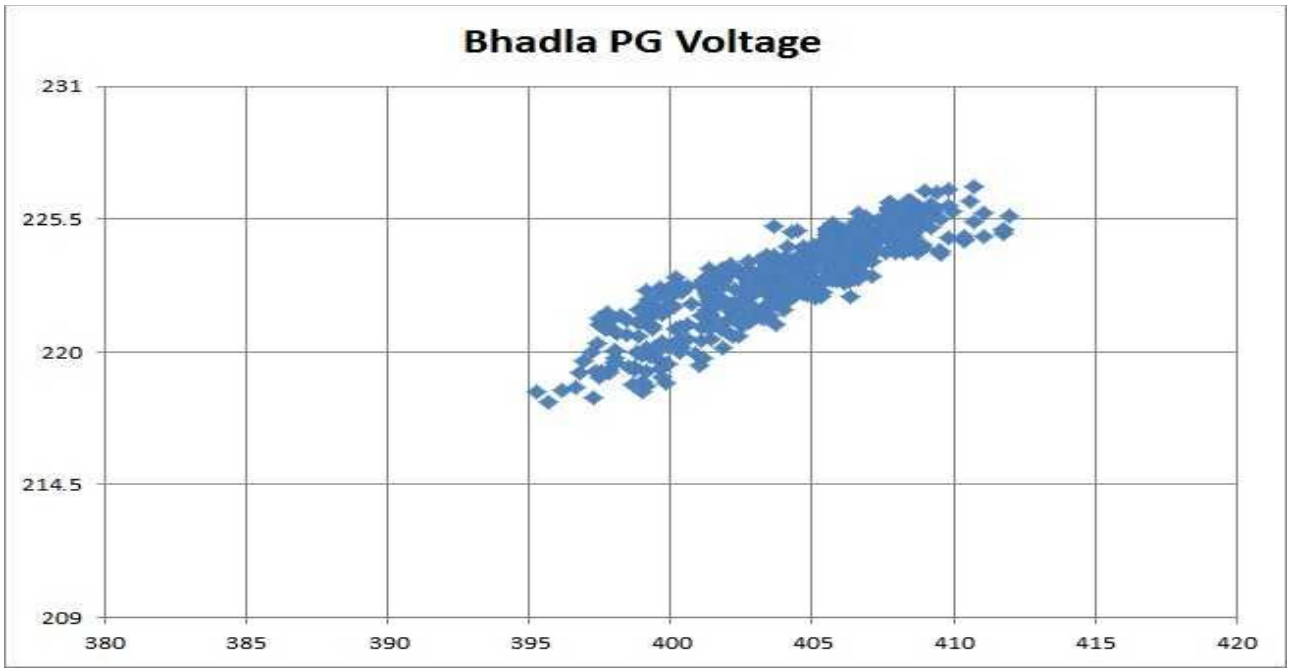
765/400/220 kV Bhadla-PG is the first ISTS (Inter-State Transmission System) Solar Renewable Energy (RE) pooling station commissioned in the Northern Region.

It is equipped with 8*500 MVA 400/220 kV Interconnecting Transformers (ICTs). Currently, approximately 3,200 MW of generation is being evacuated through these ICTs.

During solar peak hours, the voltage levels in the renewable energy (RE) pockets tend to decrease. In response, the NRLDC (Northern Regional Load Dispatch Center) issues a code to inject reactive power from the 220 kV side to support and stabilize the voltage in the RE pockets.

It has been observed that the 220 kV voltage levels are slightly higher compared to the 400 kV side, as indicated by both the voltage trend and scatter plot.

Scatter plot for 400/220kV Bhadla(PG) substation is shown below:



During the PSSE study, a decrement of one tap in the 400/220 kV ICTs results in an increase of 1.9 kV at the 400 kV Bhadla-PG (no change is observed in 220kV voltage), along with an approximate increase of 245 MVAr in reactive power injection. Therefore, the option of changing taps to decrease the voltage on the 400 kV side may be considered.

Accordingly, it is proposed that tap position is reduced by 1 step and kept under observation, thereafter, if required 1 more tap step may be reduced.

Members may please discuss.

B.7. Reactive power performance of generators

During winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings, it is seen that MVAR data telemetry is poor/ inaccurate from most of the generating stations. For some of the generators it is

seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 20 days (20 Nov 2024 – 09 Dec 2024) is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity as per capability curve (on LV side)	MVAR performance (-) Absorption (+) Generation (HV side data)	Voltage absorption above (in KV)
1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-160 to 80	410
		2	490		-147 to 294	-150 to 60	410
2	Singrauli NTPC	1	200	UP	-60 to 120	-20 to 5	397
		2	200		-60 to 120	0 to 20	404
		3	200		-60 to 120	-5 to 15	402
		4	200		-60 to 120	-	-
		5	200		-60 to 120	-25 to 0	395
		6	500		-150 to 300	0 to 55	404
		7	500		-150 to 300	0 to 50	402
3	Rihand NTPC	1	500	UP	-150 to 300	-60 to 40	397,401
		2	500		-150 to 300	-70 to 30	397,401
		3	500		-150 to 300	-90 to 0	395
		4	500		-150 to 300	-100 to 0	394
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-130 to 160	-
		2	600		-180 to 360	-130 to -30	-
5	Anpara C UP	1	600	UP	-180 to 360	-150 to 50	770
		2	600		-180 to 360	-	-
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-210 to 0	405
		2	660		-198 to 396	-210 to 0	408
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-70 to 50	405
		2	660		-198 to 396	-80 to 50	404
8	IGSTPP	1	500	Haryana	-150 to	-120 to 100	415

	Jhajjar				300		
		2	500		-150 to 300	-130 to 100	412
		3	500		-150 to 300	-	-
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-210 to 50	405
		2	700		-210 to 420	-210 to 50	405
10	MGTPS	1	660	Haryana	-198 to 396	-130 to 40	404
		2	660		-198 to 396	-140 to 70	405
11	Bawana	1	216	Delhi-NCR	-65 to 130	-	-
		2	216		-65 to 130	-70 to 20	410
		3	216		-65 to 130	-	-
		4	216		-65 to 130	-	-
		5	253		-65 to 130	-60 to 40	415
		6	253		-65 to 130	-	-
12	Bara PPGCL	1	660	UP	-198 to 396	-40 to 60	772,778
		2	660		-198 to 396	-30 to 60	772,778
		3	660		-198 to 396	-70 to 60	768
13	Lalitpur TPS	1	660	UP	-198 to 396	-100 to 30	755
		2	660		-198 to 396	-70 to 30	765
		3	660		-198 to 396	-90 to 50	758
14	Anpara D UP	1	500	UP	-150 to 300	-	-
		2	500		-150 to 300	-150 to 50	770
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-50 to 70	410
		2	250		-75 to 150	-60 to 60	408
		3	250		-75 to 150	-60 to 50	408
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-50 to 200	412
		6	660		-198 to 396	-100 to 150	410

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

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

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

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

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

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

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

During 227 OCC meeting, NRLDC representative presented IEGC clause 39.(3),

Quote

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

Unquote

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

- Some of the machines at NTPC Singrauli are generating MVAr whereas some are absorbing MVAr. NTPC representative stated that AVR is to be replaced for Unit-6 of Singrauli.
- IGSTPP Jhajjar performance needs improvement, unnecessary MVAR generation could be avoided. As requested previously AVR setpoint to be reduced.
- AVR setpoint may also be reduced for Dadri Stage-II, Talwandi Saboo and Bawana stations.
- NTPC representative stated that Dadri is already absorbing up to 150MVAR.

- NRLDC representative stated that no doubt Dadri is absorbing MVAr, but AVR setpoint or GT tap may be changed such that the units are absorbing MVAr just beyond 400kV.
- IGSTPP Jhajjar representative stated that Unit-1 overhauling is planned in first week of Feb. and during this time GT tap position of Unit-1 will also be changed. It was also mentioned that during summer tap position may again need to be changed when MVAr generation is desired as AVR setpoint change is not able to change the required MVAr output.
- NRLDC representative stated that AVR set point change should be available with thermal stations so that reactive power change is possible as per grid requirement and relying on offload tap change is not at all suitable alternative. However, as last resort if required, seasonal tap change of GT may have to be carried out.
- It was also mentioned that communication with OEM regarding any issue in AVR setpoint may be shared separately with NRLDC. In case AVR setpoint change is not possible, GT tap position has to be changed so that required MVAr exchange is obtained and generating station needs to take up the issue of AVR setpoint inflexibility with their OEM.

Based on the analysis of data for 10Jan 2025-10Feb 2025, following are few of the observations:

- Some of the machines at NTPC Singrauli are generating MVAr whereas some are absorbing MVAr
- IGSTPP Jhajjar and MGTPS performance needs improvement, unnecessary MVAR generation could be avoided. AVR setpoint to be reduced.
- AVR setpoint may also be reduced for Dadri Stage-II
- Data to be checked for Kalisindh TPS
- At number of stations Rihand, Singrauli, Bara etc., even though unit size is same, there is different MVAR generation/absorption by each unit, same needs to be further deliberated.

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

Quote

…..(6) NLDC, RLDCs and SLDCs shall assess the dynamic reactive power reserve available at various substations or generating stations under any credible contingency on a regular basis based on technical details and data provided by the users, as per the procedure specified by NLDC

Unquote

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

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

Format-IA- for Generating stations / Condenser / IBR

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

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

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

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

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

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

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

Purpose	***S No***	***Action of Stakeholder***	***Responsibility***	***Submission to***	***Data/ Information Submission Time line***
1. Revision 0 TTC/ATC Declaration for Month 'M'	*1(a)*	*Submission of node wise Load and generation data along with envisaged*	*SLDC*	*RLDC*	*10th Day of 'M-12' month*
		scenarios for assessment of transfer capability			
		Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of			

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

To encourage participation from SLDCs regarding basecase preparation and ATC/TTC assessment, two workshops have been conducted from Grid-India/NRLDC side. One workshop was conducted 31.08.2023 before the finalization of the procedure and another on 10.01.2024 recently to involve further participation from SLDCs. Subsequently, workshop was organized on 9-11 December 2024 & **3-4 February 2025** at NRLDC for all SLDCs under initiative by FOLD.

