सत्यमेव जयते

भारत सरकार

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

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 222वीं बैठक का कार्यवृत |

Subject: Minutes of the 222nd OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 222वीं बैठक दिनांक 14.08.2024 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

The 222nd meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 14.08.2024. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक:यथोपरि।

Signed by Dharmendra Kumar Meena
Date: 05-09-2024 10:17:39

(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

उ.क्षे.वि.स. के प्रचालन समन्वय उप-समिति के सभी सदस्य

Contents

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 222वीं बैठक का कार्यवृत्त

The 222nd OCC meeting of NRPC was held on 14.08.2024 through video conferencing.

खण्ड-क:उ.क्षे.वि.स. PART-A:NRPC

A.1. Confirmation of Minutes

Minutes of the 221st OCC meeting was issued on 08.08.2024. OCC confirmed the minutes of the meeting.

A.2. Status of action taken on decisions of 221st OCC meeting of NRPC

A.2.1. MS, NRPC conveyed that the agenda has been taken to track the status of action taken as per decision of last meeting. Accordingly, issues may be resolved at the earliest.

A.2.2. Concerned utilities submitted the status of action taken.

Decision of OCC Forum:

Concerned utilities submitted the status of action taken and the same has been complied as ***Annexure- A.0****.*

A.3. Review of Grid operations of July 2024

Anticipated vis-à-vis Actual Power Supply Position (Provisional) for July 2024

Reasons submitted by States for significant deviation of actual demand from anticipated figures during the month of July 2024 are as under:

- **Delhi**

In the month June-2024, demand was unexpected high and peak demand for June 2024 reached to 8656 MW so peak demand and energy consumption for July was revised to 8300 MW and 4500 MUs respectively. However, Peak demand and energy consumption was on lower side than expected due to good monsoon.

- **Himachal Pradesh**

The Anticipation in Energy Requirement in respect of Himachal Pradesh for the month of July, 2024 came on the higher side due to the consistent dry weather.

- **Haryana**

It is intimated that the deviation in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures was due to severe heat wave in northern region and increase in demand ranging from ~ 20% to 355% in the agricultural sector for the first half of the month as compared to last year data for the same period.

- **Punjab**

  It is intimated that actual energy requirement is more as compared to anticipated energy requirement because of higher temperature and deficit of rainfall in the month of July 2024 in the state of Punjab.

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

The maintenance programme of generating units and transmission lines for the month of September 2024 was deliberated in the meeting on 13.08.2024.

A.5. Anticipated Power Supply Position in Northern Region for September 2024

The updated anticipated Power Supply Position for September 2024 is as below:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	210	390	No Revision submitted
	Requirement	196	444	
	Surplus / Shortfall	14	-54	
	% Surplus / Shortfall	7.1%	-12.2%	
DELHI	Availability	4969	7100	13-Aug-24
	Requirement	3900	7100	
	Surplus / Shortfall	1069	0	
	% Surplus / Shortfall	27.4%	0.0%	
HARYANA	Availability	7430	12507	12-Aug-24
	Requirement	7263	13423	
	Surplus / Shortfall	167	-916	
	% Surplus / Shortfall	2.3%	-6.8%	
HIMACHAL	Availability	1279	1962	13-Aug-24

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
PRADESH	Requirement	1128	1830	
	Surplus / Shortfall	151	132	
	% Surplus / Shortfall	13.4%	7.2%	
J&K and LADAKH	Availability	1680	3060	No Revision submitted
	Requirement	1624	3485	
	Surplus / Shortfall	56	-425	
	% Surplus / Shortfall	3.4%	-12.2%	
PUNJAB	Availability	8300	14200	13-Aug-24
	Requirement	8600	15712	
	Surplus / Shortfall	-300	-1512	
	% Surplus / Shortfall	-3.5%	-9.6%	
RAJASTHAN	Availability	9180	18360	14-Aug-24
	Requirement	9200	17200	
	Surplus / Shortfall	-20	1160	
	% Surplus / Shortfall	-0.2%	6.7%	
UTTAR PRADESH	Availability	17100	31500	08-Aug-24
	Requirement	16800	31500	
	Surplus / Shortfall	300	0	
	% Surplus / Shortfall	1.8%	0.0%	
UTTARAKHAND	Availability	1371	2320	05-Aug-24
	Requirement	1398	2400	
	Surplus / Shortfall	-27	-80	
	% Surplus / Shortfall	-1.9%	-3.3%	
NORTHERN REGION	Availability	51519	84000	
	Requirement	50109	85500	
	Surplus / Shortfall	1410	-1500	
	% Surplus / Shortfall	2.8%	-1.8%	

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

A.6.1. The updated status of agenda items is enclosed at ***Annexure-A.I.***

A.6.2. In 222nd OCC meeting, SLDCs were requested again to coordinate with respective Transmission Utilities of states/UTs and submit details about the updated status of Down Stream network by State Utilities from ISTS Station (enclosed as ***Annexure-A-I.I***) before every OCC meeting.

A.7. NR Islanding scheme

A.7.1. In the meeting (222nd OCC), UPPTCL representative apprised that Unchahar-Lucknow Islanding scheme has been successfully implemented and same is visible at SCADA of UPSLDC also (except 03 Substation: Namely 132 kV S/s tripula,132 kV S/s bachhrawan and 132 kV S/s Hussainganj. The data of above 03 substation is not available at UPSLDC due to lack of OPGW. The work of laying OPGW cable is under progress and same shall take around 02 months' time.

A.7.2. With regard to Agra islanding scheme, UPPTCL representative apprised forum that procurement of UFR for Lalitpur Agra Islanding scheme is under process and management approval is expected by month end.

A.7.3. RRVPNL representative mentioned that logic for Jodhpur-Barmer-Rajwest islanding scheme is under implementation and DPR for implementation of Suratgarh islanding scheme is under finalization.

A.7.4. With regard to Patiala-Nabha Power Rajpura islanding scheme representative from Punjab SLDC informed that DPR for PSDF funding has been approved from their management and it has been submitted to PSDF Secretariat. In the meeting, Punjab SLDC informed that no reply has been received from PSDF Sectt. till date in this regard. MS, NRPC asked Punjab SLDC to explore the alternative mechanism for procurement of UFR as funding has been freezed till March'25 from PSDF Sectt..

A.7.5. HPSLDC representative apprised that proposed UFR scheme for both Kullu-Manali and Shimla-Solan Islanding scheme has been recommended by the Appraisal Committee of the State PSDF for approval of Hon'ble HPERC.

A.7.6. Further, with regard to Shimla-Solan Islanding scheme, issue b/w HPSEBL and M/s GE is unresolved. MS, NRPC asked to have a separate meeting with all stakeholders to resolve the issue.

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

A.8.1. In the meeting, NRPC representative apprised forum about the coal stock position of generating stations in northern region during current month (till 10th August 2024).

A.8.2. Average coal stock position of generating stations in northern region, having critical stock, during first nine days of August 2024 is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
KOTA TPS	1240	0.66	21	4.6
SURATGARH TPS	1500	0.62	21	4.7
TALWANDI SABO TPP	1980	0.55	21	3.7

A.9. Status of availability of ERS towers in Northern Region (Agenda by NRPC Sectt.)

A.9.1 In the meeting, EE(O) NRPC apprised forum updated inputs received from utilities are attached as **Annexure-A.II.**

A.9.2 MS, NRPC asked transmission utilities of NR that have not submitted the status of ERS set/towers available with them to submit the requisite information before next OCC meeting.

Decision of the OCC forum

- *Forum asked the transmission utilities of NR that have not submitted the status of ERS set/towers available with them to submit the requisite information before next OCC meeting.*

A.10. Updating outage Details by Generating Station/utilities (Agenda by CEA) (Agenda by CEA)

A.10.1 NRPC representative apprised forum that to enhance the monitoring of approved Planned Maintenance schedules, CEA has asked that information regarding actual maintenance availed against approved planned maintenance is to be updated on priority by respective RPCs regularly on monthly basis.

A.10.2 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.10.3 In this regard, list of Planned Maintenance schedules versus actual maintenance availed for the year 2024-25 for the month of July-2024 attached as Annexure-A.IV of agenda was shared with the relevant generating stations of NR and based on the inputs received from them the updated information is attached as **Annexure-A.III**.

A.11. Flexible Operation of Coal Based Thermal Power Plants (Agenda by CEA)

A.11.1. NRPC representative apprised forum that as per the CEA Gazette Notification dated January 30, 2023, coal-based thermal power generating units shall have flexible operation capability with a minimum power level 55%, along with specified ramp rates, January 2024. Additionally, a phased implementation plan for achieving a 40% minimum technical load (MTL) has been notified, with specific targets and timelines for compliance.

A.11.2. CEA vide letter dated 01.08.2024 (copy attached as Annexure-A.VI of agenda) has submitted a list of thermal generating station in northern region that have not met 55% Technical Minimum Load (TML) till date.

A.11.3. Punjab SLDC mentioned that for Goindwal Sahib TPS, the machine cannot go below 60% due to technical issues. MS, NRPC asked Punjab to submit the reasons for the same to CEA and accordingly TPRM division CEA would examine their matter.

A.11.4. RVUN mentioned that due to commercial reasons it is not feasible to some of their machines mentioned in the cited list at technical minimum level of 55%. To this MS, NRPC apprised forum that RVUN had filed a petition in their SERC seeking relaxation to achieve technical minimum level of 55%, however same has been dismissed by the Hon'ble state regulatory commission.

A.11.5. Haryana mentioned that they have approached their state regulatory commission for exemption for units of Panipat TPS and same has been granted.

A.11.6. MS, NRPC mentioned that all the generating units in NR that have not been able to achieve the technical minimum level of 55% shall submit the reasons of same to CEA (cetprm-cea@gov.in) and subsequently CEA would examine their request for exemption.

A.11.7. EE(O) NRPC mentioned that in compliance of CEA (Flexible operation of Coal Based Thermal Power Generating Units) regulations, 2023, CEA has prepared a roadmap for achieving the minimum load operation of 40% in a phased manner. Under the Pilot Phase of the phasing plan, 2 no. of thermal generating stations of NR namely, Suratgarh SCTPP unit 8 and Dadri TPS unit 6 has been considered.

A.11.8. NTPC representative mentioned that they are facing challenges/issues in achieving the minimum load operation of 40% for Dadri TPS unit 6 and major modification work needs to be carried out to achieve the same.

A.11.9. RVUNL representative mentioned that presently Suratgarh SCTPP unit 8 is under shutdown and major modification work is being carried out to achieve the minimum load operation of 40%.

A.11.10. MS, NRPC asked NTPC and RVUNL to submit their learnings/observations to CEA highlighting the difficulties faced by them to achieve the minimum load operation of 40%.

Decision of OCC Forum:

Forum was of view that generating units in NR that have not been able to achieve the technical minimum level of 55% shall submit the reasons of same to CEA (cetprm-cea@gov.in) and subsequently CEA would examine their request for exemption.

Forum asked NTPC and RVUNL to submit their learnings/observations to CEA highlighting the difficulties faced by them to achieve the minimum load operation of 40%.

A.12. Installation of Control switch devices in 400KV Kalaamb Wangtoo and Kalaamb Sorang lines at PKATL Substation KALAAMB to control switching surges (Agenda by Powergrid NR-2)

A.12.1. Powergrid NR-2 representative apprised forum that LILO of 400KV Kalaamb-Karchamm Wangtoo-1 was done by M/S HPPTCL at Wangtoo. Similarly, LILO of 400KV Kalaamb-Karcham Wangtoo-2 was done in 2021 by M/S Greenco at Sorang. After above LILO arrangements, details of Lines connected to 400KV Bus at Kalaamb were:

- 400KV Kalaamb-Wangtoo Line having line length of 174 KM
- 400KV Kalamb-Sorang line having Line length 160.5KM.

A.12.2. Powergrid mentioned that above Lines having longer line length are provided with FSC at one end but no Line Reactor at other end. Switching of these lines without Line Reactor had resulted in generation of switching surges and Failure of GIS equipment in these bays at Kalamb during 03 occasions from 2019 onwards that may be due to above surges.

A.12.3. To overcome above difficulty, Powergrid had installed CSD relay in one Line as per recommendations of OEM as an experiment and had resulted in reduced switching surges in above Lines. In view of above, it is proposed that CSD must be installed in above Lines at both ends.

A.12.4. NRLDC representative stated that to control steady state voltages, 80MVAr L/Rs available at Karcham Wangtoo which are idle due to reduction of line length may be shifted to any of KalaAmb/ Sorang/Wangtoo substations.

A.12.5. POWERGRID representative stated that space is not available at these substations as per telephonic conversations with different sites.

A.12.6. NRLDC stated that POWERGRID may also submit brief report on effectiveness of CSD relay in one Line in which it has been installed along with all waveforms.

A.12.7. POWERGRID representative agreed to submit the same.

Decision of OCC Forum:

OCC forum agreed that as discussed POWERGRID may submit report including space related constraint in reactor shifting and effectiveness of CSD relay. Thereafter, decision may be taken in next OCC meeting.

A.13. Considering deemed availability of outage of Transmission lines due to tripping of the line caused by flying loose foreign objects during localized winds/storms (Agenda by Powergrid NR-2)

A.13.1. Powergrid NR-2 representative apprised forum that in last 04 months, there are 06 numbers of trippings caused by loose foreign material like tarpaulin, packing material flying in the air etc. As tripping due to loose flying material is beyond the control of transmission licensee, Powergrid requested that such outages may please be considered as deemed available.

A.13.2. Powergrid mentioned that for such tripping incidents, they submit documents like photos of foreign material with co-ordinates, fault distance (DR/EL) of relay.

A.13.3. CGM, NRLDC mentioned that there is no provision for considering tripping of the line caused by flying loose foreign objects like tarpaulin under deemed availability in the CERC tariff regulation, 2024.

A.13.4. EE(P), NRPC mentioned that verification of such outages of foreign material is not possible to ascertain due to variance in size of foreign material and cause of entanglement. Moreover, foreign material has no definite shape as in case of kite.

A.13.5. Powergrid NR-3 mentioned that there have been instances wherein on the request of the local administration, they have to facilitate the shutdown of their lines due to miscreant activities endangering human safety such as someone climbing on the tower of their line, stating that such outages are beyond the control of the transmission licensee.

A.13.6. All the present transmission licensee stated that despite all the precautionary measures available on their tower, such incidents are sometime reported and henceforth requested Sectt. to kindly review such instances on case-to case basis based upon the supporting documents submitted by licensee.

A.13.7. EE(P) NRPC mentioned that as per CEA safety regulation, it is responsibility of transmission licensee to restrict such miscreant activities by installing anti-

climbing devices on their tower, barbed wires or incorporate any other innovate measures to avoid such situation.

A.13.8. MS, NRPC mentioned that there is diverse view on the agenda and therefore it needs discussion separately.

Decision of OCC Forum:

Forum was of view that agenda may be discussed separately with all stakeholders.

A.14. Considering deemed availability of outage of Transmission lines due to Shutdown taken for removal of kite thread (Agenda by Powergrid NR-2)

A.14.1. In the meeting, Powergrid NR-2 representative mentioned that as present, in case of tripping of a transmission line due to kite thread, outage of 02 hours per tripping is condoned subject to maximum 24 trippings in a year for POWERGRID.

A.14.2. Powergrid NR-2 also stated that during last four months they have availed 08 number shutdowns for removal of kite thread as a proactive measure to prevent tripping of the line. In view of above, Powergrid requested that outage of the line availed for removal of kite thread may please be considered as deemed available.

A.14.3. CGM, NRLDC submitted that outage of the line availed for removal of kite thread may not be considered for deemed availability as it is not possible to verify such outage claims due to lack of witness and issues in verification of facts.

A.14.4. All the transmission licensee requested that in case of adverse weather like storm/lightning, they are not getting deemed availability although it is beyond control of licensee.

A.14.5. CGM, NRLDC was of opinion that from grid point of view such relaxation shall not be passed to the licensee.

A.14.6. EE (P), NRPC also stated that such outages may not be considered for deemed availability where verification is not possible.

A.14.7. MS, NRPC mentioned that there is diverse view on the agenda and therefore it needs discussion separately.

Decision of OCC Forum:

Forum was of view that agenda may be discussed separately with all stakeholders.

A.15. Regarding attempt to create LILO of 132kV Ropar-Pinjore Circuit 1 without FTC clearance and bypassing safety instructions. (Agenda by PSTCL)

A.15.1. PSTCL presented the matter to the forum and highlighted that similar issue has also been discussed in the 220th OCC meeting regarding Charging of 132 kV

substation Nanakpur and associated LILO of existing 132kV Ropar-Pinjore lines without FTC approval of NRLDC and consent of PSTCL.

A.15.2. PSTCL representative mentioned that HVPN has been asked on regular basis to sign a MOU with PSTCL for the bay maintenance charges but there is no response from HVPN side on this till date and without obtaining the necessary FTC clearance and permit from PSTCL, HVPN attempted on 07.08.2024 to create LILO of 132kV Ropar-Pinjore Circuit 1.

A.15.3. To this HVPN replied that, they have applied for permit from PSTCL to work on the 132kV Ropar-Pinjore Circuit 1 and submitted FTC documents as per the requisite formats to PSTCL but there has been no response from Punjab leading to unnecessary delay.

A.15.4. MS, NRPC mentioned that no ISTS element must be charged without the First Time Charging (FTC) approval of NRLDC and advised representatives of PSTCL and HVPN to kindly highlight the issue to their apex management and bilaterally resolve the commercial dispute regarding the signing of MOU for bay maintenance charges.

Decision of OCC Forum:

Forum advised representatives of PSTCL and HVPN to highlight the issue to their apex management and bilaterally resolve the commercial dispute regarding the signing of MOU for bay maintenance charges.

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

B.1 NR Grid Highlights for July 2024

Detailed presentation on grid highlights of July'2024 as shared by NRLDC in OCC meeting is attached as **Annexure-B.I.**

B.2 Status of compliances as per IEGC 2023

a. Mock drill of the islanding schemes:

NRLDC representative stated that as per IEGC regulation 29(11):

"Mock drill of the islanding schemes shall be carried out annually by the respective RLDCs in coordination with the concerned SLDCs and other users involved in the islanding scheme. In case mock drill with field testing is not possible to be carried out for a particular scheme, simulation testing shall be carried out by the respective RLDC."

