I/34402/2024

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 216वीं बैठक का कार्यवृत |

Subject: Minutes of the 216th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 216वीं बैठक दिनांक 14.02.2024 को जैसलमेर (राजस्थान) में 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 216th meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 14.02.2024 in Jaisalmer (Rajasthan). 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।

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

सेवा में,

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

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 216 वीं बैठक का कार्यवृत्त

Member Secretary, NRPC welcomed all the participants to the 216th OCC meeting. He thanked Powergrid NR-1 for hosting the meeting and for the wonderful arrangements for meeting. He hoped that the deliberations in the meeting would help in resolving the issues affecting the Northern Region. He stated that the agenda's approved in this meeting would be taken up for approval in the upcoming NRPC meeting. Thereafter, he requested that the agenda may be presented and deliberated.

List of participants of 216th OCC meeting is attached at ***Annexure-A.IV.***

खण्ड-क:उ.क्षे.वि.स. PART-A:NRPC

A.1. Confirmation of Minutes

Minutes of the 215th OCC meeting was issued on 26.01.2024. OCC confirmed the minutes of the meeting.

A.2. Review of Grid operations of January 2024

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

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

- **Delhi**

Delhi experienced continuous intense cold weather in January 2024 as compared to last year. Temperatures was lower than usual which causes increase in demand and energy consumption. So, peak demand and energy consumption was on higher side than expected.

- **Haryana**

Haryana intimated that the reason for significant positive variation is due to increased agricultural demand without rainfall in January 2024 as compared to last year.

- **Himachal Pradesh**

Himachal Pradesh intimated that the anticipation in Energy Requirement in respect of Himachal Pradesh for the month of January 2024 came on

the lower side due to dry weather conditions as well as low tourist inrush in the state.

- **Rajasthan**

  The Actual Energy requirement w.r.t. Anticipated Energy requirement for the month January 2024 increased by 5.8% due to uninterrupted power supply given to Agriculture consumers and the Actual peak demand w.r.t. Anticipated peak demand for the month January 2024 increased by 3.6 % which is within permissible limit.

- **Uttar Pradesh**

  Actual energy consumption was higher than anticipated due to persistent severe winter in the month of January 2024.

- **Uttarakhand**

  The reason for significant positive variation is due to persistent cold wave conditions without rainfall in January 2024 w.r.t historical data.

A.3. Maintenance Programme of Generating units and Transmission Lines

The maintenance programme of generating units and transmission lines for the month of March 2024 was deliberated in the meeting on 12.02.2024.

A.4. Anticipated Power Supply Position in Northern Region for March 2024

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	120	300	No Revision submitted
	Requirement	120	270	
	Surplus / Shortfall	0	30	
	% Surplus / Shortfall	0.0%	11.1%	
DELHI	Availability	3126	4716	12-Feb-24
	Requirement	2280	4650	
	Surplus / Shortfall	846	66	
	% Surplus / Shortfall	37.1%	1.4%	
HARYANA	Availability	5140	8326	
	Requirement	4140	8428	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Surplus / Shortfall	1000	-102	14-Feb-24
	% Surplus / Shortfall	24.2%	-1.2%	
HIMACHAL PRADESH	Availability	1053	2055	06-Feb-24
	Requirement	1068	2065	
	Surplus / Shortfall	-15	-10	
	% Surplus / Shortfall	-1.4%	-0.5%	
J&K and LADAKH	Availability	1410	4190	No revision submitted
	Requirement	1910	3810	
	Surplus / Shortfall	-500	380	
	% Surplus / Shortfall	-26.2%	10.0%	
PUNJAB	Availability	5690	11640	12-Feb-24
	Requirement	4860	9300	
	Surplus / Shortfall	830	2340	
	% Surplus / Shortfall	17.1%	25.2%	
RAJASTHAN	Availability	8820	18480	12-Feb-24
	Requirement	9610	17000	
	Surplus / Shortfall	-790	1480	
	% Surplus / Shortfall	-8.2%	8.7%	
UTTAR PRADESH	Availability	10540	20500	07-Feb-24
	Requirement	10695	20500	
	Surplus / Shortfall	-155	0	
	% Surplus / Shortfall	-1.4%	0.0%	
UTTARAKHAND	Availability	1188	2220	08-Feb-24
	Requirement	1221	2275	
	Surplus / Shortfall	-33	-55	
	% Surplus / Shortfall	-2.7%	-2.4%	
NORTHERN REGION	Availability	37088	68200	
	Requirement	35904	64300	
	Surplus / Shortfall	1183	3900	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	% Surplus / Shortfall	3.4%	11.7%	