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

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

The procedure mentions that:

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

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

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

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

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

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

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

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

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

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

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

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

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

In 227 OCC meeting,

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

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

September 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (October-24)		M-12 (September-25)		M-6 (Mar-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	No	No	No	No
Haryana	No	No	No	No	No	Shared only for 1 cardinal point
Himachal	Shared only for 1 cardinal point	Shared only for 1 cardinal point	Shared only for 1 cardinal point	Shared only for 1 cardinal point	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

October 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (November-24)		M-12 (October-25)		M-6 (Apr-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	No	No	No	No
Haryana	Yes	Yes	No	No	No	No
Himachal	Yes	No	Yes	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	Shared only TTC value and TTC case, no data regarding cardinal points		No	No	No	No

November 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (December-24)		M-12 (November-25)		M-6 (May-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	Yes	Yes	No	No	No	No
Himachal	Yes	No	Yes	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

December 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (January-25)		M-12 (December-25)		M-6 (June-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	No	Yes	No	No	No	No
Himachal	Yes	No	Yes	No	No	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

Submitted with one month delay

January 2025 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (February-25)		M-12 (January-26)		M-6 (July-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh	No	No	No	No	No	No
Delhi	No	No	Yes	Yes	No	No
Haryana	Yes	Yes	No	Yes	No	No
Himachal	Yes	No	Yes	No	Yes	No
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	Yes	Yes	Yes
Rajasthan	Yes	Yes	Yes	Yes	Yes	Yes
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

February 2025 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (March-25)		M-12 (February-26)		M-6 (August-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh						
Delhi						
Haryana						
Himachal	Yes		Yes		Yes	
J &K	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh						
Punjab					Yes	Yes
Rajasthan						
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand						

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

Members may please discuss.

B.9. Workforce Adequacy Guidelines for Load Despatch Centres and Guidelines for Deputation of Workforce from SLDCs to Grid India for Fixed terms

The Ministry of Power has published a report on Workforce Adequacy Guidelines for Load Despatch Centres and Guidelines for Deputation of Workforce from SLDCs to Grid India for Fixed terms on 30th October 2024.

In the above report, under the section "*Creating a Skilled and Motivated Workforce at LDCs*," Point 3 outlines "*A Short term Exposure Programme*" has been envisaged to

provide opportunity the system operators to learn from each other and to propagate best practices.

Modalities:

The programme will include 2-10 days duration rotational assignments to other LDCs. The officials will be rotated from System operation, Market operation and Logistics and REMC functions.

No. of persons to be rotated will endeavoured to be kept as 1:1, however, in certain cases especially for emerging LDCs this can be relaxed.

Eligibility:

All LDC officials working in System operation, Market operation and Logistics and REMC functions and have minimum 1 year or regular service in LDC are eligible.

Execution:

LDCs can submit their annual rotational plan to the FOLD secretariat, which will create a region-wise round-robin plan to ensure HR adequacy across all LDCs.

TA/DA including accommodation expenses will be borne by the parent organisation as per their rules. Host Organisation will not be obligated to provide any facility to visiting officer

Schedule will be proposed based on discussions:

S.no	SLDC	Tentative month
1	Punjab	
2	Delhi	
3	Rajasthan	
4	Uttar Pradesh	
5	Uttarakhand	
6	Haryana	
7	Himachal Pradesh	
8	JK & Ladakh	
9	Chandigarh	

Members may please discuss.

B.10. Multiple element tripping events in Northern region in the month of January 2025:

A total of 11 grid events occurred in the month of January 2025 of which 06 are of GD-1 category, 04 are of GI-2 Category and 01 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.IV.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Akal(RS) on 12th January, 2025 (As per PMU at Bhadla(PG), B-N phase to earth fault converted into Y-B-N double phase to earth fault with delayed fault clearing time of 2120ms is observed).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 05 events out of 11 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.

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

Members may like to discuss.

B.11. Status of submission of DR/EL and tripping report of utilities for the month of January 2025:

The status of receipt of DR/EL and tripping report of utilities for the month of **January 2025** is attached at **Annexure-B.V**. It is to be noted that as per the IEGC provision under clause 37.2 (c), tripping report along with DR/EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement.

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

Members may like to discuss.

B.12. Frequency response performance for the reportable events of month of January 2025:

In the month of January 2025, only 1 no. of reportable event on 04th January 2025 was notified by NLDC for which FRC/ FRP need to be calculated and the same along with high resolution data need to be submitted to RLDC. Description of the event is as given in the Table below:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	Nadir Frequency (in Hz)	End Frequency (in Hz)	*Δf*	NR FRP during the event
1	04-Jan-25	19:23 hrs	As reported, at 19:23 hrs on 04th January, 2025, generation loss event of 1790 MW occurred at Barh generating station, ER. Hence net generation loss of 1790 MW is considered for FRC/FRP Calculation.	49.931	49.785	49.893	-0.038	4.07

As per IEGC 2023 Clause 30.8, "The primary response of the generating units shall be verified by the Load Despatch Centres (LDCs) during grid events. The concerned generating station shall furnish the requisite data to the LDCs within two days of notification of reportable event by the NLDC."
As per IEGC 2023 Clause 30.10. (n), "Each control area shall assess its frequency response characteristics and share the assessment with the concerned RLDC along with high resolution data of at least 1 (one) second for regional entity generating stations and energy storage systems and 10 (ten) seconds for the state control area."

As per sub-clause (a (v)) of clause (9) of IEGC 2023 Annexure-2, "All the SLDCs shall work out FRC for all the intra-state entities (for events indicated by the Regional Load Despatch Centres) based on the HDR available at their respective SLDCs and submit the same to respective RLDC within six (6) working days after the event. (Format as per Table-B)."

As per sub-clause (a (vi)) of clause (9) of IEGC 2023 Annexure-2, "All regional entity generating stations shall also assess the FRC for their respective stations and submit the same to respective RLDC within six (6) working days. (Format as per Table-B). The high-resolution data (1 second or better resolution) of active power generation and frequency shall also be shared with RLDC."

Status of details received from constituents as on 09th February 2025 is:

S. No	Control Area	Event Date
		04-01-2025
1	Punjab	Not Received
2	Haryana	Received
3	Rajasthan	Received
4	Delhi	Received
5	Uttar Pradesh	Received
6	Uttarakhand	Received
7	Chandigarh*	NA

8	Himachal Pradesh	Received
9	J&K(UT) and Ladakh(UT)	Not Received
10	Dadri -1 (TH)	Received
11	Dadri -2 (TH)	Received
12	Jhajjar (TH)	Received
13	Rihand-1 (TH)	Received
14	Rihand-2 (TH)	Received
15	Rihand-3 (TH)	Received
16	Shree Cement (TH)	Not Received
17	Singrauli (TH)	Received
18	Tanda-2 (TH)	Received
19	Unchahar-I (TH)	Received
20	Unchahar-II (TH)	Received
21	Unchahar-III (TH)	Received
22	Unchahar-IV (TH)	Received
23	Anta (G)	No Gen
24	Auraiya (G)	No Gen
25	Dadri (G)	No Gen
26	AD Hydro (H)	No Gen
27	Bairasiul (H)	Not Received
28	Bhakra (H)	Not Received
29	Budhil (H)	Not Received
30	Chamera-1 (H)	Not Received
31	Chamera-2 (H)	Not Received
32	Chamera-3 (H)	Not Received
33	Dehar (H)	Not Received
34	Dhauliganga (H)	Not Received
35	Dulhasti (H)	Not Received
36	Karcham (H)	Received
37	Kishanganga	Not Received
38	Koldam (H)	Received
39	Koteshwar (H)	Received
40	Malana-2 (H)	NA
41	Nathpa Jhakri (H)	Received
42	Parbati-2 (H)	Not Received
43	Parbati-3 (H)	Not Received
44	Pong (H)	Not Received
45	Rampur (H)	Not Received
46	Sainj (H)	No Gen
47	Salal (H)	Not Received
48	Sewa-II (H)	No Gen
49	Singoli Bhatwari (H)	Not Received
50	Sorang (H)	Not Received
51	Tanakpur (H)	Not Received
52	Tehri (H)	Received
53	Uri-1 (H)	Not Received
54	Uri-2 (H)	Not Received

Frequency Response Performance (FRP) of generating stations for each reportable event are calculated based on the submitted high resolution data from generating stations. However, the generating stations for which data is not received till 09th February 2025, FRC/FRP as per NRLDC HDR data is used for computation of Average Monthly Frequency Response Performance, Beta 'β' for Generating Stations.

FRP values as considered (as per NRLDC HDR data/ generator high resolution data) for the event of January 2025 is as follows:

S. No	Control Area	Event Date
		04-01-2025
1	Punjab	0.40
2	Haryana	1.34
3	Rajasthan	0.63
4	Delhi	5.06
5	Uttar Pradesh	2.15
6	Uttarakhand	-0.27
7	Chandigarh*	NA
8	Himachal Pradesh	1.71
9	J&K(UT) and Ladakh(UT)	0.00
10	Dadri -1 (TH)	20.16
11	Dadri -2 (TH)	11.29
12	Jhajjar (TH)	6.66
13	Rihand-1 (TH)	16.91
14	Rihand-2 (TH)	7.66
15	Rihand-3 (TH)	12.96
16	Shree Cement (TH)	6.26
17	Singrauli (TH)	8.00
18	Tanda-2 (TH)	6.42
19	Unchahar-I (TH)	22.23
20	Unchahar-II (TH)	0.37
21	Unchahar-III (TH)	-3.25
22	Unchahar-IV (TH)	-3.95
23	Anta (G)	No Gen
24	Auraiya (G)	No Gen
25	Dadri (G)	No Gen
26	AD Hydro (H)	No Gen
27	Bairasiul (H)	0.00
28	Bhakra (H)	0.65
29	Budhil (H)	1.16
30	Chamera-1 (H)	0.00
31	Chamera-2 (H)	12.05
32	Chamera-3 (H)	-0.29
33	Dehar (H)	1.61
34	Dhauliganga (H)	7.25
35	Dulhasti (H)	0.00
36	Karcham (H)	13.79
37	Kishenganga	0.00
38	Koldam (H)	6.18

39	**Koteshwar (H)**	7.34
40	**Malana-2 (H)**	NA
41	**Nathpa Jhakri (H)**	5.14
42	**Parbati-2 (H)**	0.00
43	**Parbati-3 (H)**	-21.01
44	**Pong (H)**	-0.65
45	**Rampur (H)**	37.58
46	**Sainj (H)**	No Gen
47	**Salal (H)**	44.95
48	**Sewa-II (H)**	No Gen
49	**Singoli Bhatwari (H)**	-0.81
50	**Sorang (H)**	-0.10
51	**Tanakpur (H)**	-1.66
52	**Tehri (H)**	0.00
53	**Uri-1 (H)**	-6.82
54	**Uri-2 (H)**	0.00

ISGS were requested to confirm whether FGMO as per IEGC 2023 has been implemented at their respective stations or not. Updated sheet on the basis of details receicved is as follows:

Sl. No.	Entity	Capacity(MW)	Governor Mode (FGMO as per IEGC 2023) Yes or No	Droop setting (%)	Remarks (if any)
1	Dadri-1 (TH)	4*200			
2	Dadri -2 (TH)	2*490			
3	Jhajjar (TH)	3*500			
4	Rihand-1 (TH)	2*500	Yes	5.0	Under Implementation
5	Rihand-2 (TH)	2*500	Yes	5.0	Under Implementation
6	Rihand-3 (TH)	2*500	Yes	5.0	Under Implementation
7	Shree Cement (TH)	(2 * 150)			
8	Singrauli (TH)	2*500+5*200			
9	Tanda-2 (TH)	2*660			
10	Unchahar stg-4 (TH)	1*500			
11	Unchahar (TH)	2*210			
12	Anta (G)	(1 * 153.2 + 3 * 88.71)			
13	Auraiya (G)	(2 * 109.3 + 4 * 111.19)			
14	Dadri (G)	(2 * 154.51 + 4 *			

		130.19)			
15	AD Hydro (H)	(2 * 96)	YES	4.0	-
16	Bairasiul (H)	(3 * 60)	Yes	4.0	
17	Bhakra (H)	(5 * 126 + 5 * 157)			
18	Budhil (H)	(2 * 35)			
19	Chamera-1 (H)	(3 * 180)	Yes	5.0	
20	Chamera-2 (H)	(3 * 100)	Yes	5.0	
21	Chamera-3 (H)	(3 * 77)	Yes	4.0	
22	Dehar (H)	(6 * 165)			
23	Dhauliganga (H)	(4 * 70)	Yes	5.0	
24	Dulhasti (H)	(3 * 130)	Yes	5.0	
25	Karcham (H)	(4 * 261.25)	Yes	5.0	
26	Kishenganga	(3 * 110)	Yes	4.0	
27	Koldam (H)	(4 * 200)	Yes	4.0	
28	Koteswar (H)	(4 * 100)	Yes	4.0	
29	Malana-2 (H)	(2 * 50)			
30	Nathpa Jhakri (H)	(6 * 250)	Yes	5.5	
31	Parbati-2 (H)	(4 * 200)			
32	Parbati-3 (H)	(4 * 130)	Yes	4.0	
33	Pong (H)	(6 * 66)			
34	Rampur (H)	(6 * 68.67)			
35	Sainj (H)	(2 * 50)			
36	Salal (H)	(6 * 115)	Yes	3.0	
37	Sewa-II (H)	(3 * 40)	Yes	4.0	
38	Singoli Bhatwari (H)	(3 * 33)			
39	Sorang (H)	(2 * 50)			
40	Tanakpur (H)	(1 * 31.42 + 2 * 31.4)	Yes	4.0	
41	Tehri (H)	(4 * 250)	Yes	4.0	
42	Uri-1 (H)	(4 * 120)	Yes	6.0	
43	Uri-2 (H)	(4 * 60)	Yes	5.0	

Constituents are requested to share the details at the earliest.

Memebers are requested to analyse the frequency response of their respective control area and share the FRC/FRP analysis of generating stations along with unit wise 01 sec data as per timeline for ensuring IEGC compliance.

Members are also requested to reconcile the FRP values as considered for the event of January 2025.

Members may like to discuss.

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

As per Indian Electricity Grid Code (IEGC) clause 34.3

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

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

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

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

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

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

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

ISGS and SLDCs are requested to take following actions:

- To share the tentative schedule of mock black start exercise of generating stations in their respective control area.

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

Members may like to discuss.

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

As per IEGC clause 16.2

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

As per IEGC clause 16.3

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

There are 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 January 2025. Revised version of the document is available on the NRLDC website in Document section and can be accessed at below link: https://newnr.nrldc.in/documents/Documents.
SPS is designed to detect abnormal system conditions and take predetermined, corrective action to preserve system integrity and provide acceptable system performance. Therefore, correct operation of SPS as per designed logic is important to serve its purpose. To ensure this, mock testing of SPS needs to be conducted at a regular period. Clause 16.2 of IEGC 2023 also mandates the mock testing of SPS for reviewing SPS parameters & functions, at least once a year.

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

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

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

Members may like to discuss.

B.15. Revision of document for System Restoration Procedure Document of Northern Region:

NRLDC has been issuing '**System Restoration Procedure Document of Northern Region**' on annual basis. The document has been revised on 31st January 2025 and same has been shared with all the constituents.

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

The document is password protected and password was already informed to all the NR constituents through NRLDC letter dated 31st January 2025.

For kind information.

Annexure-A.0

Status of action taken on decision of 227th OCC meeting of NRPC

S.N.	Agenda	Decision of 227th OCC meeting of NRPC	Status of action taken
1	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.)	Forum asked SLDC to identify and communicate feeder-wise, Stage-wise load relief to RPC/RLDC.	There is separate agenda A.10 on the said matter.
2	A.14. SPS arrangement for load shedding at 400/220 kV Mandola & Maharani Bagh Substation in view of N-1 criteria violation (Agenda by POWERGRID NR-1)	Forum directed to DTL, POWERGRID and NRLDC for separate discussion and SPS logic may be finalised and implemented by POWERGRID as soon as possible.	Powergrid to update status.
3	A.16. Requirement of complete 400 kV Bus-1 &2 shutdown at Mandola & Ballabgarh SS for replacement of damaged sections 400 kV jack buses (Agenda by POWERGRID NR-1)	Forum asked Powergrid NR-1, HVPNL, and BBMB to conduct a joint site visit of Ballabgarh S/s within one week and submit their observations to NRPC/NRLDC. Following this, a physical meeting will be arranged at the NRPC Secretariat to discuss the possibility of shutting down the 400 kV bus at Ballabgarh Substation for the replacement of the damaged sections of the 400 kV jack buses.	Powergrid to update status.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Nov-2024
◎ HARYANA — Oct-2024
◎ HP — Sep-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Dec-2024
◎ RAJASTHAN — Dec-2024
◎ UP — Dec-2024
◎ UTTARAKHAND — Jan-2025
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Dec-2024
◎ HARYANA — Dec-2024
◎ HP — Oct-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Sep-2024
◎ RAJASTHAN — Dec-2024
◎ UP — Dec-2024
◎ UTTARAKHAND — Dec-2024
◎ BBMB — Jun-2024
All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest.</td></tr>
<tr><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased</td></tr>
</table>

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

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

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

9	Reactive compensation at 220 kV/ 400 kV level at 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.

Status of ADMS implementation in NR:

Sl. No.	State / UT	Status	Remarks
1	DELHI	Scheme Implemented but operated in manual mode.	In 225th OCC meeting NRPC representative apprised forum that revised Standard Operating Procedure (SOP) of Automatic Demand ManagementScheme (ADMS) by the DISCOMs in NCT of Delhi has been approved in 51st TCC and 76th NRPC meeting. In 52nd TCC and 77th NRPC DTL intimated that tentative timeline for implemenation is 28th February 2025.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 taht they expect to complete it by August 2025, if materialized. 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 & BYPL by Oct 25.
2	HARYANA	Scheme not implemented	Haryana SLDC intimated that as per Joint Roadmap of implementation of ADMS in Haryana supplied to NRPC vide memo dated 17.10.2023 (Annexure-II), the implementation plan was proposed to be carried out in two parts, as mentioned below: PART-I: Control with Transmission Utility PART-II: Control with Distribution Utility It is pertinent to mention that as part of upcoming SCADA-EMS system i.e. upgradation of SCADA-EMS system, a feature in the name of LSS (Load Shedding Software)/ ADMS is part of the Technical Specification of project to be delivered. Therefore, the functionalities of ADMS application will be covered under 'Part-I: Control with Transmission Utility' will already be covered using the RTUs available at select substations along with the ADMS software being delivered by M/s GE under SCADA upgradation project. Hence, there is no need to acquire a separate ADMS application & associated hardware for data centre for implementation of PART-I. Further for Part -II a committee has been constituted for further finalization of the ADMS module with control with Discoms is under discussions for preparation of DPR.
3	HP	Scheme not implemented	HP SLDC imentioned that HPSEB had intimated that initially 142 Nos. of feeders were identified for operation under ADMS functionality but most of these feeders were from same sub-station. Therefore, now they have increased the no. of sub-station and identified the non-critical feeders. Load relief to be given through these feeders is under finalization. The revised feeder list to be shared by HPSEBL with the SLDC within one month.

4	PUNJAB	Scheme not implemented	i. A committee comprising of following officers of PSPCL & PSTCL has been constituted to finalize the logic regarding implementation of Automatic Demand Management System in Punjab Control Area. A meeting in this regard was held on dated 26-02-2024 at PSLDC Complex, Patiala. The committee deliberated various loading scenarios and proposed the following logic for the management of demand: 1. If the frequency sustains below 49.90 Hz for duration of 3 minutes, the Automatic Demand Management System will initiate a 50% reduction in the Over Drawl. 2. In case the frequency falls further below 49.85 Hz, the Over Drawl will be reduced to zero. 3. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation. ii. In 222nd OCC, MS NRPC asked Punjab to co-ordiante with Powergrid for integration of their propsoed logic with the ULDC phase-III SCADA system for timely implementation.
5	RAJASTHAN	Under implementation	In 227th OCC meeting, RVPN informed that 208 nos. of circuit breakers have been mapped to ADMS, all 208 circuit breakers tested upto yard individually. Total 650CBs are to be mapped in phased manner.
6	UP	Scheme implemented by NPCIL only	i. A meeting regarding ADMS was held on 15.01.2023 with the UPPCL under the chairmanship of MD UPPTCL ii. A committee formed for identification of load at 33 kV level under the chairmanship of Director (Distribution), UPPCL. iii. Another committee under the chairmanship of Director UPSLDC shall identify the technical and operational requirement for ADMS implementation iv. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation and likely to be commissioned by March 2025. v. In order to operate identified 33 kV feeders under ADMS scheme, integration of 132 kV substations with SCADA system is under implementation in the Reliable Communication Scheme and expected date of completion of the scheme is October 2024. vi. MS, NRPC apprised forum that a letter has been written to Director, SLDC for co-odinatng with Director (Distribution), UPPCL for expediting the finalization of feeder list at 33kV for ADMS implementation.
7	UTTARAKHAND	Scheme not implemented	i. UPCL has prepared a system architecture in which all the non-monitored sub-stions have been selected and 11kV feeders have been considered for ADMS operation. For the scheme, discom has also done group-wise selection of feeders and quantum of MW relief to be given for automatic demand response at 11kV level has also been decided. UPCL has awarded the tender for implementation of the aforementioned scheme to M/s Metergy Pvt.Ltd. ii. As per the status report submitted by M/s Metergy Pvt.Ltd, the survey work of 30 nos. incomer sites have been completed and order has been placed by UPCL for hardware equipments. iii. Uttarakhand SLDC informed that feeder list at 11kV level has been finalized and logic of ADMS implementation is under finalization. iv. Uttarakhand has intimated that It is bring to your notice that installation MFT(Multi Function Transducers) at various interstate points at PTCUL Substations under ADRS Project of UPCL is in progress.