Following islanding schemes have been implemented in NR:

1. NAPS (UP)
2. RAPS (Rajasthan)
3. Bawana (Delhi)
4. Pathankot-RSD (Punjab)

All utilities were requested to test the relays one by one involved in the islanding schemes with disabling of actual trimming of load during testing and report may be submitted. Further, officers involved in preparation of the islanding schemes from states side, may also review the islanding scheme in consultation with NRLDC system studies team and carry out simulation studies.

Delhi SLDC confirmed that field testing of SPS is possible and timeline for same shall be provided in consultation with DTL. Punjab also confirmed that field testing is possible and same shall be planned in off-peak season around Nov'2024.

MS NRPC stated that since only signal checking is involved and no actual island formation will take place, accordingly, testing exercise may be carried out at the earliest. He suggested that islanding scheme testing may be carried out in next 2-3 months so as to comply with IEGC.

Some of the SLDCs stated that SOP may also need to be prepared before carrying out mock testing of SPS.

OCC forum discussed that NRLDC in consultation with SLDCs may prepare SOP and carry out mock testing of already commissioned SPS at the earliest.

In addition to this, NRLDC representative stated that it was recommended to include the following in Islanding SCADA Display for better monitoring of Island health in real time:

1. Island Generators status with total actual generation in MW (G)
2. Island Load status with actual Load in MW (L)
3. G/L Ratio
4. Islanding Frequency value

The display may be arranged in following fashion.

It was requested to prepare network map of the island for easy visualisation by control room operators. It was also requested to ensure that error-free telemetry of all elements which are part of island is available at SLDC/NRLDC control room. The load and generation may be logged and stored so that periodic analysis of island is possible.

Punjab SLDC stated that Pathankot-RSD display is available at their control center, however, they will implement the same in this format and share with NRLDC.

UP and Rajasthan SLDCs stated that island display has been prepared at their end in the required format, however, there is some issue in transferring the data to NRLDC.

NRLDC representative stated that along with display of island, logging of data also needs to be ensured to study island performance over period of time.

NRLDC stated that display availability of Delhi islanding scheme is poor and most of the data is not available and also requested to develop display in format attached in the meeting.

CGM NRLDC and MS NRPC expressed concern on the same and asked Delhi SLDC to implement the SCADA display at the earliest in the required format.

All SLDCs agreed to implement island display in this format at their end and also to share the data with NRLDC.

b. Submission of self-audit report in compliance to IEGC regulation 56(2*)*

As per IEGC regulation 56(2), self-audit shall be conducted for compliance of these regulations and reports shall be submitted by the users to concerned RLDC by 31st July 2024.

" (2) Self –Audit:

(a) All users, CTU, STUs, NLDC, RLDCs, RPCs and SLDCs, power exchanges, QCAs, SNAs shall conduct annual self-audits to review compliance of these regulations and submit the reports by 31st July of every year.

(b) The self-audit report shall inter alia contain the following information with respect to non-compliance:

(i) Sufficient information to understand how and why the non-compliance occurred;
(ii) Extent of damage caused by such non-compliance;
(iii) Steps and timeline planned to rectify the same;
(iv) Steps taken to mitigate any future recurrence;

(c) The self-audit reports by users, QCAs, SNAs shall be submitted to the concerned RLDC or SLDC, as the case may be."

OCC asked all ISGS, IPPs and transmission licensees to conduct self-audit and submit their self-audit report to NRLDC.

c. **Submission of system studies related to implemented SPS in NR**

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.''

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

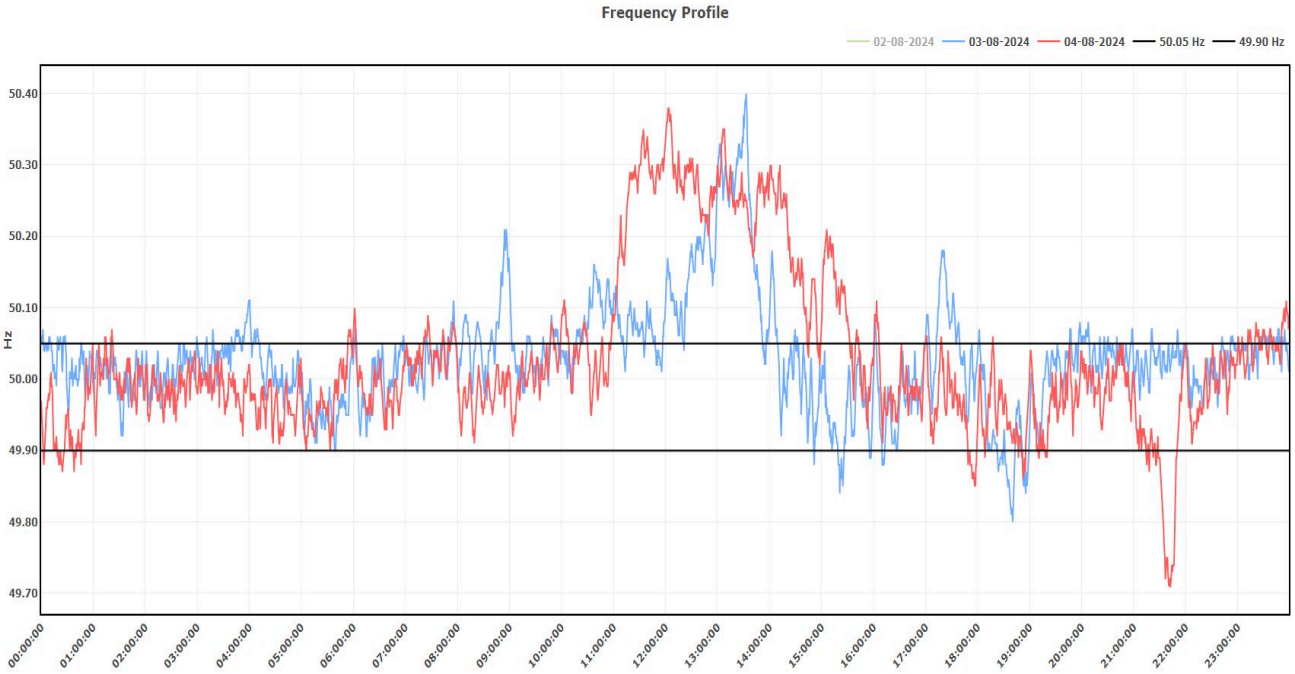
NRLDC is in the process of carrying out simulation studies for the SPS which were proposed by NRLDC and are of importance at regional level. However, there are number of SPS related to N-1 contingency of 400/220kV ICTs in Rajasthan, Punjab, UP, Haryana, Delhi and Uttarakhand state control area. Details are available in NR-SPS document.

NRLDC representative stated that SLDCs may submit nomination of one nodal officer for interaction with NRLDC for the exercise. It was also informed that some of the SPS such as Jodhpur ICT SPS and Anpara-Unnao complex SPS were recently revised in OCC meeting.

Concerned STUs and SLDCs were asked to share simulation studies from their side for SPS implemented in their respective state control area at the earliest. All members agreed to share the same.

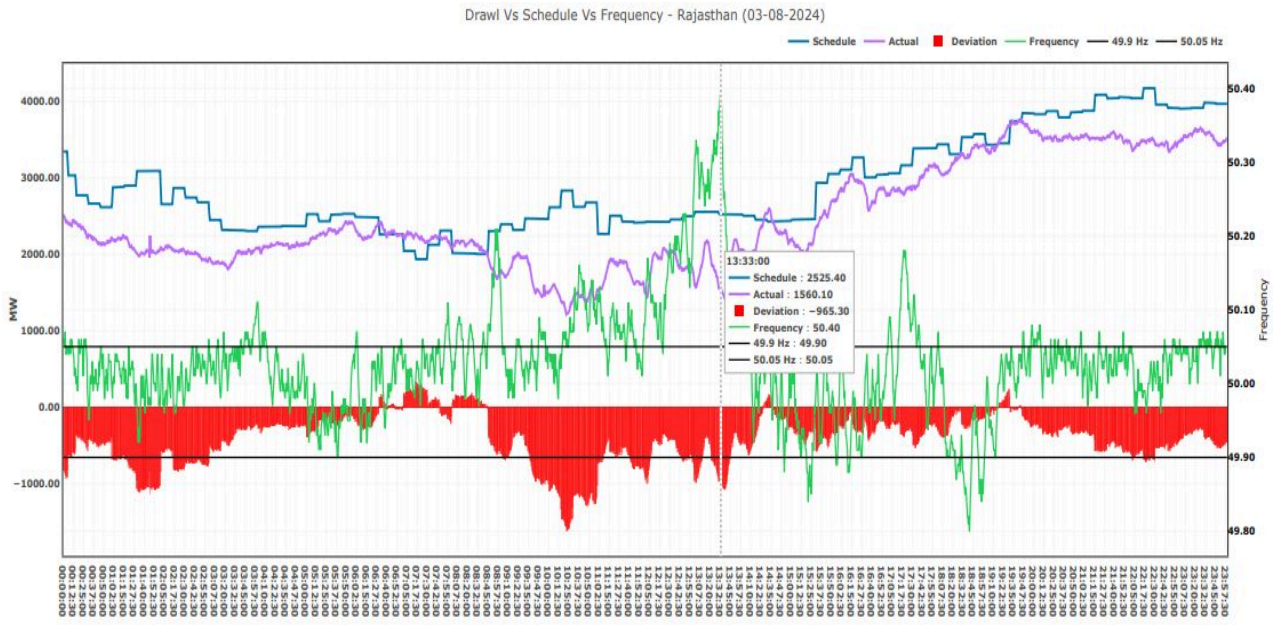
B.3 Continuous high frequency operation of grid on 03.08.2024 & 04.08.2024

On 03.08.2024 and 04.08.2024, continuously high frequencies were observed in the grid. On both the days Rajasthan state control area in NR was found to underdrawing to the tune of 1000MW contributing to the high frequency operation.

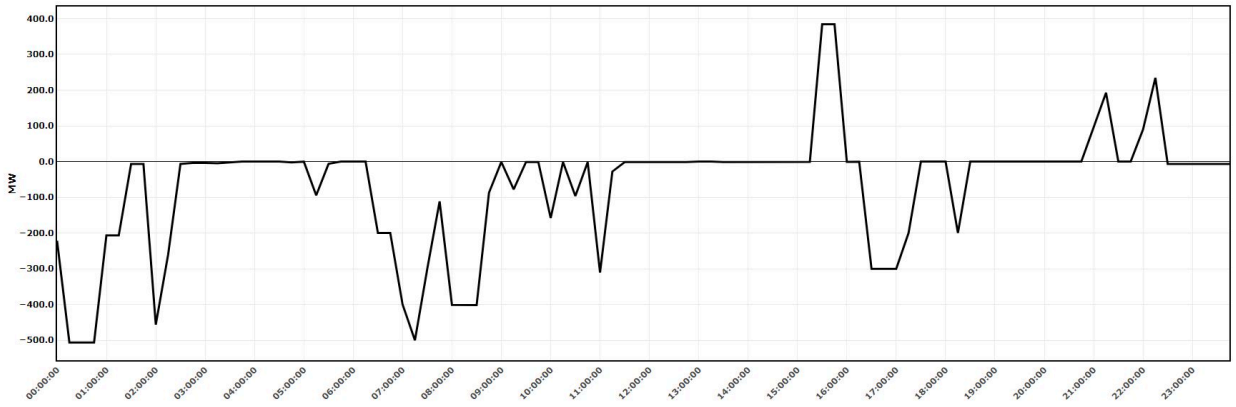


On <u>03.08.2024</u>:

- Grid frequency reached its maximum of 50.40 Hz at 13.33 hrs. As per the PSP report of 03.08.2024, frequency profile was as follows- within IEGC band- 66.25 %, > 50.05-30.91%, >50.2-3.54%.
- Rajasthan was continuously underdrawing from its schedule from 0845 hrs. to 1425 hrs. (340 mins approx.) Frequency was above IEGC band from 12.22 hrs to 1352 hrs (90 mins approx.)
- Rajasthan Under drawl at Highest frequency of 50.40 Hz was ~950 MW



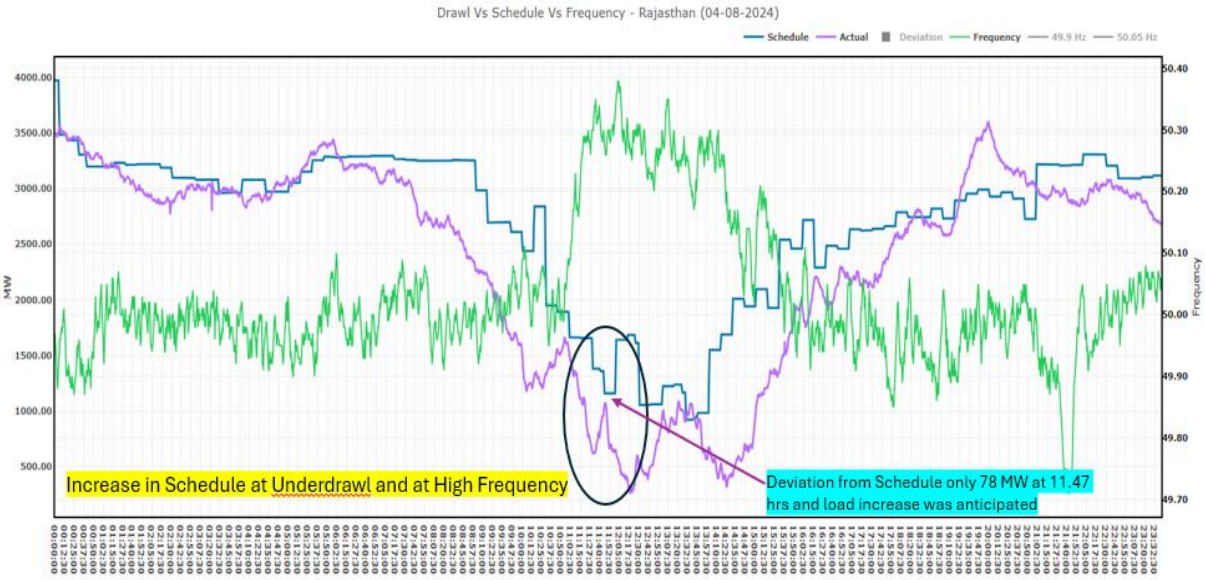
RTM transaction of Rajasthan for 03-08-2024 is shown below:

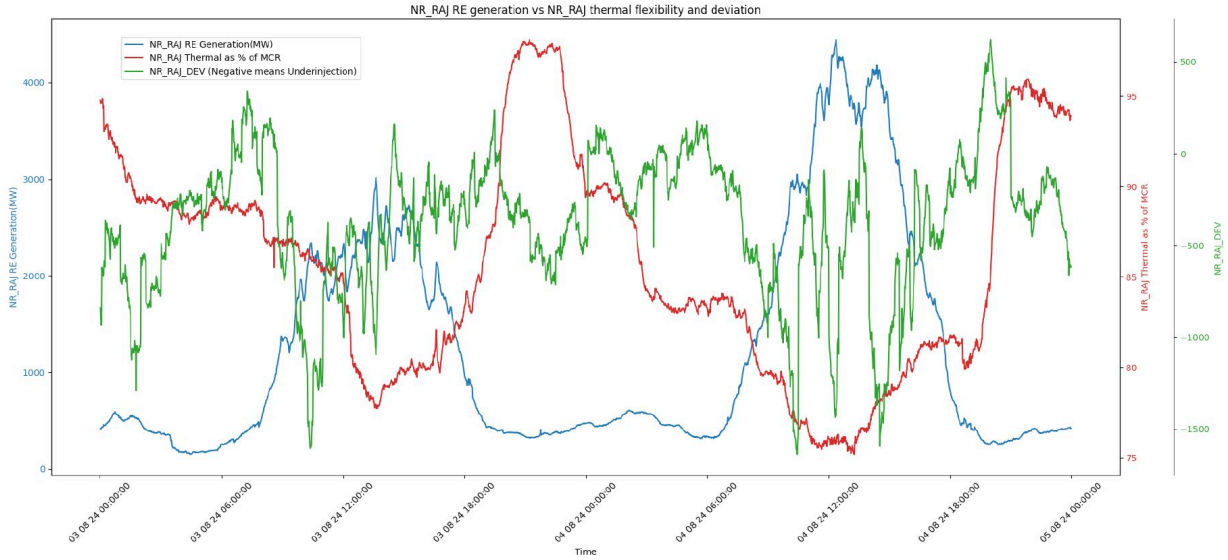


It can be seen that Rajasthan did not sell power in real-time market from 10:00hrs to 14:00hrs even though it was continuously under drawing from the grid.

On 04.08.2024

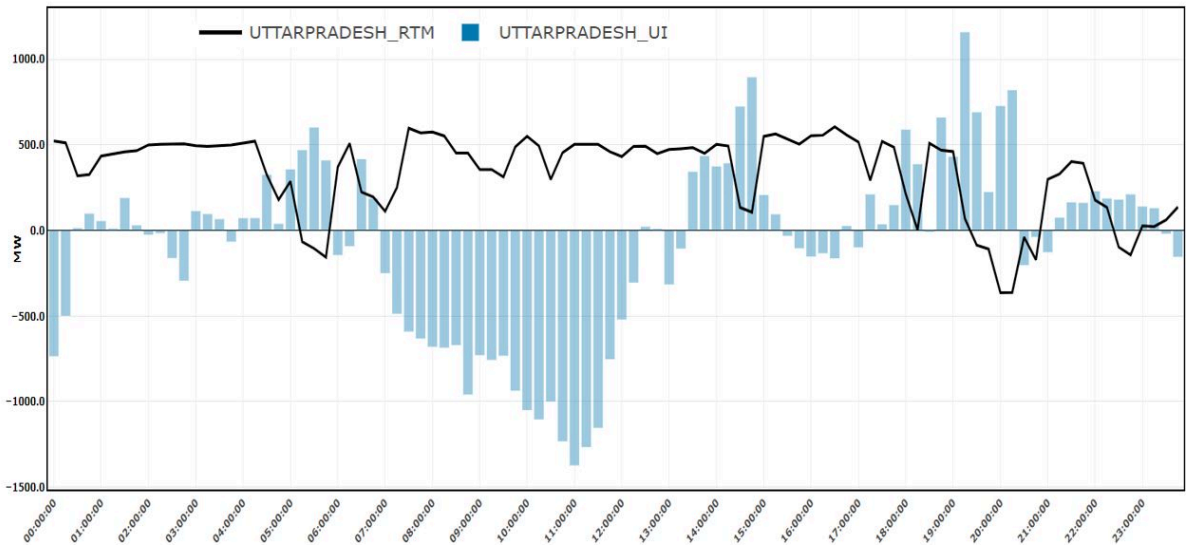
- Grid frequency reached its maximum of 50.38 Hz at 12.02 hrs. As per the PSP report, frequency profile was as follows: within IEGC band- 69.29 %, >50.05- 26.27%, >50.2-12.89%
- Rajasthan was continuously underdrawing from its schedule from 0600 hrs. to 1330 hrs.
- Rajasthan Under drawl at Highest frequency of 50.38Hz was ~1050 MW
- UP Under drawl at Highest frequency of 50.38Hz was ~ 600 MW. However, UP instructed for 7 thermal plants to be under Reserve Shutdown (1050 MW)
- Rajasthan reported curtailment of Wind generation by approx. 700MW.