A.5. Follow-up of issues from various OCC Meetings - Status update

A.5.1. The updated status of agenda items is enclosed at ***Annexure-A.I.***

A.5.2. In 216th OCC, 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.6. NR Islanding scheme

A.6.1. With regard to Lucknow-Unchahar islanding scheme, UPSLDC representative apprised forum that UFR have been installed at PGCIL and UPPCL S/s, however, work is pending from NTPC Unchahar end for Lucknow- Unchahar islanding scheme. Representative of NTPC was not available in the meeting.

A.6.2. MS, NRPC stated that a separate meeting may be held to expedite the implementation of Lucknow-Unchahar islanding scheme.

A.6.3. With regard to Agra islanding scheme, EE(O), NRPC informed that the scheme has been approved in the 17st meeting of NRPC held on 29.01.2024. He requested UP SLDC to intimate timeline for implementation of the scheme. Representative of UP SLDC stated that timeline for implementation would be communicated in the next OCC meeting.

A.6.4. Representative from RRVPNL intimated forum that draft DPR for Jodhpur-Barmer Rajwest and Suratgarh Islanding scheme would be shared with NRPC Secretariat and NRLDC by next week.

A.6.5. With regard to Patiala-Nabha Power Rajpura islanding scheme representative from Punjab SLDC informed that DPR for PSDF funding is under approval of their management and it would be submitted for PSDF funding in the next 15 days.

A.6.6. There was no update on Kullu-Manali Islanding scheme and Shimla-Solan Islanding scheme as representative of HP SLDC was not available in the meeting.

A.6.7. MS, NRPC stated that a separate meeting may be held to discuss the Kullu-Manali Islanding scheme and Shimla-Solan Islanding scheme.

A.7. Coal Supply Position of Thermal Plants in Northern Region

A.7.1. In the meeting, NRPC representative apprised forum about the coal stock position of generating stations in northern region during current month (till 10th February 2024).

A.7.2. Average coal stock position of generating stations in northern region, having critical stock, during first ten days of February 2024 is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
SURATGARH TPS	1500	0.65	26	2.6
CHHABRA-I PH-1 TPP	500	0.89	26	2.0
CHHABRA-I PH-2 TPP	500	0.88	26	2.1

A.12.1 In the meeting, above mentioned generating station was requested to take adequate measures to enhance the coal stocks.

A.8. Status of availability of ERS towers in Northern Region (Agenda by NRPC Sectt.)

A.8.1. In the meeting, EE(O) NRPC apprised forum updated inputs received from utilities are attached as **Annexure-A.II.**

A.8.2. 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.9. Furnishing of substation details for implementation of Centralized Database for Protection Settings in Northern Region (Agenda by NRPC Sectt.)

A.9.1. In the meeting, EE(O) NRPC apprised that in 48th TCC & 70th NRPC Meeting (held on 17-18 Nov 2023), NRPC Committee has approved for development of a portal through PSDF for Centralized database containing details of relay settings for grid elements connected to 220 kV and above.

A.9.2. Further, a meeting was held on 08.01.2024 with POWERGRID to deliberate on tendering, wherein POWERGRID desired to know the number of sub-stations, number of elements (Lines/ICT/Reactor/GT), and number of relay so that estimate of work can be figured out for implementation of the portal.

A.9.3. In view of above, it was requested vide letter dtd. 23.01.2024 (**Annexure-A.IV of agenda**) to NRLDC/NLDC and SLDCs of Northern region to furnish the details of all elements connected at 220 kV and above, in respective control area latest by 30.01.2024.

A.9.4. AEE (P), NRPC informed that details of WUPPTCL, Anpara-D, OCBTL, GTL, Obra -C, RPSCL, RVPN, DTL, POWERGRID and Prayagraj zone (UPPTCL) only have been received as of now.

A.9.5. CGM, NRLDC conveyed that NRLDC has submitted the elements details along with ownership. However, figures for relays nos. are not available with NRLDC.

A.9.6. MS, NRPC highlighted that after receiving the details in time, DPR shall be submitted for PSDF grant.

A.9.7. SE (O), NRPC addressed SLDCs to pursue the matter urgently and furnish the details of all elements connected at 220 kV and above, in respective control area.