Annexure-A.I.III.

Status of availability of ERS towers in NR

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

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
15	HVPN						HVPN 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 Status

Updated status of FGD related data submission

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

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

Updated status of FGD related data submission

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

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

Adani Power Ltd. (18.02.2022)
KAWAI TPS

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

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB

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

Target Dates for FGD Commissioning (Utility-wise)

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

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

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

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

MIS Report for Status of Islanding Schemes

Implemented Schemes

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

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding (Required / Not Required)	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	Scheme has been approved in 59th NRPC meeting held on 31.10.2022. In the 227th OCC meeting, UPPTCL representative apprised that Unchahar-Lucknow Islanding scheme has been successfully implemented and same is visible at SCADA of UPSLDC (except 01 Substation: Namely 132 kV S/s Hussainganj.) The data of above 01 substation is not available at UPSLDC due to lack of OPGW. The work of laying OPGW cable is under progress and same shall be completed by end of April 2025.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Under Implementation	Scheme has been approved in 71th NRPC meeting held on 29.01.2024. In 227th OCC, UPPTCL representative apprised forum that management is of view that procurement of UFRs for the Lalitpur-Agra islanding scheme should be explored through PSDF funding. A proposal for the same has been prepared and submitted to the PSDF Secretariat.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 227th OCC, RRVPNL representative mentioned that they have submitted their proposal of Jodhpur-Barmer- Rajwest islanding scheme to PSDF Secretariat on 16.01.2025 for PSDF funding.	-	-		-	-	-	-	-	-	-	-
4	Suratgarh IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 227th OCC, RRVPNL representative mentioned that DPR for implementation of Suratgarh islanding scheme would be submitted in next OCC.	-	-		-	-	-	-	-	-	-	-
5	Patiala-Nabha Power Rajpura IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 227th OCC, Punjab SLDC apprised forum that they have submitted their proposal to PSDF Secretariat and are awaiting confirmation regarding the status of PSDF funding from PSDF Sectt.		-		-	-	-	-	-	-	-	-
6	Kullu-Manali-Mandi IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. In 227th OCC, HPSLDC representative informed that proposed UFR scheme for Kullu-Manali- Mandi islanding scheme has been recommended by the Appraisal Committee of the State PSDF for approval of Hon'ble HPERC. The islanding scheme would now be taken up in the Monitoring committee for State PSDF funding approval. Meeting of Monitoring committee is planned in February 2025.		-		-	-	-	-	-	-	-	-
7	Shimla-Solan IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. a separate meeting was conducted by NRPC Sectt. with HPSLDC, HPSEBL and M/s GE on 18.09.2024, wherein HPSEBL informed that payment to M/s GE would be made within two months and subsequently work regarding the implementation in revised setting of Bhaba HEP would be completed by M/s GE within one month. HPSLDC also informed that they had sent a letter to all concerned generators requesting them to lower the UFR settings of their generators to below 47.5 Hz. In this regard, HPSLDC has intimated vide letter dated 06.01.2025 that expect generators under HPSEBL and Sandhya HEP (which is under force outage) all the rest generators have lower the UFR settings of their generators to below 47.5 Hz.											

Capacity (MW) 30-11-2023	Name of Station	UNIT_NM	STN_TYPE_ID	SECTOR	REGION_NM	ST_NM	SH_NM	IPP	FUEL_NM	Capacity (MW) 31-03-2025	Start Date	End Date	Reason
600	RAJIV GANDHI TPS	1	T	STATE SECTOR	Northern	Haryana	HPGCL	FALSE	COAL	600	15-Nov-24	30-Jan-25	AOH
660	SURATGARH TPS	7	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	660	1-Jan-25	25-Jan-25	AOH
660	PRAYAGRAJ TPP	1	T	IPP SECTOR	Northern	Uttar Pradesh	PPGCL (Jaypee)	FALSE	COAL	660	1-Jan-25	15-Jan-25	Maintenance Works
660	LALITPUR TPS	3	T	IPP SECTOR	Northern	Uttar Pradesh	LPGCL	FALSE	COAL	660	15-Dec-24	9-Jan-25	AOH
200	SINGRAULI STPS	4	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL-P	200	15-Dec-24	18-Jan-25	AOH
660	TANDA TPS	6	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL	660	20-Dec-24	28-Jan-25	AOH
111.19	AURAIYA CCPP	4	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	NATURAL GAS	111.19	5-Jan-25	19-Jan-25	Filter Replacement
225	GAMA CCPP	1	T	IPP SECTOR	Northern	Uttarakhand	GIPL	FALSE	NATURAL GAS	225	22-Jan-25	31-Jan-25	Inspection
30	I.P.CCPP	1	T	STATE SECTOR	Northern	Delhi	IPGCL	FALSE	NATURAL GAS	30	20-Nov-24	22-Dec-24	Major Inspection
104.6	PRAGATI CCPP	1	T	STATE SECTOR	Northern	Delhi	PPCL	FALSE	NATURAL GAS	104.6	1-Nov-24	10-Dec-24	Major Inspection
104.6	PRAGATI CCPP	2	T	STATE SECTOR	Northern	Delhi	PPCL	FALSE	NATURAL GAS	104.6	3-Dec-24	4-Dec-24	Air Filter Replacement
250	PRAGATI CCGT-III	2	T	STATE SECTOR	Northern	Delhi	PPCL	FALSE	NATURAL GAS	250	18-Nov-24	5-Dec-24	Mark VI upgradation
700	RAJPURA TPP	1	T	IPP SECTOR	Northern	Punjab	NPL	FALSE	COAL	700	20-Nov-24	10-Dec-24	AOH
660	TALWANDI SABO TPP	2	T	IPP SECTOR	Northern	Punjab	TSPL	FALSE	COAL	660	1-Dec-24	25-Dec-24	COH
220	RAJASTHAN A.P.S.	4	N	CENTRAL SECTOR	Northern	Rajasthan	NPCIL	FALSE	NUCLEAR	220	1-Nov-24	10-Dec-24	Binennial Shutdown
105	HARDUAGANJ TPS	7	T	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL	105	20-Nov-24	24-Dec-24	COH
500	ANPARA TPS	7	T	STATE SECTOR	Northern	Uttar Pradesh	UPRVUNL	FALSE	COAL-P	500	10-Nov-24	9-Dec-24	AOH
660	PRAYAGRAJ TPP	2	T	IPP SECTOR	Northern	Uttar Pradesh	PPGCL (Jaypee)	FALSE	COAL	660	20-Nov-24	20-Dec-24	AOH
660	LALITPUR TPS	1	T	IPP SECTOR	Northern	Uttar Pradesh	LPGCL	FALSE	COAL	660	1-Dec-24	11-Dec-24	Boiler License Renewal
600	ANPARA C TPS	2	T	IPP SECTOR	Northern	Uttar Pradesh	LAPPL	FALSE	COAL-P	600	11-Nov-24	1-Dec-24	AOH
200	SINGRAULI STPS	2	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL-P	200	10-Nov-24	9-Dec-24	AOH
500	RIHAND STPS	1	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL-P	500	15-Nov-24	19-Dec-24	Annual Overhauling
210	UNCHAHAR TPS	3	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL	210	5-Nov-24	9-Dec-24	AOH
660	MEJA STPP	2	T	CENTRAL SECTOR	Northern	Uttar Pradesh	MUNPL	FALSE	COAL	660	20-Oct-24	18-Dec-24	COH
110	TANDA TPS	4	T	CENTRAL SECTOR	Northern	Uttar Pradesh	NTPC Ltd.	FALSE	COAL	110	11-Nov-24	10-Dec-24	AOH
300	ROSA TPP Ph-I	1	T	IPP SECTOR	Northern	Uttar Pradesh	RPSCL	FALSE	COAL	300	15-Nov-24	6-Dec-24	Boiler Overhauling
45	MAQSOODPUR TPS	2	T	IPP SECTOR	Northern	Uttar Pradesh	BEPL	FALSE	COAL	45	15-Nov-24	30-Dec-24	Boiler Overhauling
135	JALIPA KAPURDI TPP	1	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	1-Nov-24	12-Nov-24	Boiler Inspection
135	JALIPA KAPURDI TPP	4	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	23-Nov-24	30-Nov-24	Boiler License Renewal
110	RAMGARH CCPP	5	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	NATURAL GAS	110	1-Aug-24	15-Sep-24	Major Inspection

Annexure-A.IV

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

सेवा में / To,

1. COO, CTUIL, Floors No. 5-10, Tower 1, Plot No. 16, IRCON International Tower, Institutional Area, Sector 32, Gurugram (Haryana)-122001
2. Managing Director, HPPTCL, Himfed Bhawan, Panjari, Shimla (HP)-171005
3. General Manager (Electrical), HPPCL, Himfed Bhawan, Panjari, Shimla(HP)-171005
4. Addl. CEO, RECPDCL, D Block, Plot No. 1-4, Sector-29, Gurugram-122 001
5. VP (Head of Plant KW & Baspa), JSW Hydro Energy Limited, Sholtu Colony, Kinnaur (HP)-172104

विषय/Subject: Minutes of the meeting for deliberation on transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh

Sir/Madam,

Please find enclosed the Minutes of Meeting held on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh.

भवदीय / Yours faithfully

(नितिन देसवाल /Nitin Deswal)
उप निदेशक / Deputy Director

Copy to:

1. SA to Member (Power Systems), CEA
2. Member Secretary (NRPC)

Minutes of Meeting held on 30.01.2025, for deliberation on the transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) in Himachal Pradesh

List of participants is enclosed as **Annexure-I.**

Background:

The transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)" is currently under bidding. The broad scope of the transmission scheme is given below:

- Establishment of 2x315 MVA 400/220 kV GIS Pooling Station at Jhangi
- 400 kV Jhangi PS – Wangtoo (Quad) D/c line
- LILO of one circuit of Jhangi PS – Wangtoo (HPPTCL) 400 kV D/c (Quad) line at generation switchyard of Shongtong HEP
- Wangtoo (HPPTCL) – Panchkula (PG) 400 kV D/c line

The above transmission scheme in under bidding with implementation timeframe of 30 months.