From the trend shown above, it is clear that intrastate thermal generation of Rajasthan was backed down to 78% of MCR on 03.08.2024 and around 75% of MCR on 04.08.2024. To facilitate further integration of RE generation especially during lower demand period, it is suggested that intrastate thermal genetors may be asked to back down further so as to maintain grid frequency and also avoid huge underdrawl by state.

RTM transaction of UP along with deviations for 04-08-2024 is shown below:



It can be seen that UP did not sell power in real-time market (rather it was purchasing) from 07:00hrs to 12:00hrs even though it was continuously under drawing from the grid.

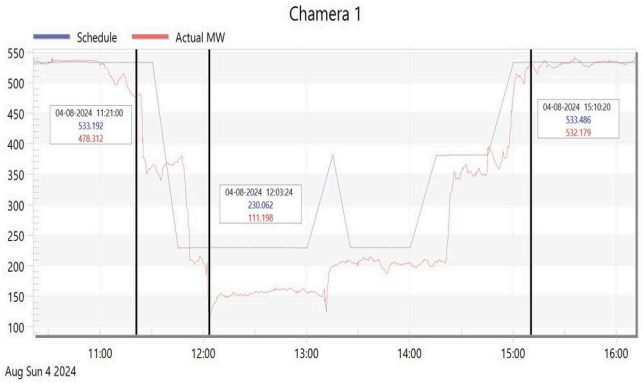
Following units in UP Control Area were made under Reserve Shutdown on 04.08.2024:

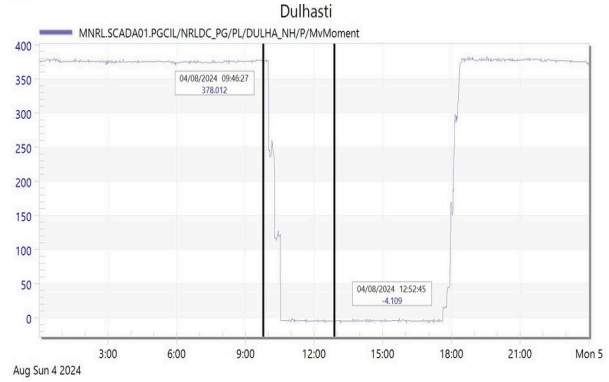
S.N	Station	Owner	Unit	Capacit	Reason(s)	Outage	Tim

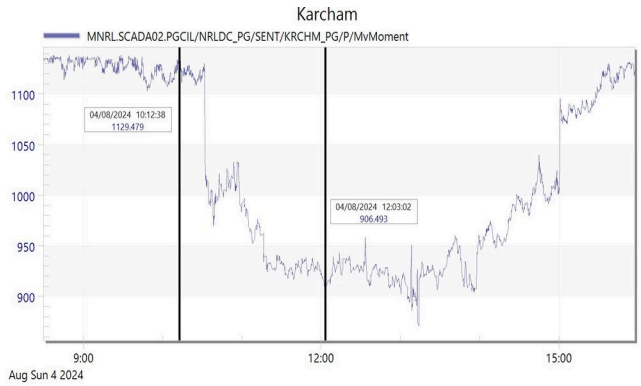
o			No	y MW			e
1	Tanda TPS	NTPC	2	110	Reserve Shutdown	04-08-2024	13:40
2	Tanda TPS	NTPC	3	110	Reserve Shutdown	04-08-2024	14:11
3	Tanda TPS	NTPC	4	110	Reserve Shutdown	04-08-2024	14:37
4	Tanda TPS	NTPC	1	110	Reserve Shutdown	04-08-2024	14:44
5	Harduaganj -C TPS	UPPTCL	7	110	Reserve Shutdown	04-08-2024	12:27
6	Harduaganj -D TPS	UPPTCL	8	250	Reserve Shutdown	04-08-2024	19:50
7	Harduaganj -D TPS	UPPTCL	9	250	Reserve Shutdown	04-08-2024	20:05

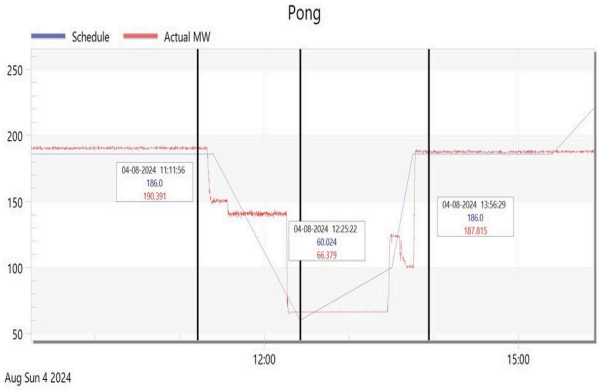
Following actions were taken at NRLDC level

- Messages issued to SLDC Control Room and senior officials of SLDC Rajasthan to maintain drawl as per schedule through OD/UD portal as well as through emails in addition to regular follow up telephonically.
- Frequency and Deviation Violation Messages of Alert, Emergency and Extreme Emergency categories were issued to SLDC Rajasthan.
- TRAS down of ~55 MW despatched in the Northern Region
- Schedule of Tehri, Chamera-1 and Pong revised w.e.f. 11.30 hrs.









NRLDC representative stated that on observing the performance of states for 03.08.2024, 04.08.2024 & 11.08.2024, it was observed that quick actions may have been taken by SLDCs which could have improved the grid conditions. It was suggested to state control area generators to back down to their technical minimum. Technical minimum of State control area plants should be set at 55% of the installed capacity minus auxiliary consumption. Same is also required as per CEA regulations.

Rajasthan SLDC stated that bids were placed for selling power in real-time market, however, the bids were not cleared due to price quoted, same shall be taken care in future. On 03.08.2024, solar generation was on the higher side due to sudden removal of cloud cover and increased internal solar generation.

NRLDC representative stated that Rajasthan SLDC should take quick decisions for bringing machines on bar and gaining ramping support to support grid frequency profile.

Rajasthan SLDC highlighted that they will be having issue in managing demand during evening time and accordingly, sometimes generating units are not being boxed up even incase of underdrawl.

NRLDC stated that on analysing performance of UP state for 04.08.2024, they were underdrawing during day time whereas they were continuously purchasing power in real-time.

UP SLDC representative stated that when the prices in real-time market are low, buyers in state are directly purchasing power from real-time market, instead of

DISCOMs and as a result, for state as whole, UP may be purchasing power in real-time market whereas UPCL/ UP SLDC is selling power in real-time market.

NRLDC representative stated that UP SLDC may share their experience through written communication to NLDC/NRLDC for further analysis at GRID-INDIA end and how to deal with such situations from regulatory side.

NRLDC reiterated suggestions for mitigating high frequency grid operation to be followed by utilities:

- State control area generators to back down to their technical minimum. Technical minimum of State control area plants should be set at 55% of the installed capacity minus auxiliary consumption.
- Due to rainy weather conditions particularly in weekends, some of the units on high merit may be put under Reserve Shutdown in the state control area.
- Improvement in demand forecast by states would prevent in wide gaps in anticipated demand and actual drawl.
- Taking cues from Day ahead Market and RTM prices decision on putting higher merit order plants on Reserve Shut down can be taken. If required, power can be purchased in DAM or RTM under such scenarios.
- ISGS Generators particularly thermal stations to maintain generation as per schedule and back down to technical minimum as per their ramp rates.
- Hydro plants in state control area not under spillage condition may be scheduled as per system requirement.
- Gas plants in state control area which are underdrawing should be put in Reserve Shutdown at the earliest.
- Participation in TRAS of intrastate generators will further improve the system conditions as in case of high frequency TRAS down in intrastate plants can be despatched.

Further, as part of IEGC 2023, under clause 31 (4) Resource adequacy mentions that:

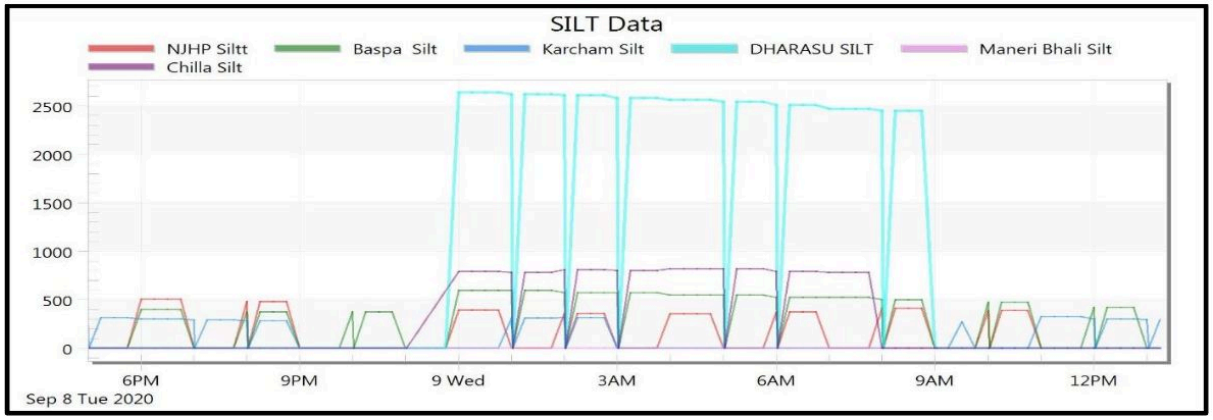
"a) *SLDCs shall estimate and ensure the adequacy of resources, identify generation reserves, demand response capacity and generation flexibility requirements with due regard to the resource adequacy framework as specified under Chapter 2 of these regulations."*

OCC forum asked all SLDCs to effectively implement the measures listed above so as to ensure resource adequacy as well as avoid huge under drawl/ over drawl from the grid.

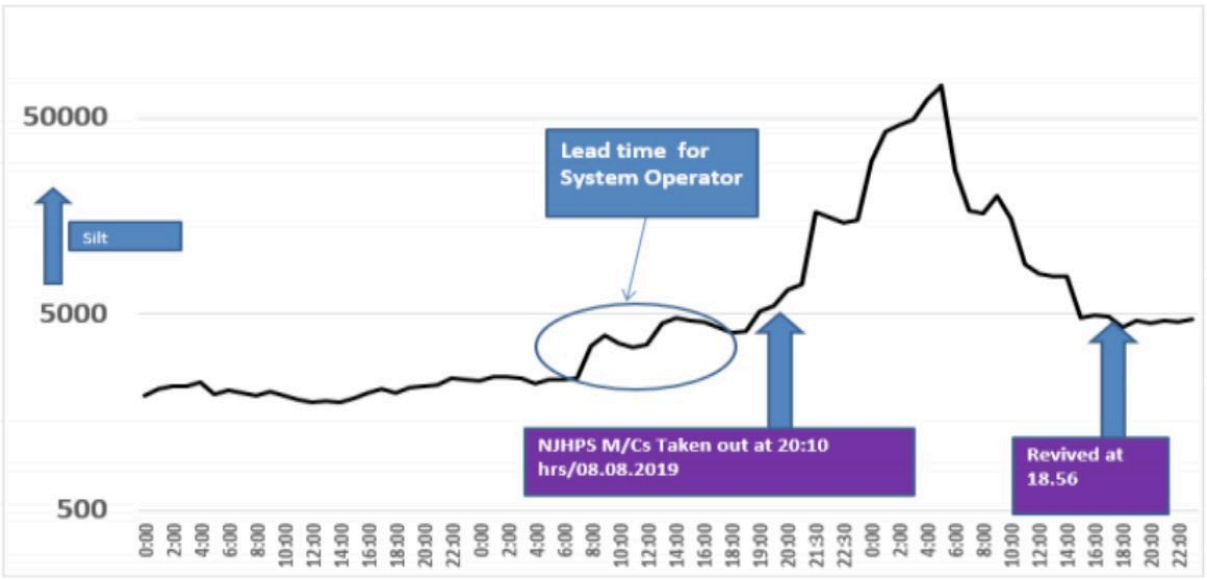
B.4 Sharing of real-time silt monitoring data in real-time by hydro plants

Availability of near real time silt measurement data to NRLDC/ SLDCs will be helpful for real time system operation in view of frequent hydro generation outage due to silt. PPM numbers are being punched directly from the site/control room at NRLDC server providing silt measurement at NRLDC control room. During previous years also, for Nathpa Jhakri, Baspa, Karcham and other small HEPs of Uttarakhand, trends of silt

data were made available at NRLDC & being monitored by system operators in real-time.



Sample available data of silt shown below suggests that there is some lead-time (varying from few hours to several hours) available with system operators to accommodate outage of hydro generators on account of high silt level.



All hydro stations are requested to take actions to provide this near-real time silt measurement to control centers (RLDCs/SLDCs) as this would help them gain some lead-time for better tackling of hydro generator outage on silt.

In 220 OCC meeting, members agreed to share the data on real-time basis with NRLDC control room and perform coordinated operations of hydro generators during monsoon season.

As per the latest status available at NRLDC, real-time silt monitoring data is being received from most of the hydro plants. All other hydro generators such as Bairasuil, Chamera-1, Chamera-3, Kishenganga, Salal, Sainj, Maneri Bhali, Chilla, Baspa, Khodri, Chibro are also requested to regularly share data.

Status of NHPC Plants as on 19.07.2024 at 10:00 hrs	
Bairasuil	Not yet
CPS-1	Not yet
Kishenganga	Not yet
Salal	Not yet
Uri-1	Not yet
Uri-2	Not yet
Parbati-3	Last update on 06.07.2027
Tanakpur	only once on 08.07.2027
CPS-2	Last update on 16.07.2024
CPS-3	Last update on 13.07.2025
Dhauliganga	Last update on 17.07.2026
Dulhasti	only once on 08.07.2027
Sewa-2	Updating timely

Status of Other Hydro Plants as on	
Sainj	Not yet
Maneri Bhali	Not yet
Chilla	Not yet
Baspa	Not yet
Khodri	Not yet
Chibro	Not yet

Status of SJVNL Plants and near Complex as on 19.07.2024 at 10:00 hrs	
Nathpa Jhakri HPS	Last update on 18.07.2024
KARCHAM	Last update on 18.07.2025

In 221 OCC meeting, NHPC representative stated that there was some IP address issue in NHPC substations and the issue would be resolved shortly.

NRLDC representative stated that as mentioned above, some NHPC substations are sharing the silt data but frequency of sharing also needs to be improved.

All hydro generators agreed to share the data in real-time with NRLDC control room.

However, following is the latest status as on 08.08.2024 in this regard:

Status of NHPC Plants as on 08.08.2024 at 10:00 hrs	
Kishenganga	Not yet
Salal	Not yet
Uri-1	Not yet
Uri-2	Not yet
Parbati-3	Last update on 06.07.2024
Tanakpur	Last update on 31.07.2024
CPS-3	Last update on 30.07.2024
Dulhasti	Last update on 03.08.2024, Intermitent
CPS-2	Timely
Dhauliganga	Timely
Sewa-2	Timely
Bairasuil	Timely
CPS-1	Timely

Status of Uttrakhand Hydro Plants as on 08.08.2024 at	
Sainj	Not yet
Maneri Bhali	last update on 27.07.2024
Chilla & Khodri	last update on 05.08.2024
Chibro	Timely
Dharasu	Timely

Status of HP Hydro Plants as on 08.08.2024 at 10:00 hrs	
Baspa	Timely

Status of SJVNL Plants and near Complex as on	
Nathpa Jhakri HPS	Timely
KARCHAM	Timely

NHPC representative stated that Kishenganga, Uri and Uri-II do not observe silt during this season and silt measurement is also not regular. Further, Salal has been asked to share real-time silt data with NRLDC.

OCC asked all hydro generators to share the data in real-time with NRLDC control room as already agreed.

B.5 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 scenarios for assessment of transfer capability Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models*	*SLDC*	*RLDC*	*10th Day of 'M-12' month*
	1(b)	*Declaration of TTC/ATC of the intra- state system by SLDC in consultation with RLDC*			*26th Day of 'M-12' month*
2. Interconnection Studies for elements to be integrated in the	*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*

month 'M'					*'M-6' month*
3. Month Ahead TTC/ATC Declaration & Base case for Operational Studies for Month 'M'	*3(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability* / *Assessment of TTC/ATC of the intra- state system and sharing of updated network simulation models*	*SLDC*	*RLDC*	*8th Day of 'M- 1' month*
	3(b)	*Declaration of TTC/ATC of the intra- state system in consultation with RLDC*	*SLDC*	*RLDC*	*22nd Day of 'M-1' month*

To encourage participation from SLDCs regarding basecase preparation and ATC/TTC assessment, two workshops have been conducted from Grid-India/NRLDC side. One workshop was conducted 31.08.2023 before the finalization of the procedure and another on 10.01.2024 recently to involve further participation from SLDCs.

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.5.1 ATC/TTC assessment sharing 11 months in advance

The procedure mentions that:

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

Accordingly, SLDCs are requested to send the PSSE cases for four scenarios for Aug'25 i.e. Afternoon Peak, Solar Peak, Evening Peak & Off-Peak hours as given below

S. No.	Scenario	Time of Scenario
1	Off-Peak	06:00 Hrs
2	Afternoon Peak	15:00 Hrs
3	Evening Peak	22:30 Hrs
4	Solar Peak	12:00 Hrs

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-11 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.5.2 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.5.3 TTC/ATC of state control areas for monsoon 2024 (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 Sep'2024 are attached as Annexure-B.I.