HPPTCL vide letter dated 16.01.2024 informed that HPPCL has intimated scheduled commissioning of Shongtong HEP in November 2026 and transmission scheme (under TBCB) for evacuation of power from Shongtong HEP has not yet been awarded for execution. As only 22 months are left for the proposed commissioning of Shongtong HEP, HPPTCL had proposed following interim arrangement for evacuation of power from Shongtong HEP:

- LILO of one circuit of Baspa-II – Karcham Wangtoo 400 kV line (Triple snowbird) at Shongtong HEP

Further, HPPTCL mentioned that as there is limited corridor in the narrow valley, the LILO portion may be constructed on Quad configuration under ISTS and the same would become part of the final transmission scheme.

Deliberations held in the meeting:

1. Chief Engineer, CEA stated that the similar interim arrangement was earlier agreed in a meeting held on 03.01.2020. He opined that modalities and requirement of proposed interim arrangement could be ascertained after getting the firm commission timeframe of the Shongtong HEP and timeframe of transmission scheme that is under bidding.

2. BPC (RECPDCL) informed that the Bid Evacuation Committee (BEC) had decided to go for re-bidding of the transmission scheme "Transmission system for evacuation of power from Shongtong Karcham HEP (450 MW) and Tidong HEP (150 MW)". However, final view on the same is yet to be taken.

3. Regarding the commissioning timeframe of the Shongtong HEP, HPPCL informed that the works are under full swing and they are trying best to achieve the commissioning of hydro project by November, 2026.

4. JSW raised the issue of under rated XLPE cable (630 sqmm) at Karcham Wangtoo end of Baspa-II – Kancham Wangtoo 400 kV D/c line which limits the capacity of this Triple snowbird line. Upon query regarding the change of under rated cable, JSW stated that the cable delivery would take at least couple of years and long shutdown would also be required for the same. Further, JSW expressed concerns about congestion in the existing corridor due to the interim arrangement and opined for realignment of SPS setting in the complex.

5. HPPTCL stated that the interim arrangement has been proposed as HPPCL is consistently perusing for the timeframe of commissioning of Shongtong HEP by November 2026. HPPTCL added that due to delay in associated transmission scheme, power from Tidong HEP could be evacuated through the intra-state network; however, same would not be possible for Shongtong HEP. The interim arrangement could be established under ISTS and Shongtong HEP would shutdown one unit in case of outage in one ckt of Baspa-II – Karcham Wangtoo 400 kV D/c line. Further, the SPS scheme for the entire complex should be revised considering Shongtong HEP. HPPTCL highlighted the issue of bottlenecks in the existing system such as under rated cable, under rated bay equipments etc. that limits the capacity of the corridor and suggested for measures for removal of those bottlenecks.

6. CTUIL submitted the following observations on proposal:
   - From the load flow studies, it is envisaged that considering Shongtong generation with interim arrangement (LILO of one ckt of Baspa-II – Karcham Wangtoo at Shongtong HEP), loadings are in order; however, loading of 400 kV Nathpa Jhakri – Gumma – Panchkula D/c line (Triple snowbird) under N-1 contingency is about 950 MW.
   - Considering huge quantum of hydro generation in above complex after additional generation of Shongtong HEP (450 MW) and Tidong HEP (150 MW), it may be prudent to plan additional corridor beyond Wangtoo (Wangtoo - Panchukula) to maintain system reliability & security. Also, SPS requirement and setting in above complex with proposed interim arrangement may be reviewed.
   - From the studies considering the interim arrangement, in the contingency of 400 kV Baspa - Shongtong circuit, loading on 400 kV Baspa – Karcham Wangtoo circuit would be about 825 MW (considering 10% overloading in peak hydro season). Therefore, due to the under rated cable (~700 MW capacity) in existing 400 kV Baspa - K Wangtoo D/c line section, SPS arrangement on Baspa-Shongtong generation complex would also be required with above interim arrangement at the event of contingency. Also, JPTL may assess the possibility to upgrade the power rating of above cables.

7. NRLDC stated the following:
   - In case Shongtong and Tidong generation is to be evacuated before commissioning of 400kV Wangtoo – Panchkula D/c line, switchgear replacement for Jhakri – Panchkula section and Rampur – Nallagarh section may be carried out as it may lead to SPS requirement under N-1 contingency.
   - Modification of SPS under different contingencies needs to be discussed with all stakeholders at OCC/NRPC level after revised simulation studies and also depending on switchgear upgradation work at POWERGRID/Hydro stations.
   - Shongtong HEP should confirm whether they will be able to receive SPS signal from Nathpa Jhakri/Rampur/Gumma and trip their units in case of N-1-1 contingency of lines,

as the comprehensive SPS logic of the whole complex would require tripping of Shongtong generation.

- For replacement of terminal equipment, prolonged shutdown may be required. Shutdown requirement for terminal equipment replacement also to be discussed beforehand to take judicious call as most substations in the complex are GIS substations.

8. After further deliberations, following was agreed:
   (i) HPPTCL is requested to take the matter in the coming meeting of NRPC for consultation with all the stakeholders.
   (ii) Decision on the interim arrangement would be taken based on the timeline of commissioning of the planned transmission scheme and the timeline of commissioning of Shongtong Karcham HEP.

* * *

Annexure

List of Participants

- **CEA**
    1. Shri Ishan Sharan - Chief Engineer
    2. Smt. Kavita Jha - Director
    3. Shri Nitin Deswal - Deputy Director
    4. Ms. Komal Dupare - Deputy Director

- **CTUIL**
    1. Shri Sandeep Kumawat – DGM

- **Grid India / NRLDC**
    1. Shri Gaurav Malviye - Manager

- **RECPDCL**
    1. Shri Saroj Kumar - General Manager
    2. Shri Anil Kumar Perala - Chief Manager (Tech.)
    3. Shri Ritam Biswas - Asst.Manager (Engg)

- **HPPTCL**
    1. Shri Rajiv Sood - MD
    2. Shri Manoj Kumar - GM (C&D)
    3. Shri Harmanjeet Singh - AE (Planning)

- **HPPCL**
    1. Shri Vimal Negi - GM (Electrical)
    2. Shri Aditya Thakur - Sr. Manager

- **M/s JSW**
    1. Shri Kaushik Maulik - VP (Head of Plant KW & Baspa)
    2. Shri P K Jha - GM (Electrical & Transmission)
    3. Shri Vikas Gupta - GM (Head Operation Baspa)

Thermal Generators

Annexure-A.V

S. No.	Name of Plant	Unit	Installed Capacity	MVA Rating	Make of Units	COD	GT Details			Mode of Fuel Transport (Pit Head/Non 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			Revised Simulation Models		
							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/yyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Whether Revised Models Submitted?	Remarks	
1																																
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9																																
10																																

Hydro Generators

S. No.	Name of Plant	Unit	Installed Capacity	MVA Rating	Make of Units	COD	GT Details			Type (Pondage/RoR etc.)	Name of Utility	Sector	Control Area	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			Revised Simulation Models		
							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	Whether Revised Models Submitted?	Remarks	
1	Mahi Power House-I	UNIT-I	25 MW	27.778 MVA	BHEL, Bhopal	22/01/1986	11kV/132kV	31.5 MVA	3/5	RoR	RVUN	Power/ Energy																			
2	Mahi Power House-I	UNIT-II	25 MW	27.778 MVA	BHEL, Bhopal	06/02/1986	11kV/132kV	31.5 MVA	3/5	RoR	RVUN	Power/ Energy																			

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

S. No.	Name of Plant	Unit	Installed Capacity	MVA Rating	Make of Units	COD	GT Details			Type	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			Revised Simulation Models		
							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/yyy)	Whether due?	Tentative Schedule date	Last tested on (dd/mm/yyyy)	Whether due?	Tentative Schedule date	Whether Revised Models Submitted?	Remarks	

Gas Based Generators

S. No.	Name of Plant	Unit	Installed Capacity	MVA Rating	Make of Units	COD	GT Details			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			Revised Simulation Models	
							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	Whether Revised Models Submitted?	Remarks

Renewable Energy Plants

S. No.	Name of Plant	Pooling Station Name	Installed Capacity	Type (Solar/Wind)	COD	Owner	Sector	Control Area	Inverter/ WTG Make	Inverter/ WTG Model	PPC Make	Real and Reactive Power Capability for Generator			Power Plant Controller Function Test			Frequency Response Test			Active Power Set Point change test			Reactive Power (Voltage / Power Factor / Q) Set Point change test			Revised Simulation Models		
												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	Whether Revised Models Submitted?	Remarks	

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.			Revised Simulation Models		
				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	Whether Revised Models Submitted?	Remarks	
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			

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.			Revised Simulation Models	
						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	Whether Revised Models Submitted?	Remarks
1	Kurukshetra	TCR	500	POWERGRID	GE Vernova T&D	NA	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		

FSCs/TCSCs

S. No	End 1	End 2	Line No.	Compensator Location	Make	Fixed Compensation	Variable Compensation Positive	Variable Compensation Negative	Agency	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.			Revised Simulation Models	
										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	Whether Revised Models Submitted?	Remarks

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.			Revised Simulation Models	
							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	Whether Revised Models Submitted?	Remarks
1																	
2																	

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

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

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

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

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

ग्रिड-इंडिया
GRID-INDIA

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
राष्ट्रीय भार प्रेषण केन्द्र / National Load Despatch Centre

आज़ादी का अमृत महोत्सव

कार्यालय : बी-9, प्रथम एवं द्वितीय तल, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016
Office : 1st and 2nd Floor, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016
CIN : U40105DL2009GOI188682, Website : www.grid-india.in, E-mail : gridindiacc@grid-india.in, Tel.: 011- 42785855

संदर्भ: NLDC/SO/RE/Intra-state/ दिनांक: 3rd Jan 2025

To,

Head of State Transmission Utilities (As per Distribution List)
Head of State Load Despatch Centres (Through RLDCs)

Sub: Compliance verification and monitoring of intra-state renewable plants – Reg.

Dear Sir,

The Government of India has set an ambitious target of integrating 500 GW of non-fossil fuel capacity by the year 2030. The solar and wind generation resources are expected to constitute a majority (~400 GW) of this non-fossil installed capacity. In line with this target, the generation capacity addition of solar and wind generation in the Indian power system is being facilitated by SLDC/STU at the intra-state and RLDC/CTUIL at the inter-state level. This rapid integration may require the processing of a large number of first-time charging applications in a short time.