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

March 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (Apr-24)		M-11 (Mar-25)		M-6 (Sep-24)	
	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	Yes	Yes	Yes	Yes
Himachal Pradesh	No	No	No	No	No	No
Jammu and Kashmir	Yes	No	Yes	No	Yes	No
Ladakh	No	No	No	No	No	No
Punjab	No	No	No	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	No	No	No	No	No

April 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (May-24)		M-11 (Apr-25)		M-6 (Oct-24)	
	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 Pradesh	No	No	No	No	No	No
Jammu and Kashmir	Yes	No	Yes	No	Yes	No
Ladakh	No	No	No	No	No	No
Punjab	No	No	No	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	No
Uttarakhand	No	No	No	No	No	No

May 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (June-24)		M-11 (May-25)		M-6 (Nov-24)	
	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	No	No	No	No	No
Himachal Pradesh	No	No	No	No	No	No
Jammu and Kashmir	Yes	No	Yes	No	Yes	No
Ladakh	No	No	No	No	No	No
Punjab	No	No	No	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	No	No	Yes	Yes
Uttarakhand	No	No	No	No	No	No

June 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (July-24)		M-11 (June-25)		M-6 (Dec-24)	
	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	No	No	No	No	No
Himachal Pradesh	No	No	No	No	No	No
Jammu and Kashmir	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	Yes	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	No	No
Uttarakhand	No	No	No	No	No	No

July 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (August-24)		M-11 (July-25)		M-6 (Jan-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	No
Himachal Pradesh	No	No	No	No	No	No
Jammu and Kashmir	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh	No	No	No	No	No	No
Punjab	No	No	No	No	No	No
Rajasthan	No	No	No	No	No	No
Uttar Pradesh	Yes	Yes	Yes	Yes	Yes	Yes
Uttarakhand	No	Shared only for 1 cardinal point	No	No	No	No

August 2024 Mails						
	ATC/TTC Declaration				Interconnection Studies	
	M-1 (September-24)		M-11 (August-25)		M-6 (Feb-25)	
	Data Values	Basecases	Data Values	Basecases	Data Values	Basecases
Chandigarh						
Delhi			Yes	Yes		
Haryana						
Himachal Pradesh						
Jammu and Kashmir	Yes	Yes	Yes	Yes	Yes	Yes
Ladakh						
Punjab					Yes	No
Rajasthan						
Uttar Pradesh						
Uttarakhand						

The agenda was also discussed in 220 & 221 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.

Still it is being observed that response from SLDCs is not as per desired levels. All SLDCs to provide update.

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. NRLDC CGM asked states to get help from NRLDC in case of any difficulty and emphasized on the need for regularity in sharing the data.

In 222 OCC meeting,

- ***NRLDC representative stated that UP and J&K are regularly sharing basecase as well ATC/TTC assessment with NRLDC. Haryana, Delhi, Uttarakhand, HP and Punjab 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.***

B.6 Frequent Emergency shutdowns availed by DTL and delay in return of shutdowns

It is observed that frequent emergency shutdown are taken in Delhi control area by DTL. Relevant table of emergency shutdown taken during 01.08.23 to 31.07.24 is attached as Annexure-B.II of agenda. Further, elements taken under emergency shutdown along with number of times during May-Jul 2024 are shown as below:

Transmission element Name	No. of time S/d taken during May-Jul 2024
400 KV Bamnoli(DV)-Jhatikara(PG) (DTL) Ckt-2	4
400 KV Bawana-Mundka (DV) Ckt-1	3
400 KV Jhatikara(PG)-Mundka(DV) (DTL) Ckt-1	3
220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2	2
400 KV Bawana ccgtb-bawana(dv) (dtl) ckt-2	2
400 KV Jhatikara(PG)-Mundka(DV) (PG) Ckt-2	2
400/220 kV 315 MVA ICT 2 at Bawana(DV)	2
400/220 kV 315 MVA ICT 5 at Bawana(DV)	2
400/220 kV 315 MVA ICT 6 at Bawana(DV)	2
400KV Bus 1 at Mundka(DV)	2

NRLDC representative stated that it is to be noted that May-Jul is the high demand period in NR as well as Delhi control area. Such frequent emergency shutdowns are clear threat to safe and secure grid operation.

DTL was requested to minimise the occurrence of emergency shutdown and it was suggested that scheduled maintenance may be done timely by taking shutdown in planned manner. Also, meticulous planning may be done by Delhi SLDC to take shutdown timely and avoid any emergency to maintain Grid security and reliability.

CGM-SO stated that emergency shutdowns being taken by DTL were provided from 5am-8am, however the shutdown were returned during afternoon and it was difficult to manage loading in Delhi control area during the day-time due to delay in return of S/D by DTL. Better planning of shutdowns may be done so as to avoid such emergency shutdowns in real-time.

DTL agreed to plan shutdowns in better manner and to minimize emergency shutdowns.

OCC asked DTL to schedule maintenance activities timely and avoid emergency shutdowns considering the critical situation of grid operation of Delhi state during high demand season.

B.7 Frequent forced outages of transmission elements in the month of July'24:

The following transmission elements were frequently under forced outages during the month of **July'24**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Khara(UP)-Saharanpur(PG) (UP) Ckt-1	5	POWERGRID/ UP
2	220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1	5	UP/Utt
3	220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1	3	RAPS/ Rajasthan
4	400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1	4	RAPS/ Rajasthan
5	400 KV Bikaner-Bhadla (RS) Ckt-1	3	Rajasthan
6	400 KV Varanasi(PG)-Sahupuri(UP) (PG) Ckt-1	4	PG/UP

The complete details are attached at Annexure-B.III of Agenda.

Discussion during the meeting:

- **220 KV Khara(UP)-Saharanpur(PG) (UP) Ckt-1:** *NRLDC representative raised concerned over A/R issue and non-submission of DR/EL from Khara end. UP representative informed that relays at Khara end are of static/electromechanical type. Relay is not responding properly leading to improper operation and non-operation of A/R. Further, Pole discrepancy relay is also faulty. Remedial actions are being taken, relays have been procured and all the static/electromechanical relay will be replaced by numerical relay by October 2024. UP was also requested to take necessary actions to minimise the fault incidents in line.*
  POWERGRID was requested to review the time sync of DR/EL at Saharanpur end. POWERGRID agreed for the same. POWERGRID was asked regarding status of A/R in line whether it has been kept disabled as no A/R operation was observed at Saharanpur end during all the fault incidents. Prior intimation to NRLDC & NRPC also need to be given for disabling of A/R. POWERGRID agreed to confirm and update on this subject.

- **220 KV Nara (UP)-Roorkee(UK) (UP) Ckt-1:** *NRLDC representative raised concerned on frequent tripping of line, non-operation of A/R at Roorkee end and non-submission of DR/EL from Roorkee end. UP representative stated that A/R is healthy at Nara (UP) end. During some instances line didn't trip from Roorkee end and during some instances line tripped from Roorkee end even after successful A/R from Nara (UP) end. Uttarakhand representative stated that Roorkee is mainly connected with Nara in radial mode due to loading restrictions. 220kV bus at Roorkee is normally operated in split mode. Therefore, line didn't trip from Roorkee end. Further, they will analyse the tripping incidents and DR/EL also have been submitted on tripping portal now.*
- **220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1:** *NRLDC representative raised concern over A/R operation and non-submission of DR/EL & tripping details from RAPS end. RAPS representative stated that during 9th & 17th July incidents, A/R operated at RAPS end and during 27th July incident, fault*

was in Z-2 and Z-4 from KTPS end. It was further informed that DR/EL & tripping details have been submitted now and they will ensure the timely submission of tripping details on tripping portal. Rajasthan representative also informed that A/R operated at their end also.

- **400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1:** *NRLDC representative asked reason of overvoltage at Rosa S/s. Being a generating station, overvoltage scenario should have arisen. NRLDC requested UP to review the MVAr profile of Rosa TPS and review whether overvoltage was in all three phases, or it occurred due to CVT error issue. UP agreed to review the overvoltage tripping at Rosa (UP).*

- **400 KV Bikaner-Bhadla (RS) Ckt-1:** *NRLDC representative raised concerned on frequent non-operation of A/R in the line. Rajasthan representative informed that A/R at Bhadla end was disabled inadvertently during testing time and it remained in OFF condition, now it has been enabled. At Bikaner end, there is some issue in BCU due to which command is not reaching to breaker. Issue is being reviewed and shall be rectified at the earliest. NRLDC also requested Rajasthan to review the dead time setting in A/R, it seems that it is kept as 600msec which need to be ~1sec. Rajasthan agreed to review the same.*

- **400 KV Varanasi (PG)-Sahupuri(UP) (PG) Ckt-1:** *NRLDC representative raised concern over frequent tripping of the line due to PLCC maloperation. UP representative stated that there was fault in the GIS compartment of 400kV Varanasi-Sahupuri ckt-2 at Sahupuri station. Frequent incident occurred due to persisting fault in GIS. Later, line was taken under shutdown and corrective actions are being taken. UP was requested to expedite the remedial actions and restore the line-2 as soon as possible so that reliability of NR-ER link through Sahupuri(UP) can be ensured. UP agreed for the same.*

NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. He sensitized all the utilities to ensure healthiness/in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standards. He further informed that most of the tripping are transient in nature but due to non-operation of A/R, it resulted into tripping of the transmission element thus reducing the reliability of the grid. All the utilities shall endeavor to keep auto re-closer in service and healthy condition of 220 kV and above voltage level transmission line. The issue of time syncing of DR/EL at many of the stations was highlighted, constituents were requested to ensure the time syncing of DR/EL. In addition, necessary actions also need to be taken to ensure the Right of Way and other operation & maintenance issues to minimize the frequent faults in the line. All utilities agreed for the same.

OCC forum reiterated that frequent outages of such elements affect the reliability and security of the grid. Members were requested to investigate such frequent outages and share the suitable remedial measures taken/being taken in this respect.

B.8 Multiple element tripping events in Northern region in the month of July'24:

A total of 17 grid events occurred in the month of July'24 of which **07** are of GD-1 category, **09** are of GI-2 Category and **08** are of GI-1 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at Annexure-B.IV of agenda.

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Patiala(PG) on 19th July, 2024 (As per PMU at Patiala(PG), two consecutive B-N phase to earth faults with delayed fault clearing time of 2400 ms at 18:50:15 hrs and 120 ms at 18:50:33 hrs are observed).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **10** events out of **17** grid events occurred in the month. In 05 (no.) of grid events, there was no fault in the grid.

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

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

DR/EL of the following grid events not received till date:

a) 400/220kV Akal (RS) on 06th July'24

b) 400kV Lucknow(UP) and 220kV Lucknow(UP) on 14th July'24

c) 220/66kV Palli(HV) on 16th July'24

d) 220kV Khodri(UK) on 19th July'24

e) 220/66kV Mehrauli(DTL) on 20th July'24

f) 220kV Shalimarbagh(DTL) on 29th July'24

g) 400/220kV Bamnauli(DTL) & 220kV Najafgarh(DTL) on 30th July'24

Detail report of majority of the grid events not received yet.

NRLDC requested POWERGRID to share the analysis of multiple element tripping incident at 400/220kV Patiala (PG) on 19th July 2024 wherein delayed clearance of ~2400msec was observed.

POWERGRID (NR-2) representative informed that fault occurred in 220kV Nabha-I line. Distance protection operated correctly however, one pole of breaker failed to

open leading to its LBB operation. Further, the breaker of ICT-3 also didn't open on LBB operation which led to delayed clearance of fault. Bus bar protection was checked and tested; it was operating correctly during testing. It is suspected that bus bar relay maloperated during incident. The order of new bus bar has been given and same will be implemented at the earliest.

Regarding tripping event at 220kV Bamnauli(DV), DTL representative informed that multiple transformers tripped due to overloading of ICTs.

Regarding tripping at 220kV Shalimarbagh(DV), DTL representative informed that supply failed from Bawana end and transformers tripped on zero sequence protection operation.

Regarding tripping at Khodri S/s, NRLDC representative highlighted issues related to SCADA data and healthiness of breakers at Khodri S/s. PTCUL representative informed that there is only once communication link for five stations leading to signal losses, implementation of additional path is being explored.

NRLDC representative raised concern over delayed submission of DR/EL, submission of incorrect files and non-submission of detail tripping report by the constituents. Non availability of tripping details leads to incomplete analysis of grid incidents which may lead to further delay in remedial actions. Old breakers will also be replaced, their RMU is in pipeline.

NRLDC representative requested concerned utilities to analyse the tripping incidents at their end and taken necessary actions to avoid the similar events in future. Also share the detailed report of the tripping incidents along with remedial action taken. Utilities agreed for the same.

OCC forum suggested all the NR constituents to update the information on tripping portal developed by NRLDC. All the constituents agreed to take proactive remedial actions in this regard to minimize the tripping.

Members were asked to take expeditious actions to avoid such tripping in future, Moreover, utilities may impress upon all concerned for providing the preliminary report, DR/EL & detailed Report of the events in line with the regulations. Members were further requested to ensure the time syncing of recording devices (DR, EL etc.) with GPS/NAVIK at substation of their respective control area. Members agreed to take action in this regard.

B.9 Details of tripping of Inter-Regional lines from Northern Region for July' 24:

A total of 10 inter-regional lines tripping occurred in the month of July'24. The list is attached at Annexure-B.V of agenda**.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 37.2(c) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all

the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

On tripping of HVDC Champa-Kurukshetra link, POWERGRID representative informed that failure of recorder card S5005 led to the tripping which has been replaced and no issues observed thereafter. Further, POWERGRID intimated that work related to software upgradation is scheduled in September.

NRLDC representative highlighted tripping of 220kV Auraiya-Malanpur ckt in which A/R operation was not observed. NTPC was requested to take remedial actions and ensure A/R operation during single phase to earth fault in line.

NRLDC representative requested members to advise the concerned for taking corrective action to avoid such tripping as well as timely submission of the information. Members agreed for the same.

OCC forum emphasized the importance of inter- regional links and requested all the concerned utilities to take necessary corrective to minimise such tripping in future.

B.10 Status of submission of DR/EL and tripping report of utilities for the month of July'24.

The status of receipt of DR/EL and tripping report of utilities for the month of July'24 is attached at Annexure-B.VI of agenda. 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 tripping 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.

NRLDC representative requested RE stations, SLDC J&K & Punjab to improve the status of submission of DR/EL & tripping reports.

OCC forum emphasized the importance of DR/EL & tripping report data for analysis of the tripping. In addition, these data are also the base for the availability verification. The unavailability of these details delays the availability verification process also. Hence, timely submission of DR/EL & tripping report is very much necessary. Members were requested to comply with IEGC 37.2(c) and submit the details in time. Members agreed to take necessary follow-up actions to improve the reporting status.

Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the tripping 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.

B.11 Frequency response characteristic:

In the month of July 2024, only 1 no. of reportable event on 16th July 2024 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 below:

Table:

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	16-Jul-24	22:10 hrs	As reported, at 22:10 hrs on 16th July 2024, sparking was observed in 220 KV Sector 52 (HV) (Sec-56 Gurgaon)-Palli (HV) (HVPNL) Ckt-2 isolator at Palli end and then Bus Bar protection operated at 220kV Palli S/S, which led to black out at 220 kV Palli S/S. As per SCADA, during the same time, reduction in demand of approx. 600 MW and 980 MW are observed in Delhi and Haryana Control area respectively. Hence net load	50.006	50.136	50.092	0.086	1.46

			loss of 1580 MW is considered for FRC/FRP Calculation.					

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."
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."

Status of details received from constituents as on 05th August, 2024 is:

S. No	Control Area	Event Date
		16-07-2024
1	Punjab	Not Received
2	Haryana	Not Received
3	Rajasthan	Not Received
4	Delhi	Not Received
5	Uttar Pradesh	Received
6	Uttarakhand	Not 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)	Not 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 stg-4 (TH)**	No Gen
20	**Unchahar (TH)**	Received
21	**Anta (G)**	Not Received
22	**Auraiya (G)**	Not Received
23	**Dadri (G)**	Received
24	**AD Hydro (H)**	Received
25	**Bairasiul (H)**	Not Received
26	**Bhakra (H)**	Not Received
27	**Budhil (H)**	Not Received
28	**Chamera-1 (H)**	Not Received
29	**Chamera-2 (H)**	Not Received
30	**Chamera-3 (H)**	Not Received
31	**Dehar (H)**	Not Received
32	**Dhauliganga (H)**	Not Received
33	**Dulhasti (H)**	Not Received
34	**Karcham (H)**	Received
35	**Kishanganga**	Not Received
36	**Koldam (H)**	Received
37	**Koteshwar (H)**	Received
38	**Malana-2 (H)**	NA
39	**Nathpa Jhakri (H)**	Received
40	**Parbati-2 (H)**	Not Received
41	**Parbati-3 (H)**	Not Received
42	**Pong (H)**	Not Received
43	**Rampur (H)**	Received
44	**Sainj (H)**	Not Received
45	**Salal (H)**	Not Received
46	**Sewa-II (H)**	Not Received
47	**Singoli Bhatwari (H)**	Not Received
48	**Sorang (H)**	Not Received
49	**Tanakpur (H)**	Not Received
50	**Tehri (H)**	Received
51	**Uri-1 (H)**	Not Received
52	**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 05th August, 2024, 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 (* for NRLDC HDR data/ ^ for generator high resolution data) for the events of July, 2024 is as follows:

S. No	Control Area	Event Date
		16-07-2024
1	Punjab	2.64*
2	Haryana	2.82*
3	Rajasthan	1.21*
4	Delhi	-0.17*
5	Uttar Pradesh	1.72^
6	Uttarakhand	1.06*
7	Chandigarh*	NA
8	Himachal Pradesh	0.70^
9	J&K(UT) and Ladakh(UT)	-4.59*
10	Dadri -1 (TH)	7.06^
11	Dadri -2 (TH)	9.92^
12	Jhajjar (TH)	11.78*
13	Rihand-1 (TH)	5.34^
14	Rihand-2 (TH)	1.67^
15	Rihand-3 (TH)	8.20^
16	Shree Cement (TH)	0.00*
17	Singrauli (TH)	2.27^
18	Tanda-2 (TH)	8.00^
19	Unchahar stg-4 (TH)	No Gen
20	Unchahar (TH)	2.25^
21	Anta (G)	-0.01*
22	Auraiya (G)	-0.85*
23	Dadri (G)	4.71^
24	AD Hydro (H)	1.03^
25	Bairasiul (H)	0.00*
26	Bhakra (H)	0.17*
27	Budhil (H)	-0.26*
28	Chamera-1 (H)	0.10*
29	Chamera-2 (H)	3.19*
30	Chamera-3 (H)	1.83*
31	Dehar (H)	2.60*
32	Dhauliganga (H)	4.80*
33	Dulhasti (H)	0.10*
34	Karcham (H)	6.48^
35	Kishenganga	0.39*
36	Koldam (H)	-2.42^
37	Koteshwar (H)	15.79^
38	Malana-2 (H)	NA
39	Nathpa Jhakri (H)	6.76^
40	Parbati-2 (H)	0.00*
41	Parbati-3 (H)	-4.64*
42	Pong (H)	0.43*

43	**Rampur (H)**	4.55^
44	**Sainj (H)**	0.60*
45	**Salal (H)**	-0.14*
46	**Sewa-II (H)**	5.79*
47	**Singoli Bhatwari (H)**	0.87*
48	**Sorang (H)**	-0.08*
49	**Tanakpur (H)**	1.15*
50	**Tehri (H)**	10.46^
51	**Uri-1 (H)**	-0.72*
52	**Uri-2 (H)**	0.00*

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 events of July, 2024.

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	

Members were requested to ensure implementation of FGMO as per IEGC 2023 at generating stations in their respective control area and share the present status.

SLDC Punjab stated that few of generators are not shifting to FGMO as per IEGC as respective codes has not been amended yet in state grid code.

NRLDC representative highlighted that FRC/FRP computation sheet received from UP and HP only. Other SLDCs were requested to conduct the FRC/FRP computation as per procedure and timeline specified in IEGC 2023. Haryana, Rajasthan and Punjab agreed for the same.
NRLDC also requested SLDCs and other generating stations to implement data extracting facility if not available, in line with the data requirement mentioned in IEGC.

Among ISGS, data have been received from Rihand NTPC, Koteshwar HEP, Koldam HEP, Tehri HEP, AD Hydro HEP, Karcham, HEP and Nathpa Jhakri HEP only. Other ISGS also requested to share the FRC data of their respective stations for each reportable event.

Memebers were 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 of for the aforementioned event.

NRLDC representaitve higlighted unsatisfactory response of some of the generating stations during the event and requested to take necessary remedial actions to improve the governor response.

Memebers were requested to share the data and analysis of FRC of their control area. ISGS stations were requested to share the FRC/FRP calculations of each reportable event and also share the 01 sec data of respective generating stations. It was further requested to take remedial actions to improve the governor response if necessary. States were also requested to follow-up with the generating stations of their respective control area and share the unit wise 01 sec data of respective generating stations along with the anaysis of FRC response for the aforementioned event.

OCC forum requested members to share the FRC data and analysis fo FRC response of their respective control area and also to ensure the complaince w.r.t. IEGC 2023.

B.12 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 blackstart 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 are 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.VII of agenda. Constituents are also requested to share the test report of diesel generators / auxiliary supply on 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, Budhil, Chamera-III, Auraiya GPS, Singoli Bhatwari HEP, Koldam HEP, Dadri GPS, Delhi, Punjab and Uttarakhand.

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

B.13 Mock testing of System Protection Schemes (SPS) in Northern Region

As per IEGC clause 16.2

''For the operational SPS, RLDC or NLDC, as the case may be, in consultation with the

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

As per IEGC clause 16.3

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

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

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

In view of the above, concerned constituents / utility are 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. VIII of agneda. In this regard, a communication has already been sent to constituents through NRLDC letter dated 01.05.2024.

This is also to inform you an online meeting was scheduled on 05.08.2024 among NLDC, WRLDC, NRLDC, SLDC Gujarat, SLDC Delhi, SLDC UP, SLDC Haryana, SLDC Punjab, SLDC Rajasthan and ATL team to discuss the mock testing of SPS of 500kV HVDC Mundra-Mahindergarh and some challenges were highlighted during the meeting regarding changes in identified load feeders and load shedding in Punjab, Haryana, Delhi, UP and Rajasthan.

As per IEGC clause 16.1

“SPS for identified system shall have redundancies in measurement of input signals and
communication paths involved up to the last mile to ensure security and dependability.”

In view of the above, states may confirm the status of the identified load feeders (whether operational or not) and whether any changes done in the existing load

details. SPS scheme of 500kV HVDC Mundra-Mahindergarh is attached as Annexure-B.IX of agenda.

Details only received from Uttarakhand & UP.

NRLDC representative informed that UP has conducted ~70-80% of SPS schemes in their control area. Rajasthan, Punjab and other members are also requested to plan and conduct the SPS testing in their control area.

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

B.14 Availability and Standardization of recording instrument (Disturbance recorder and Station Event Logger):

As per IEGC clause 17

1) *All users shall keep the recording instruments (disturbance recorder and event logger) in proper working condition.*
2) *The disturbance recorders shall have time synchronization and a standard format for recording analogue and digital signals.*

IEGC clause 37.2 (c) also mandates the submission of Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) within 24 hrs of the event.

Data of recording instruments (DR/EL) are very helpful in grid event analysis and also is being used in availability verification of transmission lines. Complete and conclusive analysis of any grid event is not possible without these recording instruments and thus their standardization is very important.

Therefore, availability of disturbance recorder with standardization, time sync and correct nomenclature and station event logger need to be ensured by users at the station of their respective control area.

In view of the above, all the constituents are requested to share the details w.r.t. availability and standardization of disturbance recorder and event logger at the station of their respective control area in format attached as Annexure-B.X of agneda.

Details only received from Haryana & UP.

This is also to inform you that in some special cases First Time Charging of Elements were allowed for some critical elements on user request based on undertaking submitted by the user. Majority of these undertaking are related to installation of station event logger or non-functionality of station event logger.

In this view, you are requested to submit the status of work regarding undertaking submitted during First Time Charging of elements listed in Annexure-B.XI of agenda.

Members were requested to share the share the details w.r.t. availability and standardization of disturbance recorder and event logger at the station of their respective control area. Members are also requested to submit the status of work regarding undertaking submitted during First Time Charging of elements.

OCC forum requested all the members to share the status of their control area and ensure the standardization of recording instruments at all the stations of their control area and comply the same prior to request of FTC.

Status of action taken on decision of 221st OCC meeting of NRPC

S.N.	Agenda	Decision of 221st OCC meeting of NRPC	Status of action taken
1	A.12. Increasing capacity of ICT's at 400 KV Agra,400 KV Lucknow, Gorakhpur & Mainpuri Sub-Station (Agenda by Powergrid NR-3)	Forum asked UPPTCL to give their inputs on the said matter to CTU in next 10 days and subsequently the issue may be taken up in the CMETS meeting of CTU.	UPPTCL vide letter dated 30.08.2024 submitted its views/observation on the cited matter to NRPC, CEA and CTU. CTU to take up the issue in its next CMETS meeting.
2	A.13. Requirement of additional 400/132/33 KV,200 MVA ICT at HVDC Ballia Sub-Station. (Agenda by Powergrid NR-3)	Forum asked UPPTCL to give their views on the Powergrid proposal before the next OCC meeting.	UPPTCL vide letter dated 30.08.2024 submitted its views/observation on the cited matter to NRPC, CEA and CTU.
3	A.15. Revised SPS for 2X315 MVA, 400/220kV ILTs at 400kV GSS Jodhpur (Agenda by RVPN)	Forum asked RVPN to reply vide mail to the above queries of NRLDC and matter may be further deliberated in the upcoming PSC meeting of NRPC.	MS NRPC asked RVPN to submit revised SPS proposal at 400kV GSS Jodhpur in next OCC meeting after incorporating the NRLDC views/comments.

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: Jul-2024
◎ HARYANA: Jun-2024
◎ HP: Feb-2024
◎ J&K and LADAKH: Not Available
◎ PUNJAB: Jul-2024
◎ RAJASTHAN: Jul-2024
◎ UP: Jul-2024
◎ UTTARAKHAND: Jul-2024
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>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: Jun-2024
◎ HARYANA: Jun-2024
◎ HP: Jul-2024
◎ J&K and LADAKH: Not Available
◎ PUNJAB: Mar-2024
◎ RAJASTHAN: Jun-2024
◎ UP: Jun-2024
◎ UTTARAKHAND: Jun-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></td><td></td><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
◎ UTTARAKHAND: Increased
◎ BBMB: Increased</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>Status of FGD installation vis-à-vis installation plan at identified TPS</td><td>List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed.
Further, progress of FGD installation work on monthly
basis is monitored in OCC
meetings.</td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td>◎</td><td>HARYANA</td><td>Jun-2024</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jun-2024</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jul-2024</td></tr><tr><td>◎</td><td>UP</td><td>Jan-2024</td></tr><tr><td>◎</td><td>NTPC</td><td>Feb-2023</td></tr></table>FGD status details are enclosed as Annexure-A.I.II.
All States/utilities are requested to update status of FGD installation progress on monthly basis.</td></tr>
<tr><td>5</td><td>Submission of breakup of Energy Consumption by the states</td><td>All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:
<table><tr><td>Category→</td><td>Consumption by Domestic Loads</td><td>Consumption by Commercial Loads</td><td>Consumption by Agricultural Loads</td><td>Consumption by Industrial Loads</td><td>Traction supply load</td><td>Miscellaneous / Others</td></tr><tr><td><Month></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td></td><td>State / UT</td><td>Upto</td></tr><tr><td>◎</td><td>CHANDIGARH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>DELHI</td><td>Jun-24</td></tr><tr><td>◎</td><td>HARYANA</td><td>Jun-24</td></tr><tr><td>◎</td><td>HP</td><td>Jun-24</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>JPDCL- Mar'24
KPDCL- Not Submitted</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jun-24</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jul-24</td></tr><tr><td>◎</td><td>UP</td><td>Mar-24</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Feb-24</td></tr></table>Chandigarh is requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format</td></tr>
<tr><td>6</td><td>Information about variable charges of all generating units in the Region</td><td>The variable charges detail for different generating units are available on the MERIT Order Portal.</td><td>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>7</td><td>Status of Automatic Demand Management System in NR states/UT's</td><td>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:</td><td>The status of ADMS implementation in NR is enclosed in Annexure-A.I.II.
<table><tr><td>◎</td><td>DELHI</td><td>Scheme Implemented but operated in manual mode.</td></tr><tr><td>◎</td><td>HARYANA</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>HP</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Under implementation.</td></tr><tr><td>◎</td><td>UP</td><td>Scheme implemented by NPCIL only</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Scheme not implemented</td></tr></table></td></tr>
</table>

8	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	500 MVAr TCR at Kurukshetra has been commissioned on dated 15th December 2023
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	1x50 MVAr Reactor at Peeragarhi has been commissioned on dated 18.09.2023
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	2x50 MVAR Reactor at Harsh Vihar has been commissioned on dated 31th March 2023.
iv	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.
v	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.
vi	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.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - 1x125 MVAR Reactor at Dhuri has been commissioned on dated 30th March 2023. 220kV Reactors - 1x25 MVAR Reactor at Dhuri has been commissioned on dated 27th January 2023.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February 2023.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	SLDC informed that PTCUL has intimated that bid extension has been done till 18.07.2024.
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	1x25 MVAR Reactor at Bikaner has been commissioned on dated 24th June 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	13x25 MVAR Reactor at Suratgarh has been commissioned.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 07.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. 01 No. of 125 MVAR reactor is under testing which is expected to done by end of May 2024. Tentaive charging plan is to be intimated by Rajasthan SLDC.

Annexure-A-I.I

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

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 2 Under Implementation:2	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Commissioned	Energization date: 31.05.2024 updated by HPPTCL in 220th OCC
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	Tendering process is yet to be started.Updated in 219th OCC by HPPTCL
				• Network to be planned for 2 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• D/C line Kadarpur - Sec-56 Gurugram.	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposal to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
				• S/C line Kadarpur - Sec-52 Gurugram	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
				• S/C line Kadarpur - Pali	Not awarded yet	Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue. Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration. Updated in 218th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of both circuits of 220kV D/c Sohna-Rangla Rajpur at Roj Ka Meo line at 400kV Sohna Road	Dec'24	Updated in 216th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. **Status:-** Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Aprroved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	Mar'25	Contract awarded on 08.08.23 to M/s Skipper with completion in March 25.Updated in 218th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Energization date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	30.09.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 218th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	Jul'25	Work awarded to M/s Man Structurals Pvt Ltd. JV M/s Aquarian Enterprises on 09.01.2024. Contractual date: 06.05.2025 and Tentative date of completion :06.05.2025 Route has been approved and further work is in progress.Updated in 218th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	31.10.2024	Updated in 222nd OCC by HVPNL. **Status:** The stringing work between TL No. 19 & 20, TL No. 22 & 23 and TL No. 22 & 24 is pending for want of necessary consent from the forest department. The case has already been uploaded on Parivesh portal and is currently pending at the O/o AIGF, Forest Dept. Panchkula.
				• Sonepat - HSIISC Rai 220kV D/c line	Commissioned	Energization date: 31.05.2024 updated by HVPNL in 220th OCC
				• Sonepat - Kharkhoda Pocket A 220kV D/c line	08.03.2025	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. Both bays are under construction and erection of electrical equipment is under progress. Tetative date of completion of both bays at PGCIL end is end of July 2024.
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work is under progres. Stub Setting: 14/2017. Permission for Highway is awaited from concerned department as updated in 218th OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Date of bid opening has been extended up to 30.04.2024 as updated in 218th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	Nov'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL. 6 months more are needed due to ROW issues as updated by PSTCL in 220th OCC
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL. _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Sep'24	Line charged from Rajokheri end on 09.02.2020. The work of construction was awarded to M/s IKE ltd but due to non completion of work firm is blacklisted, Now the pending work of SCADA , Telemetry and Data Integration is being carried out departmentally through OeM M/s ZIV . After completion of these statutory requirement of NRLDC the load will be taken from the Abdullapur. Tentative date of completion of work will be 30.09.2024. Updated in 218th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Commissioned	Updated in 218th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Commissioned	Energization date: 24.05.2024 updated by HVPNL in 220th OCC
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Mar'25	Updated in 222nd OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Under Implementation:2	• Amritsar – Patti 220kV S/c line	31.08.2024	Issue in connectivity agreement with CTU. Updated in 222nd OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	31.08.2024	Issue in connectivity agreement with CTU. Updated in 222nd OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra- Daultabad S/c line at 400 kV Bahadurgarh PGCIL	Mar'25	Updated in 220th OCC by HVPNL. **Status:** NIT has been floated vide NIT No. EPC-D-96 dated 15.10.23 to be opened on 22.12.23. • Now, the tender has been dropped and likely to be refloated by 31.07.2024.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	Mar'25	Updated in 220th OCC by HVPNL. **Status:** • Revised BOQ forwarded from Design wing to contract wing. • Tender has floated vide NIT No. EPC-D-100 dated 04.01.2024 with tender opening date of 26.02.2024. • Tender has been opened on 26.03.24 and 03 nos. bids has been received. The work is likely to be awarded by the 31.07.2024.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	08.03.2025	Updated in 220th OCC by HVPNL. **Status:** Contract awarded on 09.08.23 to M/s R S Infra Noida. Work has been started.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV S/C Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG)	06.10.2025	Work order has been issued on 06.10.2023, work under progress as updated by RVPNL in 215th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220 kV D/C Kankroli(PG) - Nathdwara line	-	Standard bid document has been finalized on 13.08.2024 and bid is under preparation as updated by RVPN in 222nd OCC.
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchagon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Commissioned	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed , final agrrement is expected to be signed by May'24. Updated in 218th OCC by PSTCL.
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	Commissioned	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is commissioned on 20.01.2024. Updated in 217th OCC by HPPTCL.
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'25	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Tender is yet to be awarded. Timeline one year communicated by PSTCL in 220th OCC meeting

Status of ADMS implementation in NR:

Sl. No.	State / UT	Status	Remarks
1	DELHI	Scheme Implemented but operated in manual mode.	A committee has been constituted under the chairmanship of GM, SLDC Delhi to formulate the logic for implementation of ADMS. Delhi SLDC informed that two meetings have been held by the committee and based on the delibration in those meetings, SoP has been formed by the committee. Delhi SLDC has shared the logic for implementation of ADMS with NRLDC for their observation and upon examination of same NRLDC has submitted its views/comments to Delhi SLDC. In 222nd OCC meeting Delhi SLDC intimated that they would be shortly having a meeting with its Discoms and NRLDC views would be delibrated in the said meeting.
2	HARYANA	Scheme not implemented	Haryana SLDC intimated that the matter has been taken up with Powergrid by XEN/SLDC Design, HVPNL, Panchkula regarding the LSS /ADMS application in ULDC Phase-III for SCADA/EMS upgradation project of SLDCs of Northern region. HVPNL has sought comments & suggestions from Powergrid that LSS/ADMS under SCADA upgradation project will suffice the purpose of ADMS or this LSS/ADMS software is meant for emergency control for SLDC only. Technical specifications are yet to be finalized. MS NRPC asked Haryana SLDC to co-ordiante with its HVPN Design Wing and expedite the matter.
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. Likely completion schedule is 31.03.2024	RVPN informed that the issue of cyber security of link between SATNAM centre and SLDC control room has been resolved. Pilot testing has been done and for different logic combination/cases testing is under progress.

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.
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. In 222nd OCC meeting, Uttarakhand intiamted that commissioning of servers and related software has been done and supply of field equipment and infrastructure is under process . Further, New API has to be develop and integrate as new API for WBES for fetching real time schedule has been created by NRLDC. NRLDC has been requested to provide design document(having URL, data structure and credentials etc) of new API.