To facilitate this transition, the Central Electricity Authority (CEA) has specified the necessary technical requirements to be complied with by the RE plants in its "Technical Standards for Connectivity to the Grid" regulations. The regulations are available at: https://cea.nic.in/regulations-category/connectivity-to-the-grid/?lang=en. Prior to the interconnection of any new RE plant to the grid, it is crucial to verify the plant's compliance against these technical requirements so as to ensure the desired performance during the operation phase. For the RE plants getting connected to the inter-state transmission system (ISTS), this compliance verification is being carried out by Central Transmission Utility of India Ltd. (CTUIL) and Grid-India (RLDCs/NLDC). Comprehensive procedure for this purpose has already been developed and implemented by Grid-India and CTUIL, thereby ensuring systematic integration of RE into the grid while adhering to the technical and regulatory standards.

We are sure that similar procedures would be in place for grant of connectivity and approval of first time energization of new VRE plants at intra-state level. The procedure developed by Grid-India in consultation with all stakeholders for inter-state RE integration can be accessed through the following link: https://posoco.in/wp-content/uploads/2023/09/Final-draft-NLDC-FTEI-Procedure-submitted-to-CERC-for-kind-

approval.pdf. The broad checklist is also enclosed at Annexure-I for reference. It is suggested that the procedure may be referred to and suitably considered while revising and updating the prevailing procedure at STU/SLDC to align it with CEA Technical Standards for Connectivity to the Grid and CERC Indian Electricity Grid Code 2023.

Post interconnection with the grid, the performance of the plant vis-à-vis the technical standards and grid code needs to be monitored particularly with respect to fault ride-through, reactive power support, power quality, protection coordination and controller settings. Any grid event involving VRE plants needs to be carefully studied by STU/SLDC and operational feedback shall be provided to the plant owners to align the plant performance as per grid requirements.

Adopting a proactive and uniform approach for compliance verification and performance monitoring of Variable Renewable Energy resources at the intrastate as well as interstate level will significantly enhance the reliability and sustainability of the Indian power system. Cooperation of all stakeholders is therefore sought in this regard.

सधन्यवाद,

भवदीय,

(राजीव पोरवाल)
निदेशक (प्रणाली प्रचालन)

Copy for kind information to:

1. Member (Power System), CEA
2. Member (GO&D), CEA
3. Member (Planning), CEA
4. Member Secretary, NRPC / WRPC / SRPC / ERPC / NERPC
5. Chief Operating Officer, CTUIL
6. Chairman and Managing Director, Grid-India
7. Chairperson, CEA
8. Secretary, CERC
9. Secretary, Ministry of Power
10. Secretary, Ministry of New and Renewable Energy

Annexure-I: Checklist for Compliance Verification of Solar and Wind Plants

S. No.	Description	Remarks
1	General Details	General details such as connectivity quantum (MW), connectivity agreement, IBR make/model. registration details etc.
2	Technical Details	Technical details such as capability curve, SLD, equipment (IBR/PPC, IDT etc.) technical datasheet etc.
3	Certification Details	Details such as: a) Type certificate of IBR/SVG/other equipment etc. b) Evaluation report of IBR/SVG/other equipment etc. c) Statement of Compliance of IBR/SVG/other equipment etc. d) Other reports/certificates as per requirement
4	IBR Single Unit - Benchmarked Simulation Model and Report	a) Benchmarked RMS and EMT model of single IBR unit b) Benchmarked simulation report of single IBR unit covering all the technical requirements specified in CEA Connectivity Standards. Specific tests are specified in Grid-India's FTE&I procedure.
5	Renewable Plant Mathmatical Models along with compliance report	a) Aggregated and detailed RMS model of RE plant b) Aggregated EMT model of RE plant c) Power quality model of RE plant d) Simulation report of the RE plant covering all the technical requirements specified in CEA Connectivity Standards. Specific tests are specified in Grid-India's FTE&I procedure.
6	Others (Required at the time of First Time Charging Only)	Other details such as installation of PMU, DR/EL, protection and control settings etc.

NLDC FTE&I Procedure Link:

https://posoco.in/wp-content/uploads/2023/09/Final-draft-NLDC-FTEI-Procedure-submitted-to-CERC-for-kind-approval.pdf

Distribution List:

Head of State Load Despatch Centre

Sl No	SLDC	On Mail Through
1	SLDC of Punjab	Northern Regional Load Despatch Centre
2	SLDC of Haryana	
3	SLDC of Rajasthan	
4	SLDC of Delhi	
5	SLDC of Uttar Pradesh	
6	SLDC of Uttarakhand	
7	SLDC of Himachal Pradesh	
8	SLDC of Jammu & Kashmir and Ladakh	
9	SLDC of West Bengal	Eastern Regional Load Despatch Centre
10	SLDC of Bihar	
11	SLDC of Odisha	
12	SLDC of Jharkhand	
13	SLDC of DVC	
14	SLDC of Sikkim	
15	SLDC of Maharashtra	Western Region Load Despatch Centre
16	SLDC of Gujarat	
17	SLDC of Madhya Pradesh	
18	SLDC of Chhattisgarh	
19	SLDC of DD and DNH	
20	SLDC of Goa	
21	SLDC of Andhra Pradesh	Southern Region Load Despatch Centre
22	SLDC of Telangana	
23	SLDC of Tamilnadu	
24	SLDC of Karnataka	
25	SLDC of Kerala	
26	SLDC of Pondicherry	
27	SLDC of Assam	North Eastern Region Load Despatch Centre
28	SLDC of Meghalaya	
29	SLDC of Tripura	
30	SLDC of Manipur	
31	SLDC of Mizoram	
32	SLDC of Nagaland	
33	SLDC of Arunachal Pradesh	

Head of State Transmission Utility

Sl No	STU	On Mail Through
1	Punjab State Transmission Corporation Limited	Northern Regional Load Despatch Centre
2	Haryana Vidyut Prasaran Nigam Limited	
3	Rajasthan Rajya Vidyut Prasaran Nigam Limited	
4	Delhi Transco Limited	
5	Uttar Pradesh Power Transmission Corporation Limited	
6	Power Transmission Corporation of Uttarakhand Limited	
7	Himachal Pradesh Power Transmission Corporation Limited	
8	Jammu and Kashmir Power Transmission Corporation Limited	
9	West Bengal State Electricity Transmission Company	Eastern Regional Load Despatch Centre
10	Bihar State Power Holding Company Limited	
11	Odisha Power Transmission Corporation Limited	
12	Jharkhand Urja Sancharan Nigam Limited	
13	Damodar Valley Corporation	
14	Power Department, Govt. of Sikkim	
15	Maharashtra State Electricity Transmission Company	Western Region Load Despatch Centre
16	Gujarat Energy Transmission Corporation	
17	Madhya Pradesh Power Transmission Co. Ltd	
18	Chhattisgarh State Power Transmission Company Limited	
19	DNH and DD Power Corporation Ltd	
20	Department of Electricity, Govt. of Goa	
21	Andhra Pradesh Transmission Corporation limited	Southern Region Load Despatch Centre
22	Transmission Corporation of Telangana Limited	
23	Tamilnadu Transmission Corporation Ltd	
24	Karnataka Power Transmission Corporation Limited	
25	Kerala State Electricity Board Limited	
26	Puducherry Power Corporation Limited	
27	Assam Electricity Grid Corporation Limited	North Eastern Region Load Despatch Centre
28	Meghalaya Power Transmission Corporation Limited	
29	Tripura State Electricity Corporation Limited	
30	Manipur State Power Company Ltd.	
31	Power & Electricity Department, Mizoram	
32	Department of Power Nagaland	
33	Department of Power – Government of Arunachal Pradesh	

National Load Despatch Centre
Import Capability of Punjab for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	10600	500	10100	5497	4603		https://www.punjabsldc.org/ATC_TTC.aspx
Limiting Constraints		N-1 contigency of 400/220KV ICT at Rajpura, Ludhiana, Jalandhar, Muktsar Loading close to N-1 contingency limits of 400/220kV Patran, Malerkotla and Patiala ICTs 220 kV underlying network at Jalandhar, Ludhiana and Amritsar						

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

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	17300	600	16700	10165	6535		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints		N-1 contingency of 400/220kV Obra, Allahabad(PG), Gorakhpur (UP), Agra(PG), Lucknow (PG) ICTs						

National Load Despatch Centre
Import Capability of Haryana for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	10300	300	10000	5418	4582		https://hvpn.org.in/#/atcttc
Limiting Constraints	N-1 contingency of 400/220kV ICT at Deepalpur, Hisar, Kabulpur and Panipat(BBMB)							

National Load Despatch Centre
Import Capability of Rajasthan for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	7600	600	7000	5755	1245		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Heerapura, Jodhpur, Bikaner, Ajmer, Merta, Hindaun and Ratangarh ICTs. Low voltage issues at Hindaun, Alwar, Bhinmal, Bikaner etc.						

National Load Despatch Centre
Import Capability of Delhi for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	7300	300	7000	4810	2190		https://www.delhisldc.org/resources/atcttcreport.pdf
Limiting Constraints	N-1 contingency of 400/220kV Mundka, HarshVihar and Bawana (bus-split) ICTs.							