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 (09.07.2023)
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 (14.06.2024)
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: 31-12-2026), PANIPAT TPS U#7 (Target: 31-12-2026), PANIPAT TPS U#8 (Target: 31-12-2026), RAJIV GANDHI TPS U#1 (Target: 31-12-2024), RAJIV GANDHI TPS U#2 (Target: 31-12-2024), YAMUNA NAGAR TPS U#1 (Target: 31-12-2024), YAMUNA NAGAR TPS U#2 (Target: 31-12-2024)

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: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), 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)

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 opened and contract activities under process
		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		

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
13	DTL	220kV	915.498	NIL	1	400kV Bamnauli Sub station	ERS tower available for 400KV rating can also be used for lower voltage lines as well
		400kV	249.19	02 Sets (32 towers)	1		
14	JKPTCL						JKPTCL, Jammu: being procured
15	HVPN						JKPTCL, Kashmir:10 tower procured (out of which 3 on loan to JKPTCL, Jammu)
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					

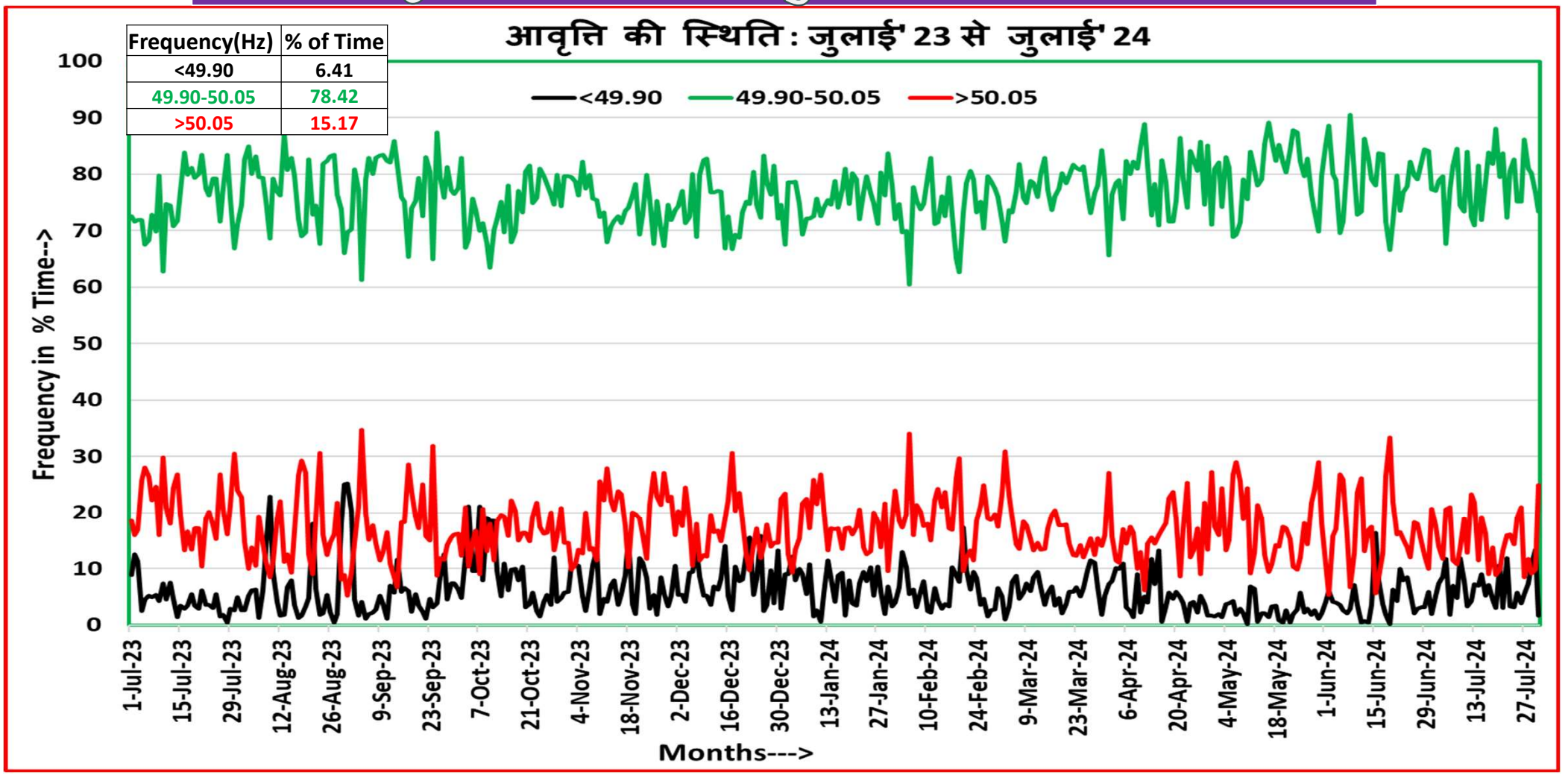
*The transmission Utility with line length less than 500 ckt kms (of 400 KV lines) may be given option either to procure ERS or have agreement with other transmission utilities for providing ERS on mutually agreed terms, when need arises. (As per MoP directions)

											Approved Planned Outage-1			Actual Planned Outage-1		
Capacity (MW) 30-11-2023	Name of Station	UNIT_NM	STN_TYPE_ID	SECTOR	REGION_NM	ST_NM	SH_NM	IPP	FUEL_NM	Capacity (MW) 31-03-2025	Start Date	End Date	Reason	Start Date	End Date	Reason for any deviation
110	KOTA TPS	1	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	110	1-Jul-24	21-Jul-24	AOH			**Deferred due to Power Crisis**
110	KOTA TPS	2	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	110	23-Jul-24	12-Aug-24	AOH			**Not required as intimated by RVUN**
210	KOTA TPS	5	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	210	1-Jul-24	21-Jul-24	AOH			**Deferred due to Power Crisis**
250	SURATGARH TPS	2	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	250	1-Jul-24	21-Jul-24	AOH			**Deferred due to Power Crisis**
135	JALIPA KAPURDI TPP	1	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	21-Jul-24	28-Jul-24	Boiler License Renewal			**Completed on 30-07-2024**
135	JALIPA KAPURDI TPP	5	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	15-Jul-24	22-Jul-24	Boiler License Renewal			**Boiler License renewed**
135	JALIPA KAPURDI TPP	6	T	IPP SECTOR	Northern	Rajasthan	JSWBL	FALSE	LIGNITE	135	4-Jul-24	11-Jul-24	Boiler License Renewal			**Boiler License renewed**
250	CHHABRA TPP	2	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	COAL	250	1-Jul-24	20-Jul-24	AOH	1-Jul-24	24-Jul-24	
35.5	RAMGARH CCPP	2	T	STATE SECTOR	Northern	Rajasthan	RRVUNL	FALSE	NATURAL GAS	35.5	1-Jul-24	31-Jul-24	Replacement of Diffusor			**Not required as intimated by RVUN**
214	KASHIPUR CCPP	2	T	IPP SECTOR	Northern	Uttarakhand	SrEPL	FALSE	NATURAL GAS	214	6-Jul-24	9-Jul-24	Offline Waterwash	19-Jun-24	19-Jun-24	**To meet UPCL generation requirement**
214	KASHIPUR CCPP	1	T	IPP SECTOR	Northern	Uttarakhand	SrEPL	FALSE	NATURAL GAS	214	6-Jul-24	9-Jul-24	Offline Waterwash	7-Aug-24	7-Aug-24	**To meet UPCL generation requirement**

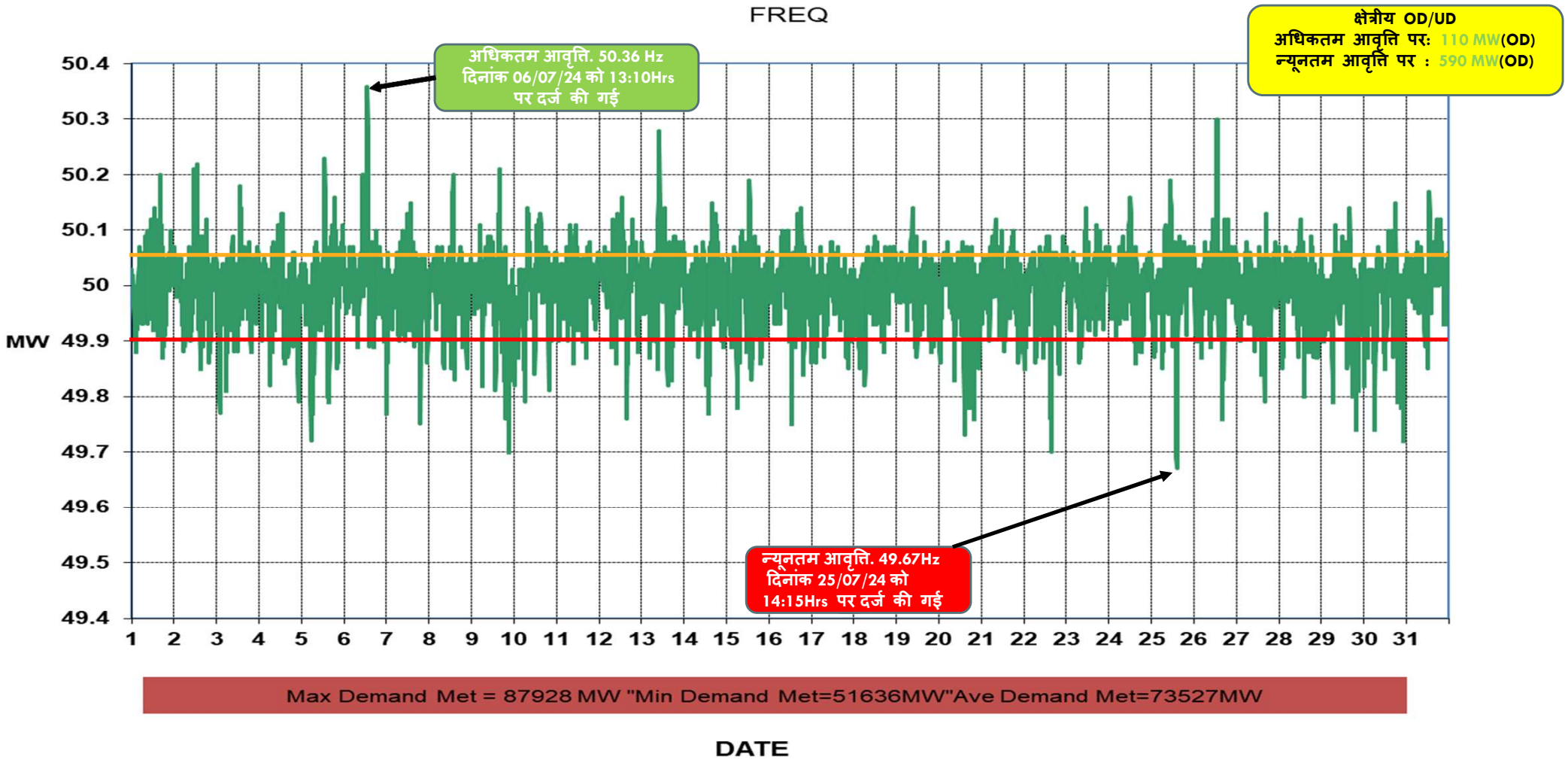
प्रचालन समन्वय उपसमिति की बैठक
जुलाई- 2024

आवृत्ति की स्थिति: जुलाई -2023 से 2024

Frequency(Hz)	% of Time
<49.90	6.41
49.90-50.05	78.42
>50.05	15.17



जुलाई-2024 के दौरान आवृत्ति की स्थिति
(As per 5 Minute SCADA data)



पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	जुलाई 2023	अगस्त 2023	सितम्बर 2023	अक्टूबर 2023	नवम्बर 2023	दिसंबर 2023	जनवरी 2024	फ़रवरी 2024	मार्च 2024	अप्रैल 2024	मई 2024	जून 2024	जुलाई 2024
< 49.7 Hz(%)	0.09	0.47	0.11	0.53	0.10	0.17	0.12	0.095	0.065	0.030	0.000	0.02	0.054
<49.8 Hz(%)	0.66	1.63	0.57	1.99	0.96	1.40	0.92	0.797	0.479	0.432	0.059	0.31	0.621
<49.9 Hz(%)	4.60	7.11	5.21	8.87	6.83	7.83	6.80	6.239	6.022	5.254	2.490	4.50	6.406
49.90-50.05 Hz(%)	*74.96*	*77.25*	*77.86*	*74.42*	*74.36*	*75.21*	*75.83*	*74.06*	77.51	78.56	80.045	79.177	78.424
50.05-50.10 Hz(%)	15.64	13.28	13.32	13.53	13.74	10.47	11.91	14.118	12.262	11.178	13.839	13.34	12.122
>50.10 Hz(%)	4.79	2.35	3.61	3.18	5.06	6.49	5.47	5.581	4.204	5.010	3.627	2.99	3.047
>50.20 Hz(%)	0.80	0.23	0.32	0.14	0.66	0.53	0.41	0.565	0.657	0.539	0.285	0.12	0.280
औसत आवृत्ति	50.01	50.00	50.00	49.99	50.00	49.99	49.99	50.00	50.00	50.00	50.00	50.002	49.997

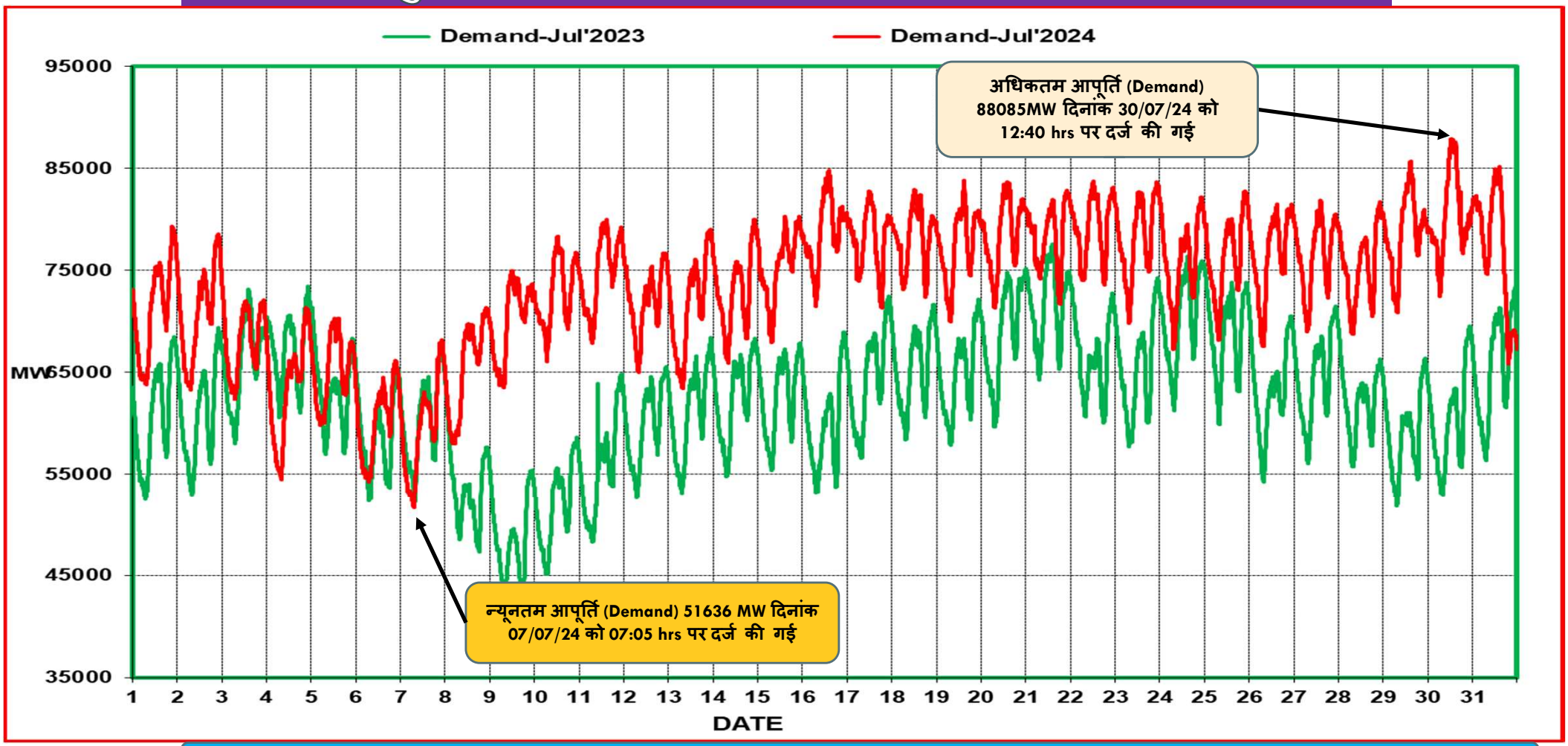
जुलाई-2024 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

राज्य	अधिकतम मांग (MW) (in Jul'24)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Jun'24)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Jul'24)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Jun'24)	दिनांक
पंजाब	16006	20.07.24 at 09:00	16089	29.06.24 at 12:45	366.8	21.07.24	344.1	24.06.2023
हरियाणा	14662	31.07.24 at 14:30	14469	19.06.24 at 15:00	293.4	30.07.24	273.1	18.08.2023
राजस्थान	16371	22.07.24 at 14:15	17949	20.01.24 at 11:00	340.4	31.07.24	379.1	30.05.2024
दिल्ली	8175	31.07.24 at 15:17	8656	19.06.24 at 15:06	163.1	30.07.24	177.7	18.06.2024
उत्तर प्रदेश	30298	22.07.24 at 22:59	30618	13.06.24 at 22:00	630.2	30.07.24	658.7	17.06.2024
उत्तराखंड	2545	16.07.24 at 16:00	2863	14.06.24 at 22:00	54.4	30.07.24	62.1	14.06.2024
हिमाचल प्रदेश	1888	24.07.24 at 10:45	2235	20.01.24 at 07:00	40.5	30.07.24	39.29	24.01.2024
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2635	16.07.24 at 21:00	3107	12.01.24 at 20:00	56.6	16.07.24	66.8	26.01.2024
चंडीगढ़	434	29.07.24 at 14:00	482	18.06.24 at 15:28	8.5	30.07.24	9.1	18.06.2024
उत्तरी क्षेत्र #	88085	30.07.24 at 12:40	91234	19.06.24 at 14:37	1920.2	30.07.2024	1990.4	18.06.2024

उत्तरी क्षेत्र अधिकतम मांग (Demand Met) as per SCADA Data

क्षेत्रीय विद्युत आपूर्ति (Demand) जुलाई 2023 बनाम जुलाई 2024 (As per 5 Minute SCADA data)

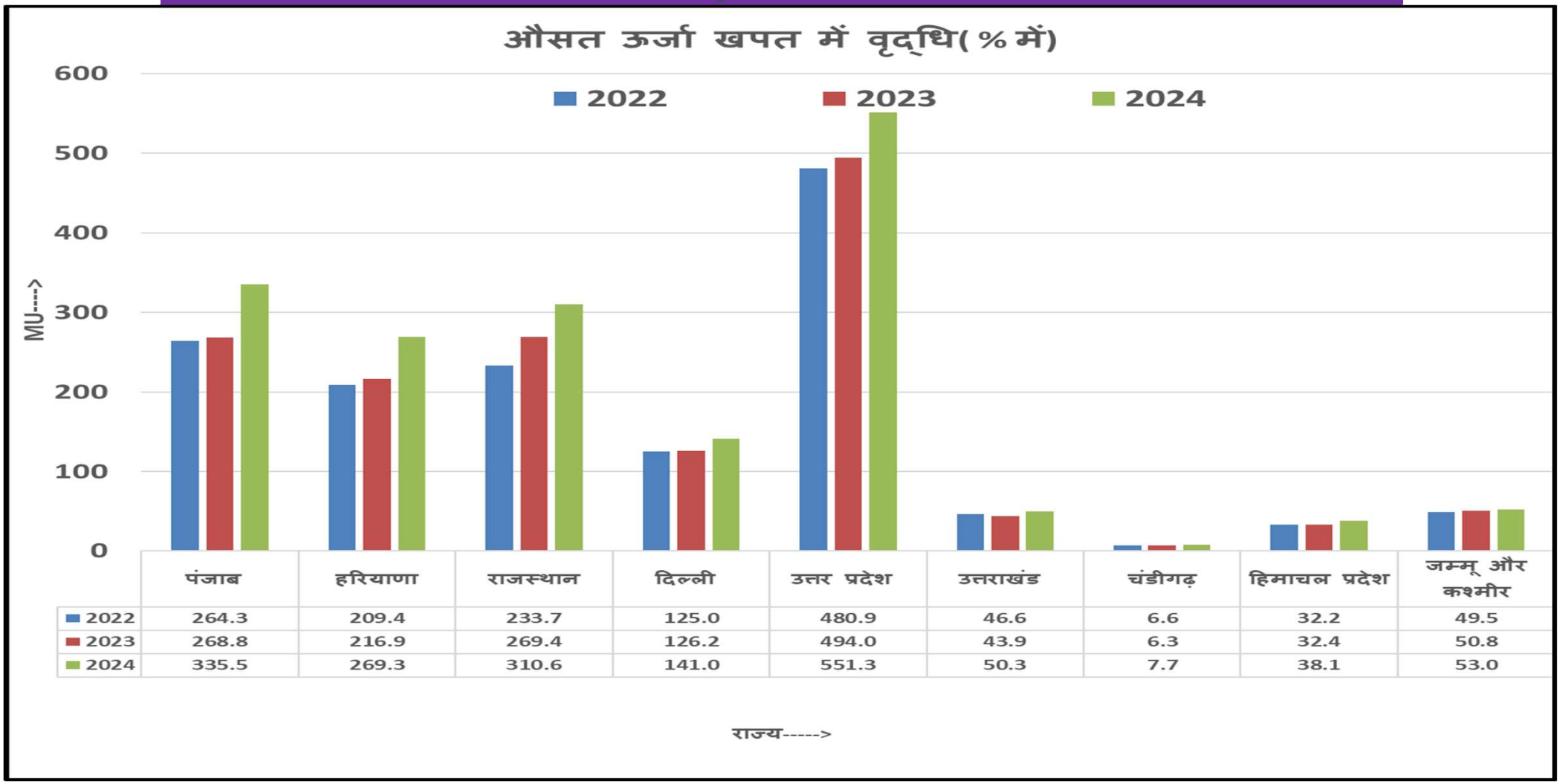


जुलाई -2023 की तुलना में जुलाई -2024 की औसत विद्युत आपूर्ति में 16.7% (~11062 MW) वृद्धि हुई

उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) जुलाई -2024/ जुलाई -2023 / जुलाई -2022

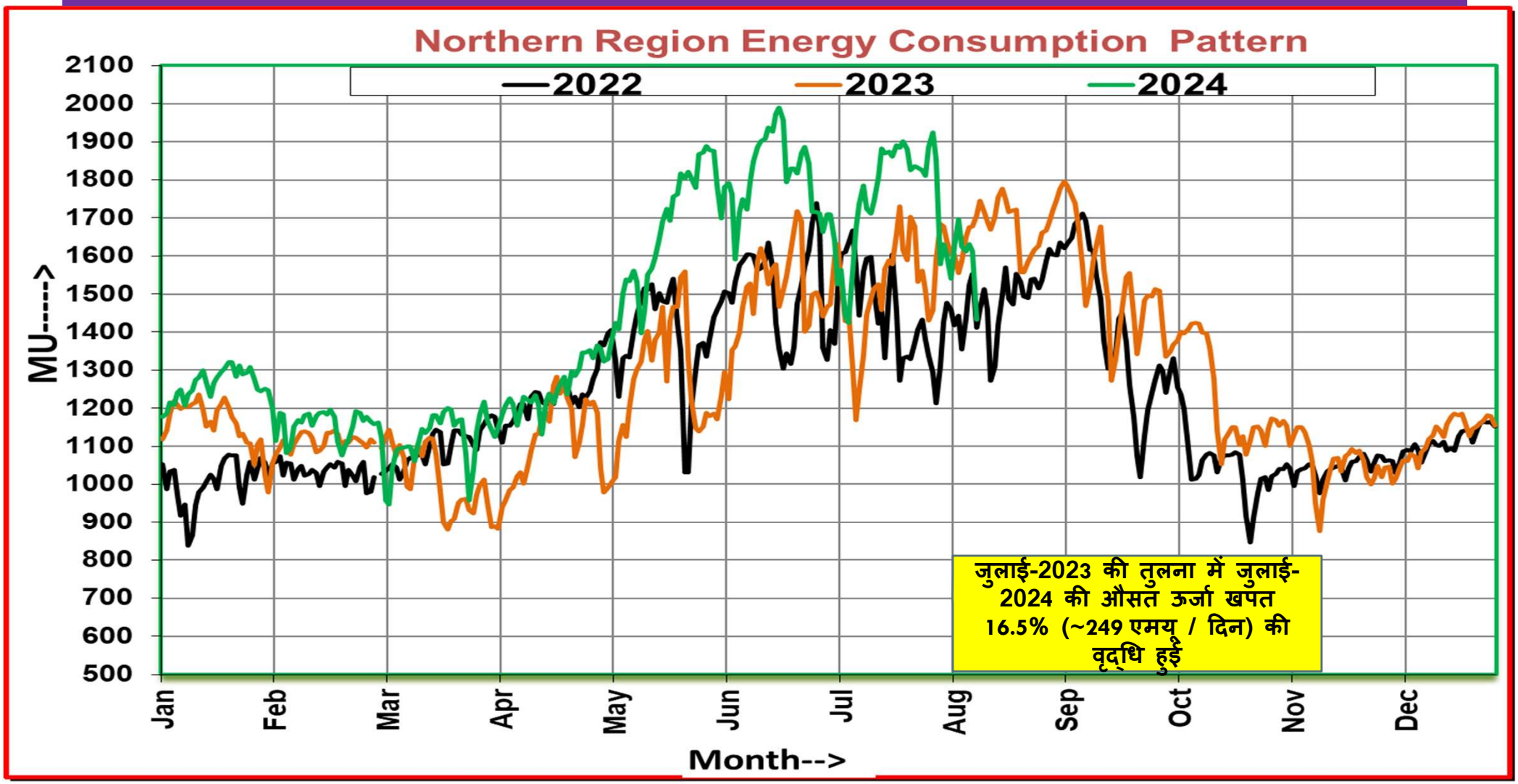
राज्य	जुलाई -2022	जुलाई -2023	जुलाई -2024	% वृद्धि (जुलाई -2023 vs जुलाई -2022)	% वृद्धि (जुलाई -2024 vs जुलाई -2023)
पंजाब	264	269	335	1.7%	24.8%
हरियाणा	209	217	269	3.6%	24.1%
राजस्थान	234	269	311	15.3%	15.3%
दिल्ली	125	126	141	0.9%	11.7%
उत्तर प्रदेश	481	494	551	2.7%	11.6%
उत्तराखंड	47	44	50	-5.8%	14.6%
चंडीगढ़	7	6	8	-3.8%	22.0%
हिमाचल प्रदेश	32	32	38	0.7%	17.6%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	49	51	53	2.6%	4.4%
उत्तरी क्षेत्र	**1448**	**1512**	**1761**	**4.4%**	**16.5%**

उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) जुलाई-2024/ जुलाई-2023 / जुलाई-2022

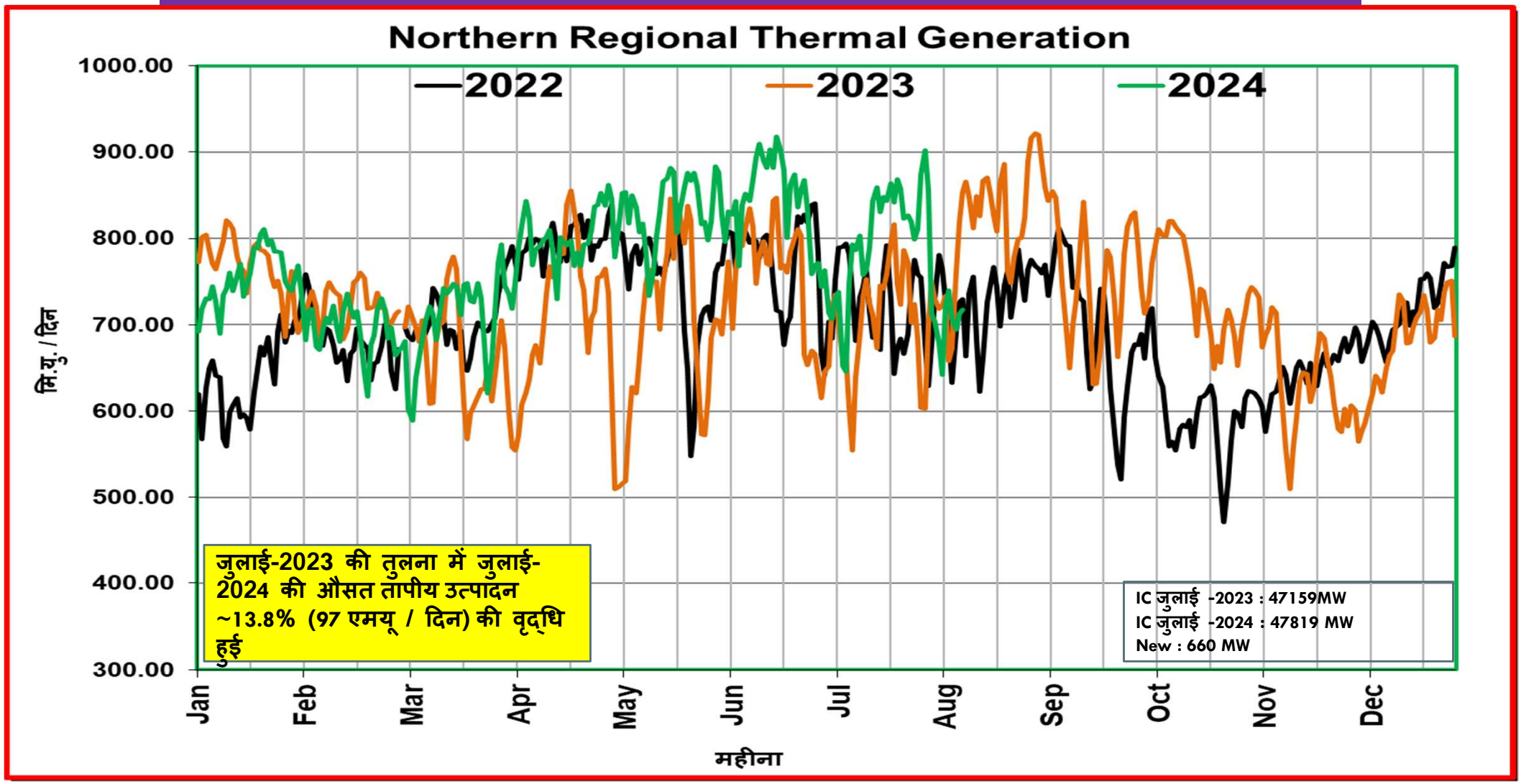


	पंजाब	हरियाणा	राजस्थान	दिल्ली	उत्तर प्रदेश	उत्तराखंड	चंडीगढ़	हिमाचल प्रदेश	जम्मू और कश्मीर
2022	264.3	209.4	233.7	125.0	480.9	46.6	6.6	32.2	49.5
2023	268.8	216.9	269.4	126.2	494.0	43.9	6.3	32.4	50.8
2024	335.5	269.3	310.6	141.0	551.3	50.3	7.7	38.1	53.0

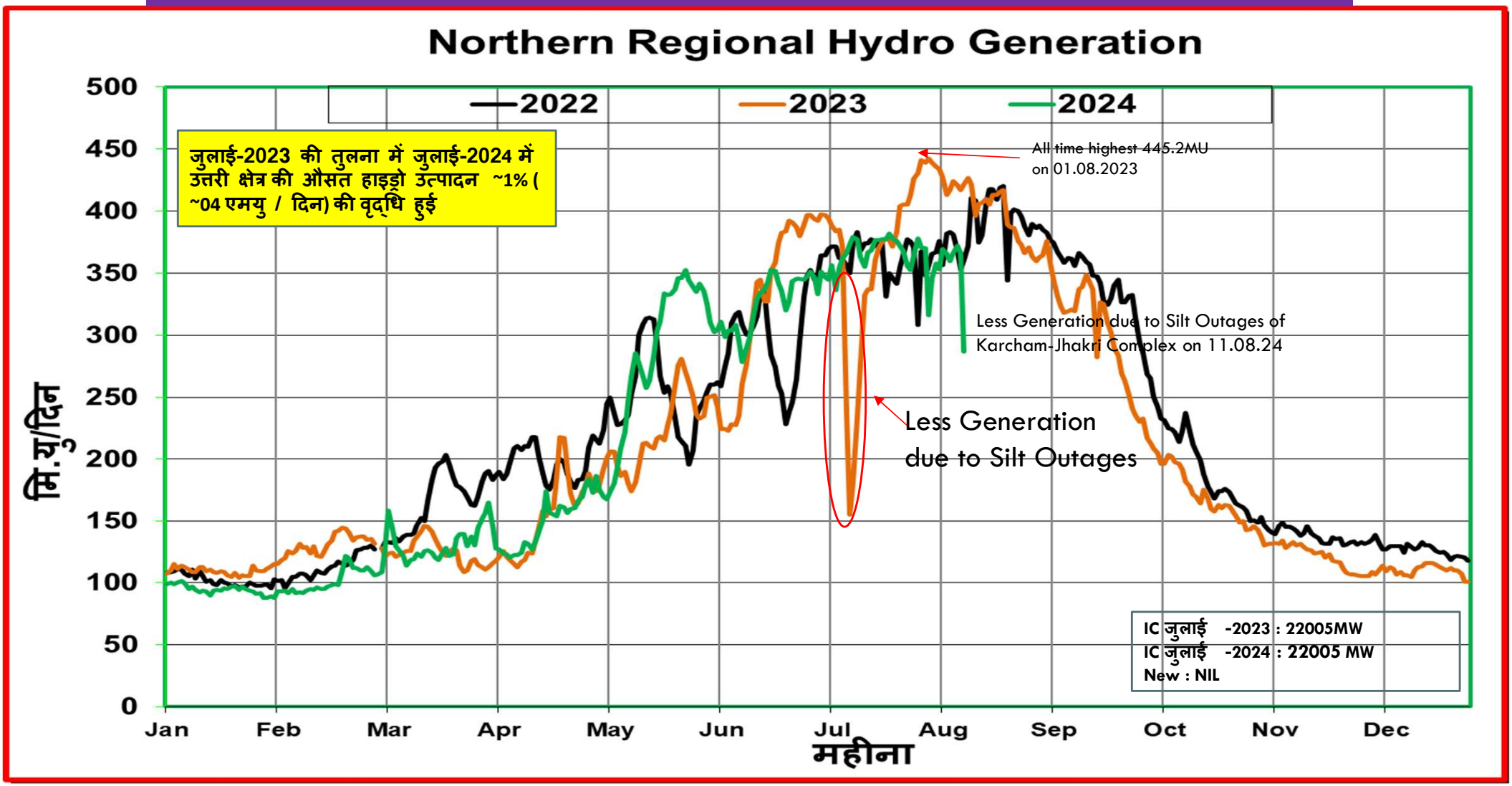
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



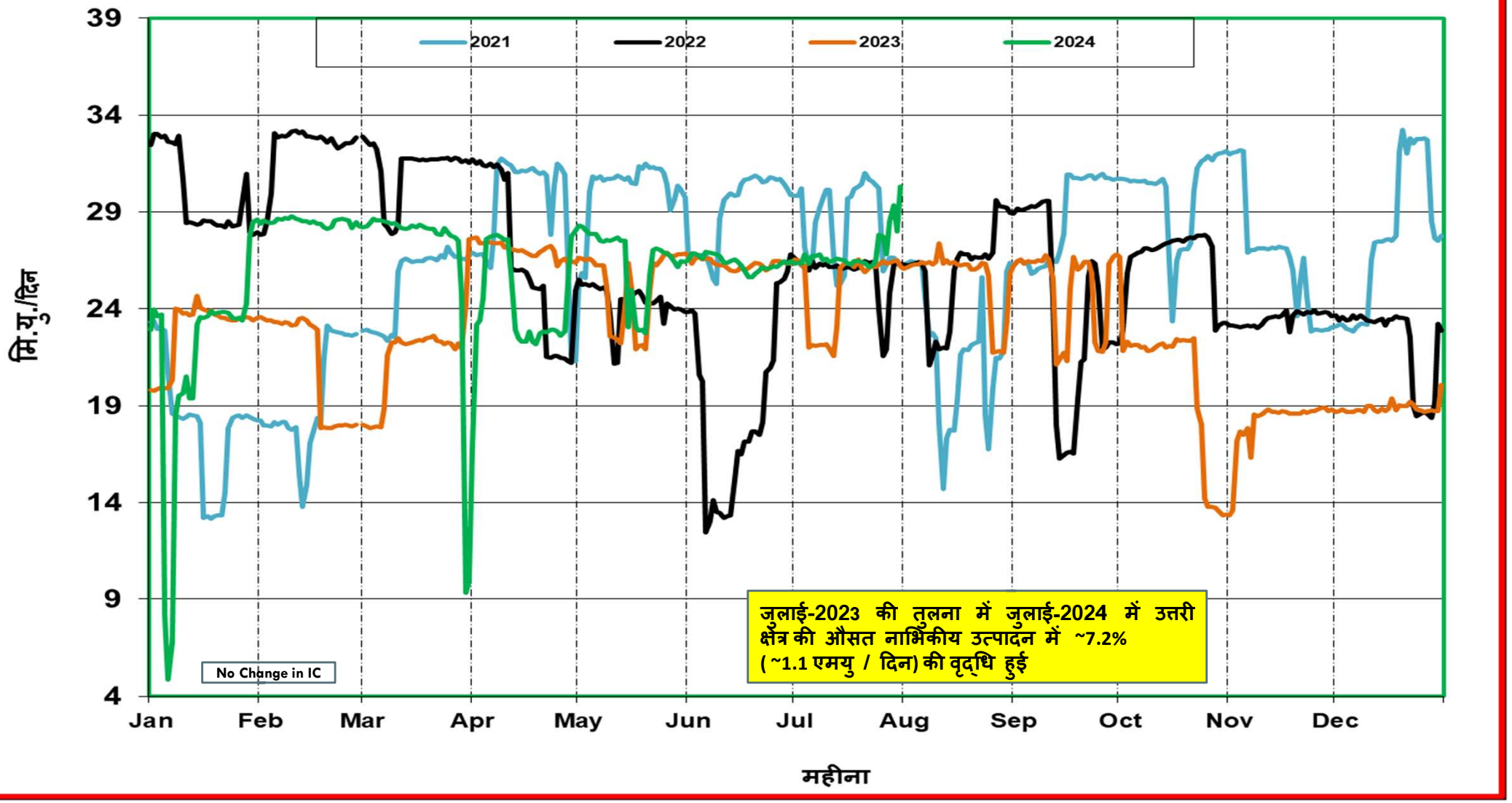
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(MUs/Day)