National Load Despatch Centre
Import Capability of Uttarakhand for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	1810	100	1710	1402	308		https://uksldc.in/ttc-atc
Limiting Constraints		N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Roorkee-Roorkee and 220kV CBGanj-Pantnagar lines						

National Load Despatch Centre
Import Capability of HP for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	2386	100	2286	1181	1105		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		Overloading of 2*100MVA Giri transformers						

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

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-09 & 14-24	3500	100	3400	1977	1423		
	09-14	2800	100	2700	1977	723		
Limiting Constraints		N-1 contigency of 400/220KV ICTs at Amargarh 220 kV underlying network at Amargarh, Wagoora Low voltages in J&K control area due to high MVAR drawl						

National Load Despatch Centre
Import Capability of Chandigarh for March 2025

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

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2025 to 31st March 2025	00-24	400	20	380	342	38		
Limiting Constraints		N-1 contigency of 220kV Nallagarh-Kishengarh						

Annexure-B.IV

Grid Event summary for January 2025

S.No.	Category of Grid Incident/ Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Compliance of Protection Protocol/Standard		
	(GI-1 to GD-V)				Date	Time		Generation Loss(MW)	Load Loss (MW)		Flash Report Submission (Y/N)	DR/EL Submission (Y/N)	Detail Tripping Report Submission (Y/N)
1	GD-1	(i)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 6 (ii)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 3 (iii)210 MW Guru Gobind Singh TPS (Ropar) - UNIT 4	Punjab	PSTCL	6-Jan-25	09:32	i)220/132 KV Ropar (GGSTP) has double main bus system in 220KV and 132KV side. ii)During antecedent condition, 210 MW Guru Gobind Singh TPS (Ropar) - UNIT 3, Unit 4 and Unit 6 generating 180MW, 167MW and 176MW respectively. iii)As reported at 09:32 hrs, during the synchronization of the 210 MW Unit-5 at Guru Gobind Singh Thermal Power Station (Ropar), the R- phase limb of the 220 kV generator transformer circuit breaker for Unit-5 ruptured. This incident triggered the tripping of Units 3, 4, and 6, each with a capacity of 210 MW. Consequently, a blackout occurred at the 220 kV Guru Gobind Singh TPS substation. (Details of protection operation yet to be received). iv)As observed from PMU at Abdullapur (PG) S/s, R-N phase to earth fault was observed. Fault clearance time of 120 msec can be seen in the PMU. v)During this event, a total generation loss of 521MW was observed in Punjab control area . (As per SCADA). vi)As per SCADA, 225MW of change in demand is observed in Punjab control area.	225	521	120	Y(d)	N	N
2	GI-2	(i) 400 KV Fatehgarh_II(PG)-Fatehgarh Pooling (FBTL) (FBTL) Ckt-1	Rajasthan	FBTL	8-Jan-25	13:38	i)400KV Fatehgarh (Adani) pooling station has one and half breaker scheme with 400KV Fatehgarh (Adani) – Fatehgarh II Ckt 1 & 2, 400KV Fatehgarh (Adani) – Acme, 400KV Fatehgarh (Adani) – Fatehgarh PSS Ckt. 1 & 2. ii)As reported, at 13:38hrs, 400 KV Fatehgarh_II(PG)-Fatehgarh Pooling (FBTL) (FBTL) Ckt-1 tripped on R-Y phase to phase fault with fault distance of 45.8Km and fault current of 8.1KA from Fatehgarh (Adani) end. iii)As per PMU at Fatehgarh, R-Y phase to phase fault (voltage dipped upto 0.514 p.u.) is observed with fault clearing time of 80ms. After the fault clearance voltage increased upto .99 p.u. iv)As per PMU at Bassi (PG), a sharp drop in frequency is observed from 49.97 Hz to 49.83 Hz and frequency recovered to 49.99 Hz within 1 min. v)As per PMU, solar generation loss of approx., 719MW, 30MW, 218MW and 98MW are observed respectively at ASHPL (IP), AHEJ3 (IP), RSUPL (IP) and CSPJP (IP). vi)As per SCADA, dip in NR total solar generation of approx. 1450 MW is observed with change in Rajasthan solar generation of approx. 177 MW.	1450	0	80	Y	Y(d)	N (Partial detail received)
3	GI-2	(i)220 kV Akal – Bhainsara Ckt-1 & 2 (ii)400/220 KV 500 MVA ICT 1, 2 & 4 AT AKAL(RS) (iii)400/220 KV 315 MVA ICT 3 AT AKAL(RS) (iv)220 kV Akal(RS) BUS-1 & 2 (v)220 KV AKAL-GIRAL (vi)220KV AKAL-BARMER (vii)220 AKAL- AMARSAGAR (viii)220 AKAL- MADA (ix)220 AKAL- AKAL(SUZLON) ckt-1 & 2 (x)220 AKAL- RAJGARH (xi)220 AKAL- JAJIYA (xii)220 AKAL- BHU ckt-1 & 2 (xiii)220 AKAL- DANGRI ckt-1 & 2 (xiv)220 AKAL- MOOLANA (xv)220 AKAL- LALA	Rajasthan	RVPNL	9-Jan-25	23:35	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 23:35 hrs, Y-phase jumper of 220kV bus-1 of 220kV Akal-Bhensara Ckt-1 snapped which created bus fault on both 220kV buses at Akal(RS). iv)As per PMU at Bhadla(PG), Y-N phase to earth fault with delayed fault clearance time of 720 msec is observed. v)Bus bar protection is not in service at 220kV side of Akal S/s. Therefore, fault cleared with the operation of back up protection i.e., 400/220kV ICTs at Akal. All four ICTs tripped on O/C E/F protection operation. vi)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 220kV buses became dead at Akal(RS) S/s. vii)During this event, dip in Rajasthan wind generation of approx. 523 MW is observed out of which approx. 232 MW recovered within 6 minutes. (As per SCADA). viii)As per SCADA, about 171MW demand change is observed in Rajasthan control area.	523	171	720	N (Partial detail received)	N (Partial detail received)	N (Partial detail received)
4	GI-2	(i)400/220 kV 250 MVA ICT 1 at Heerapura(RS) (ii)400/220 kV 250 MVA ICT 3 at Heerapura(RS)	Rajasthan	RVPNL	10-Jan-25	13:35	i)400/220KV Heerapura sub-station has one and half breaker scheme in the 400KV side and Double main & transfer scheme in the 220 KV side. ii)As reported at 13:35hrs, a kite thread fell on the 220KV side of the ICTs. As a result Bus- Bar protection operated on the 220KV side led to tripping 400/220 kV 250 MVA ICT 1 and 3 at Heerapura(RS). (exact reason and nature of protection operated yet to be shared). iii)As per PMU at Heerapura (RS), R-N fault (delayed fault clearance in R-ph) is observed with delayed fault clearing time of 320ms. iv)As per SCADA, change in demand of approx. 320MW in Rajasthan control area is observed.	0	320	320	N	N	N
5	GD-1	(i)400/220 KV 500 MVA ICT 1 AT AKAL(RS) (ii)400/220 KV 500 MVA ICT 2 AT AKAL(RS) (iii)400/220 KV 500 MVA ICT 3 AT AKAL(RS) (iv)400/220 KV 500 MVA ICT 4 AT AKAL(RS) (v)400/220 KV 500 MVA ICT 2 AT RAMGARH(RS) (vi)400 KV AKAL-JODHPUR (RS) CKT-1 (vii)400 KV AKAL-BARMER (RS) CKT-1 (viii)400 KV AKAL-JAISALMER (RS) CKT-1 (ix)400 KV AKAL-RAMGARH (RS) CKT-1 (x)400 KV AKAL-RAMGARH (RS) CKT-2 (xi)400 KV AKAL-KANKANI (RS) CKT-1	Rajasthan	RVPNL	12-Jan-25	06:31	i)400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main and transfer bus scheme at 220kV level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and 400/220 kV 315 MVA ICT-3 & 500 MVA ICT-4 were connected to 400kV bus-2. iii)As reported, at 06:31 hrs, B-N fault occurred on 400 KV Akal-Barmer (RS) Ckt, fault distance was 99.62KM and fault current was 2.42 KA from Barmer end. iv)However, as observed from PMU at Bhadla (PG) S/s, B-N fault was observed and subsequently it converted to Y-B-N double phase to earth fault. Delayed fault clearance time of 2120 msec can be seen in the PMU. v)On this fault, line tripped from Barmer end but breaker of Akal end got stuck due to issue in SF6 gas pressure. Due to non opening of breaker of Akal end, LBB protection would have operated. vi)However, all the 400kV lines and 400/220kV ICTs at Akal tripped during the event. Exact details of protection operation not received yet from SLDC-Rajasthan. vii)Due to tripping of all four ICTs at Akal(RS), evacuation path lost for all the wind power plants connected at 220kV bus-1 & bus-2 at Akal(RS). On this, both 400 and 220kV buses became dead at Akal(RS) S/s. viii)During this event, a dip in Rajasthan wind generation of approx. 340 MW is observed which recovered completely within 5 minutes. (As per SCADA). ix)As per SCADA, 206MW of change in demand is observed in Rajasthan control area.	340	206	2120	N	N (Partial details received)	N (Partial details received)
6	GD-1	1) 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt	Rajasthan	AHEJ4L, AREPRL	13-Jan-25	14:04	i)Generation of 220 KV AHEJ4L PSS 2 (ASPS2) (IP) station evacuates through 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt. During antecedent condition, 220 KV AHEJ4L PSS 2 (ASPS2) (IP) was generating approx. 280 MW (as per PMU). ii)As reported, at 14:04hrs, 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt tripped on R-Y phase to phase fault with fault distance of 14km and fault current of 6.7kA from Adani Fatehgarh Solar Park end. During inspection, broken insulator was found at 220 KV AHEJ4L PSS 2 (ASPS2) (IP) gantry. iii)Due to tripping of 220 KV AHEJ4L PSS 2 HB_FGRAH_FBTL (AHEJ4L)-Adani RenewPark_SL_FGARH_FBTL (AREPRL) (AHEJ4L) Ckt, 220 KV AHEJ4L PSS 2 (ASPS2) (IP) S/s lost its connectivity from grid and blackout occurred at 220 KV AHEJ4L PSS 2 (ASPS2) (IP) S/s. iv)As per PMU at 400kV Adani Fatehgarh(IP), R-Y phase to phase fault (voltage dipped upto 0.823 p.u.) is observed with fault clearing time of 120ms. v)As per PMU, solar generation loss of approx. 280 MW was observed at 220 KV AHEJ4L PSS 2 (ASPS2) (IP).	280	0	120	N	N	N
7	GD-1	1) 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt 2) 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt 3) 220/33 kV 100 MVA ICT 1 at Nokhra SL_BHD2 (NTPC) 4) 220/33 kV 100 MVA ICT 2 at Nokhra SL_BHD2 (NTPC) 5) 220/33 kV 100 MVA ICT 3 at Nokhra SL_BHD2 (NTPC)	Rajasthan	PGCIL, RSDCL, NTPC	15-Jan-25	13:13	i)Generation of 220kV Nokhra (IP) and 220kV RSDCL-4(IP) stations evacuate through 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt respectively. ii)During antecedent condition, 220kV Nokhra (IP) and 220kV RSDCL-4(IP) were generating approx. 295 MW and 178 MW respectively (as per PMU). iii)As reported, at 13:13hrs, 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt tripped on B-N phase to earth fault with fault distance of 1.3km and fault current of 23.4kA from Bhadla2(PG) end. During inspection it was found that jumper snapped out at tower location no. 8. iv)During the same time, 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt along with 220/33 kV 100 MVA ICT 1, 2 and 3 at Nokhra SL_BHD2 (NTPC) also tripped. Line tripped from Nokhra(NTPC) end only (exact reason of tripping and nature of protection operated yet to be shared). v)Due to tripping of 220 KV Nokhra SL_BHD2 (NTPC)-Bhadla_2 (PG) (NTPC_NOKHRA) Ckt and 220 KV Bhadla_2 (PG)-RSDCL(PSS4)_SL_BHD2_PG (RSDCL) Ckt , 220kV Nokhra (IP) and 220kV RSDCL-4(IP) S/s lost their connectivity from grid and blackout occurred at 220kV Nokhra (IP) and 220kV RSDCL-4(IP) S/s. vi)As per PMU at 220kV Nokhra(NTPC), B-N phase to earth fault (voltage dipped upto 0.269 p.u.) is observed with fault clearing time of 80ms. vii)As per PMU, solar generation loss of approx. 295 MW at Nokhra(IP) and 178 MW at RSDCL-4(IP) were observed.	473	0	80	N (Partial details received)	N (Partial details received)	N (Partial details received)
8	GD-1	i) 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 ii) 220 KV SAWAIMADHOPUR(RS)- Anta(NT) (PG) CKT-1	Rajasthan	NTPC, RVPNL &PGCIL	22-Jan-25	09:13	i)Generation of 220kV Anta station evacuate through 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1, 220 KV SAWAIMADHOPUR(RS)- Anta(NT) (PG) CKT-1, 220 KV ANTA(NT)-BHILWARA(RS) (PG) CKT-1 & 2, 220 KV LALSOTE(RS)-Anta(NT) (PG) CKT-1 and 220 KV RAPS_C(NP)-ANTA(NT) (PG) CKT-1 respectively. ii)During antecedent condition, GT-I, II & III, 220 KV ANTA(NT)-BHILWARA(RS) (PG) CKT-1 & 2, 220 KV RAPS_C(NP)-ANTA(NT) (PG) CKT-1 were under shutdown respectively (as per PMU). iii)As reported, at 09:13hrs, 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 tripped on B-N phase to earth fault with fault distance of 54.5km and fault current of 1.07kA from Anta end(Z2 Operated). During the inspection it was found that B-Phase CT of 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt-1 failed on Sakatpura end . iv)Again at 10:10 hrs, 220 KV SAWAIMADHOPUR(RS)- Anta(NT) (PG) CKT-1 which was carrying 52MW load tripped due to high voltage (details of tripping awaited). And this led to the blackout of 220KV Anta substation. v)As per PMU at 400KV Kota(PG), B-N phase to earth fault (voltage dipped upto 0.71 p.u.) is observed with fault clearing time of 120ms. vi)As per PMU, solar generation loss of approx. 38 MW at 09:13 hrs and 54 MW at 10:10 hrs occurred in Anta was observed.	54	0	120	N (Partial details received)	N (Partial details received)	N (Partial details received)
9	GD-1	i) 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1 ii) 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-2 iii) 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 iv) 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-2	Haryana	HVPNL & PGCIL	23-Jan-25	06:09	i)220/132/33KV HUKMAWALI S/stn sub-station has double main bus scheme in all voltage level. ii)During antecedent condition, 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1, 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-2, and 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 were carrying 27MW, 28MW and 19MW load respectively. iii)As reported at 06:09hrs, B-phase CT of 220 kV HUKMAWALI(HV)-CHORMAR(HV) CKT-1 exploded and thereby led to Bus bar protection operation. This resulted in tripping of all the elements connected to 220KV Bus bar. As a result, the Sub-station lost its connectivity to the Grid and Blackout occurred. iv)As per DR and EL of 220 KV Fatehabad(PG)-Hukmawali (HV) (HVPNL) Ckt-1 at 220KV Fatehabad, the line tripped due to Main-1, Zone-2 protection operation. The fault current in B phase was 6.8KA and Y phase was 7.4KA. v)As per PMU at 400 Fatehabad (PG), B-N fault converted to Y-B-N fault is observed with delayed fault clearing time of 400ms. vi)As per SCADA, no change in demand in Haryana control area is observed.	0	0	400	Y(d)	Y(d)	N
10	GI-1	i) 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt-1	Rajasthan	RVPNL & PGCIL	24-Jan-25	16:38	i)Generation of 220kV Tata Power Saurya Banderwala evacuate through 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt. ii)During antecedent condition, 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt was evacuating 126MW of load (as per PMU). iii)As reported, at 16:38hrs, 220 KV BTPSL_SL_BIK2_PG-Bikaner_2 (PBTSL) (BANDERWALA_TPSL) Ckt tripped on B-N phase to earth fault. (exact reason of tripping and nature of protection operated yet to be shared). Due to tripping of the evacuation path, the sub-station lost its connectivity from grid and blackout occurred at 220 kV Tata Power Saurya Banderwala S/S. iv)As per PMU at TPSB, B-N phase to earth fault (voltage dipped upto 0.02 p.u.) is observed with unsuccessful A/R operation is observed. v)As per PMU, solar generation loss of approx. 126MW of Generation loss had occurred in TPSB and 269 MW of change in NR Solar generation was observed.	269	0	1200	N (Partial details received)	N (Partial details received)	N (Partial details received)
11	GI-2	(i)400/220 kV 500 MVA ICT 1 at Jehta_Hardoi Road (UP) (ii)400/220 kV 500 MVA ICT 2 at Jehta_Hardoi Road (UP) (iii)220/132kV 200 MVA ICT-1 at Jehta(UP) (iv)220/132kV 200 MVA ICT-2 at Jehta(UP) (v)220kV Jehta-Hardoi road (UP) ckt-1 (vi)220kV Jehta-Hardoi road (UP) ckt-2 (vii)220kV Jehta-Mallawan (UP) ckt-1 (viii)220kV Jehta-Mallawan (UP) ckt-2 (ix)220kV Bus coupler at Jehta(UP)	Uttar Pradesh	UPPTCL	29-Jan-25	12:09	i)400/220/132KV Jehta S/stn sub-station has double main bus scheme in all voltage level. ii)During antecedent condition, 400/220 kV 500 MVA ICT-1 & ICT-2 were connected to 400kV bus-1 and bus-2 respectively carrying 107MW of load each. 220/132KV ICT-3 and ICT-4 were carrying 35MW load each. iii)As reported at 12:09 hrs, 400/220KV ICT -1 and ICT-2 tripped due to Bus Bar protection. This led to further tripping of 220/132KV ICT-3 and ICT-4 downstream along with tripping of both 220KV Bus-I and Bus-II. As a result, all the elements connected to 220KV Bus Bar tripped. iv)DR and EL submitted by SLDC for 400/220KV ICT-1 and 2, shows Bus Bar protection operation. However as per PMU no fault was observed. Reason of operation of bus bar protection need to be shared. v)As per SCADA, 252MW of change in demand is observed in Rajasthan control area.	0	252	NA	Y	Y	Y