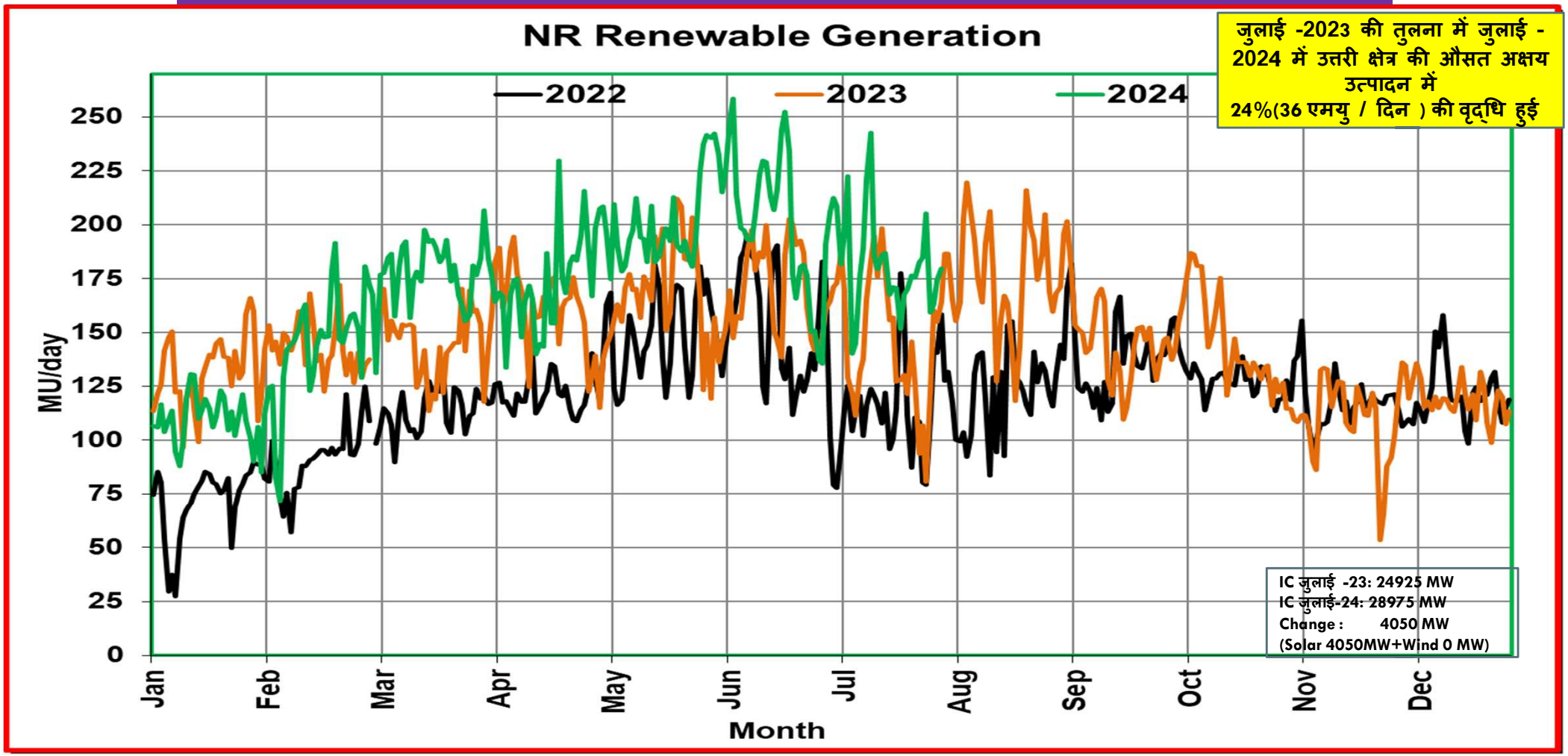
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(MUs/Day)



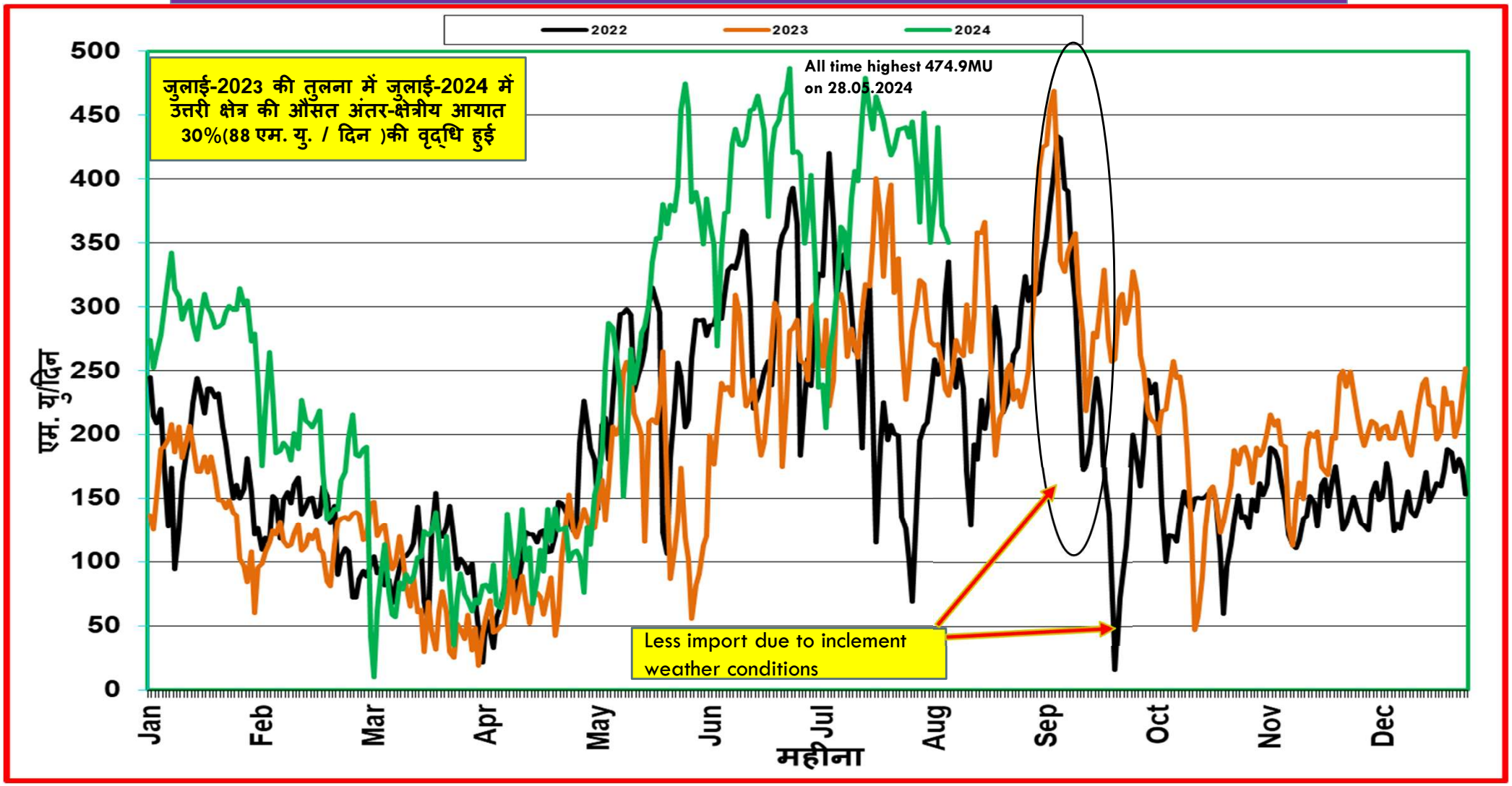
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (MUs/Day)



उत्तरी क्षेत्र की अक्षय (Renewable) उत्पादन की स्थिति (MUs/Day)



अंतर-क्षेत्रीय आयात(MUs/Day) की स्थिति



वास्तविक सारांश -
जुलाई-2023 बनाम जुलाई-2024

	जुलाई-2023 (मि.यु. /दिन)	जुलाई-2024 (मि.यु. /दिन)	जुलाई माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	702.04	798.68	96.64
जलीय (Hydro) उत्पादन	360.71	364.79	4.08
नाभिकीय (Nuclear) उत्पादन	25.09	26.91	1.81
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	297.04	385.50	88.46
अक्षय (Renewable) उत्पादन	147.324	183.199	35.87

RE Penetration

	Maximum Daily MU Penetration			
	Jul '2024		Record upto Jun '2024	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	2.91	06-07-2024	12.28	01-04-2020
Rajasthan	30.70	12-07-2024	36.47	22-10-2021
UP	2.68	14-07-2024	5.50	05-03-2024
NR	15.41	05-07-2024	20.69	02-04-2023

Outage Summary For July 2024									
CONSTITUENTS	PLANNED (A)	FORCED OUTAGES (B=C+D)	EMERGENCY SHUTDOWNS (C)	TRIPPING (D)	% PLANNED SHUTDOWNS (A/(A+C))	% EMERGENCY SHUTDOWNS(C/(A+C)	% ESD SHUTDOWNS(C/B)	% TRIPPING (D/B)	TOTAL OUTAGES (A+B)
POWERGRID	223	329	206	123	52.0%	48.0%	62.6%	37.4%	552
UPPTCL	113	240	93	147	54.9%	45.1%	38.8%	61.3%	353
RRVPNL	62	117	64	53	49.2%	50.8%	54.7%	45.3%	179
HVPNL	15	48	24	24	38.5%	61.5%	50.0%	50.0%	63
BBMB	18	37	12	25	60.0%	40.0%	32.4%	67.6%	55
PSTCL	4	39	19	20	17.4%	82.6%	48.7%	51.3%	43
DTL	4	18	6	12	40.0%	60.0%	33.3%	66.7%	22
PTCUL	7	15	2	13	77.8%	22.2%	13.3%	86.7%	22
NTPC	8	10	6	4	57.1%	42.9%	60.0%	40.0%	18
HPPTCL	1	11	6	5	14.3%	85.7%	54.5%	45.5%	12
PDD JK	3	7	3	4	50.0%	50.0%	42.9%	57.1%	10
THDC	2	7	4	3	33.3%	66.7%	57.1%	42.9%	9
AHEJ4L	0	6	1	5	0.0%	100.0%	16.7%	83.3%	6
ARP1PL	1	5	4	1	20.0%	80.0%	80.0%	20.0%	6
PKTSL	3	3	3	0	50.0%	50.0%	100.0%	0.0%	6
Adani	4	1	1	0	80.0%	20.0%	100.0%	0.0%	5
ESUCRL	4	1	1	0	80.0%	20.0%	100.0%	0.0%	5
MAHINDRA	3	1	0	1	100.0%	0.0%	0.0%	100.0%	4
Renew Power	1	3	1	2	50.0%	50.0%	33.3%	66.7%	4
PFTL	1	2	1	1	50.0%	50.0%	50.0%	50.0%	3
AREPRL	0	2	1	1	0.0%	100.0%	50.0%	50.0%	2
FBTL	1	1	0	1	100.0%	0.0%	0.0%	100.0%	2
JSW	2	0	0	0	100.0%	0.0%	NA	NA	2
Saurya Urja	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
Total	481	904	459	445	51.2%	48.8%	50.8%	49.2%	1385

OUTAGE SUMMARY OF LAST THREE MONTHS

MONTH	PLANNED	FORCED OUTAGES	EMERGENCY SHUTDOWNS	TRIPPING	% PLANNED as of TOTAL S/D	% EMERGENCY SHUTDOWNS	TOTAL OUTAGES (A+B)
	(A)	(B=C+D)	(C)	(D)	(A/(A+C))	(C/(A+C))	
Apr-24	838	724	366	358	69.6%	30.4%	1562
May-24	812	1113	469	634	62.9%	37.1%	1925
June-24	448	1163	550	613	44.9%	55.1%	1611
July-24	**481**	**904**	**459**	**445**	**51.2%**	**48.8%**	**1385**

New Elements First Time Charged During July 2024

S. No.	Type of transmission element	Total No
3	New AC Transmission line	04
5	LILO Line Charging	02
	Transformer	06
6	Line REACTOR	05
7	SOLAR PLANT	01
Total New Elements charged		18

New AC Transmission line

S.No	Name of element	Owner	Voltage Level (in kV)	Circuit No	Line Length	Conductor Type	Actual date of charging
1	400kV Aligarh(UP)-Shamli(UP)-1	UPPTCL	400kV	1	240 KM	Twin Moose	03-Jul-2024
2	400kV Aligarh(UP)-Shamli(UP)-2	UPPTCL	400kV	2	240 KM	Twin Moose	03-Jul-2024
3	765kV Fatehgarh_II(PG)-Bhadla_2 (PG)-3	POWERGRID BHADLA TRANSMISSION LIMITED (PBTL)	765kV	3	202.23 KM	AL59 Zebra	12-Jul-2024
4	400kV Jaisalmer(RS)-M/s Renew Hans urja pvt Ltd (RS)-1	RRVPNL,Renew Hans urja pvt Ltd	400kV	1	12.5 KM	Twin Moose	24-Jul-2024

LILO Line Charging

S.No	Name of element	Voltage Level (in kV)	Line Length of New Line after LILO (In Km)	LILO Portion Line Length (In Km)	Conductor Type	Agency/Owner	Actual date of charging
1	400kV Ropar(PS)-Ludhiana(PG)-1(After LILO of 400 KV KOLDAM - 400 KV LUDHIANA(PG) at 400 KV ROPAR)	400kV	101.088 KMS	6.747 kms	Tripple Snowbird	PKTCL,PSTCL	20-Jul-2024
2	400kV Koldam(NT)-Ropar(PSTCL)-1(After LILO of 400 KV KOLDAM - 400 KV LUDHIANA(PG) at 400 KV ROPAR)	400kV	63.048 kms	6.747 Kms	Tripple Snowbird	PKTCL,PSTCL	20-Jul-2024

Transformer

S.No	Name of element	Owner	Voltage Level (HV/LV/Tertiary)	MVA Capacity	Actual date of charging
1	400/220/33kV, 500 MVA, 3-Phase, T & R, ICT - 4 at Bikaner_2 (PBTSL)	PBTSL	400/220/33kV	500	02-Jul-2024
2	765/22kV, 825 MVA, 3x1-Phase, GE, GT - 2 at Jawaharpur_TPS(UP)	UPRVUNL	765/22kV	825	12-Jul-2024
3	400/33kV, 200 MVA, 3-Phase, Meiden, ICT - 3 at M/s Renew Hans urja pvt Ltd (RS)	Renew Hans urja pvt Ltd	400/33kV	200	26-Jul-2024
4	400/33kV, 200 MVA, 3-Phase, Meiden, ICT - 2 at M/s Renew Hans urja pvt Ltd (RS)	Renew Hans urja pvt Ltd	400/33kV	200	26-Jul-2024
5	400/33kV, 200 MVA MVA, 3-Phase, Meiden, ICT - 1 at M/s Renew Hans urja pvt Ltd (RS)	Renew Hans urja pvt Ltd	400/33kV	200	26-Jul-2024
6	765/400/33kV, 1500 MVA, 3x1-Phase, BHEL, ICT - 5 at Fatehgarh_II(PG)	POWERGRID	765/400/33kV	1500	29-Jul-2024

SOLAR PLANT

S.No.	Plant Name	Total Capacity charged(MW)	Total Installed Capacity of Plant(MW)	Type of R	Total No. of Solar ICR/Block Charged	Agency/ Owner	Actual date of charging
1	AYANA RENEWABLE POWER THREE PRIVATE LIMITED (ARP3PL)	58.3	272	Solar	6	Ayana_RP3P	25-Jul-2024

LINE REACTOR

S.No	Name of element	Owner	Voltage Level (in kV)	MVAR Capacity	Actual date of charging
1	240 MVAR Switchable Convertable LINE_REACTOR of 765 KV Fatehgarh- II -Bhadla-II line ckt-3 at Fatehgarh_II(PG)	POWERGRID BHADLA TRANSMISSION LIMITED (PBTL)	765kV	240 MVAR	01-Jul-2024
2	240 MVAR Switchable Convertable LINE_REACTOR of 765 KV Fatehgarh- II -Bhadla-II line ckt-4 at Fatehgarh_II(PG)	POWERGRID BHADLA TRANSMISSION LIMITED (PBTL)	765kV	240 MVAR	01-Jul-2024
3	50 Non-Switchable Non- Convertable LINE_REACTOR of 400 KV ALIGARH- SHAMLI CKT-I at Shamli(UP)	UPPTCL	400kV	50 MVAR	03-Jul-2024
4	50 MVAr Non-Switchable Non- Convertable LINE_REACTOR of 400 KV ALIGARH- SHAMLI CKT-II at Shamli(UP)	UPPTCL	400kV	50 MVAr	03-Jul-2024
5	240 MVAR Switchable Convertable LINE_REACTOR of 765 KV Fatehgarh- II -Bhadla-II line ckt-3 at Bhadla_2 (PG)	POWERGRID BHADLA TRANSMISSION LIMITED (PBTL)	765kV	240 MVAR	07-Jul-2024


धन्यवाद