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

Time Period: 1st January 2025 - 31st January 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		%	
1	ABC RENEWABLE_RJ01	1	0	0	0	1	0	1	0	100	1	0	100	DR, EL & Tripping report not submitted
2	AD HYDRO	1	1	100	0	0	0	0	0	0	0	0	0	Details received
3	AHEJ2L	1	0	0	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
4	AHEJ4L	2	0	0	2	0	100	2	0	100	2	0	100	
5	AMP Energy Green Private Limited	2	0	0	2	0	100	2	0	100	2	0	100	
6	ANTA-NT	5	1	20	4	0	80	4	0	80	4	0	80	
7	AREPRL	1	0	0	1	0	100	1	0	100	1	0	100	
8	AURAIYA-NT	2	0	0	2	0	100	2	0	100	1	0	50	
9	BAIRASUIL-NH	1	0	0	1	0	100	0	0	0	0	0	0	Details received
10	BANDERWALA_TPSL	1	0	0	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
11	BBMB	15	4	27	2	2	15	2	7	25	2	2	15	
12	CPCC1	41	10	24	27	0	66	0	8	0	0	0	0	Details received
13	CPCC2	31	0	0	17	12	89	12	2	41	12	0	39	DR, EL & Tripping report not submitted
14	CPCC3	34	19	56	7	16	39	16	1	48	10	0	29	
15	DADRI-NT	2	0	0	2	0	100	2	0	100	2	0	100	
16	FBTL	1	0	0	1	0	100	0	0	0	0	0	0	Details received
17	GRIAN ENERGY PRIVATE LIMITED	1	0	0	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
18	INDIGRID	1	0	0	1	0	100	1	0	100	1	0	100	
19	KARCHAM	1	0	0	1	0	100	1	0	100	1	0	100	
20	KISHENGANGA-NH	1	0	0	1	0	100	1	0	100	0	0	0	Details received
21	KOLDAM-NT	1	0	0	1	0	100	0	0	0	0	0	0	Details received
22	NJPC	1	0	0	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report not submitted
23	PARBATI-III-NH	1	0	0	1	0	100	1	0	100	1	0	100	

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

Time Period: 1st January 2025 - 31st January 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		%	
24	RAMPUR	1	1	**100**	0	0	**0**	0	0	**0**	0	0	**0**	Details received
25	RAPPA	14	0	**0**	14	0	**100**	14	0	**100**	14	0	**100**	
26	RAPPB	3	0	**0**	3	0	**100**	3	0	**100**	3	0	**100**	
27	RAPPC	1	0	**0**	0	0	**0**	0	0	**0**	1	0	**100**	
28	RENEW SURYA VIHAAN PRIVATE LIMITED	2	0	**0**	2	0	**100**	2	0	**0**	2	0	**100**	DR, EL & Tripping report not submitted
29	RENEW SURYARAVI (RSRPL)	1	0	**0**	1	0	**100**	1	0	**100**	1	0	**100**	
30	RSDCL	2	0	**0**	2	0	**100**	2	0	**100**	2	0	**100**	
31	SINGRAULI-NT	1	0	**0**	1	0	**100**	1	0	**100**	1	0	**100**	
32	SLDC-DV	5	0	**0**	3	0	**60**	0	0	**0**	0	0	**0**	Details received
33	SLDC-HP	6	1	**17**	1	0	**17**	0	5	**0**	0	0	**0**	Details received
34	SLDC-HR	9	0	**0**	1	3	**17**	3	3	**50**	3	0	**33**	
35	SLDC-JK	1	0	**0**	1	0	**100**	1	0	**100**	1	0	**100**	DR, EL & Tripping report not submitted
36	SLDC-PS	7	0	**0**	1	6	**100**	6	0	**86**	7	0	**100**	
37	SLDC-RS	107	6	**6**	51	42	**78**	42	5	**41**	36	0	**34**	
38	SLDC-UK	8	6	**75**	2	1	**29**	1	2	**17**	0	0	**0**	Details received
39	SLDC-UP	95	31	**33**	30	13	**37**	13	15	**16**	11	2	**12**	DR, EL & Tripping report not submitted
Total in NR Region		**411**	**80**	**19**	**190**	**96**	**60**	**141**	**48**	**39**	**126**	**4**	**31**	

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

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

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

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

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

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

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

Annexure-B.VII

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