A.9.8. MS, NRPC conveyed SLDCs to arrange the required details latest by 28.02.2024 and opined to take tentative numbers of relays for those whose details are not received till 28.02.2024.

A.9.9. NRLDC was also requested to follow up with concerned CPSUs for submission of details.

Decision of Forum:

i. SLDCs were requested to furnish the details of all elements connected at 220 kV and above of Transco, Generators, IPPs, TBCB projects and Private utilities in respective control area latest by 28.02.2024.

ii. NRLDC was requested to follow up with concerned CPSUs for submission of details latest by 28.02.2024.

A.10. Nomination of officer(s) for conducting Third Party Protection Audit of substations in Northern region (agenda by NRPC Secretariat)

A.10.1. In the meeting, EE (O), NRPC apprised that as per clause 15 of IEGC 2023:

All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.

A.10.2. Further, a Standard Operating Procedure (S.O.P.) for Protection System Audit (attached as **Annexure-A.V of agenda**) was circulated by NPC division of CEA

wherein it is recommended to form a committee to conduct 3rd party protection audit of substations.

A.10.3. Accordingly, all utilities were requested to send the nomination of officer(s) related to protection field. A letter dated 06.02.2024 has also been sent to all members of NRPC for providing the nomination(s) (attached as **Annexure-A.VI of agenda**)

A.10.4. MS. NRPC highlighted that in order to comply IEGC 2023, All utilities may nominate 2-3 officers from their organizations. List of nominated officers shall be used for forming committee for 3rd party protection audit. Further, POWERGRID was requested to submit the nominations for the same from each region.

A.10.5. AEE (P), NRPC opined that utilities may nominate suitable officers from different areas so that based on audit location and availability of nominated officers, audit committee may be formed.

A.10.6. As per S.O.P. for Protection System Audit, travel expenses from place of duty to audit location shall be borne by respective auditor's organization. Expenses for boarding and lodging during audit shall be borne by substation/generation owner whose audit shall be conducted.

A.10.7. MS, NRPC conveyed that NRPC/NRLDC may also conduct random audit of substations/generating stations of Northern Region.

Decision of the Forum

i. Forum requested all utilities to send the nomination of officers related to protection domain from their organization latest by 28.02.2024.

ii. NRPC Secretariat may conduct random audit of substations/ generating stations in Northern Region.

A.11. Methodology for calculation of Transmission Deviation charges considering Primary Response (Agenda by NRPC Sectt.)

A.11.1. In the meeting, EE(C) NRPC apprised forum that Regulation 12(2) of Amendment-I to CERC (Sharing of ISTS Charges and Losses) Regulations, 2023 provides that:

"Transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station, subject to verification of such over-injection by concerned RPC:

Provided also that each RPC shall issue necessary guidelines for furnishing the data by the generating stations regarding their primary response"

A.11.2. Further, Regulation 30(8) of IEGC, 2023 provides as under:

"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."

A.11.3. He also stated that the matter was deliberated in 212th OCC on 20.10.2023 & 48th CSC meeting on 04.12.2023.

A.11.4. However, the philosophy for incorporating primary response in RTDA was not finalized in OCC, although it was Proposed by GM, NRLDC in CSC meeting that a philosophy based on similar lines as finalized by SRPC (**attached as Annexure-A.VII of agenda**) may be developed.

A.11.5. CGM, NRLDC stated that internal discussion at RLDC level is needed to explore the feasibility and possibility of execution of responsibility at RLDC level as mentioned in procedure adopted by SRLDC/SRPC. Thereafter, NRLDC will share their comments on this subject.

A.11.6. MS, NRPC mentioned that the cited agenda shall again be deliberated in the upcoming commercial sub-committee meeting of NRPC scheduled in the first week of March 2024.

A.12. Proposed SPS for 2X500 MVA, 400/220kV ICTs at GSS Ramgarh (Agenda by RVPN)

A.12.1 EE(O) stated that RVPN has proposed a SPS for 2X500 MVA, 400/220kV ICTs at GSS Ramgarh.

A.12.2 Representative of RVPN informed that There are 2x500MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh. These ICTs are used to stepped up the RE power to evacuate through 400 kV lines to Bhadla and Jaisalmer during the RE generation hours. These ICTs are used to step down the power during off RE generation hours to meet load demand in the Ramgarh, Amarsagar and Dechu region. Peak loads are observed on the 2x500MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh during the peak RE generation hours. Load sharing on both the ICTs is almost equal and each ICT is loaded near to 360 MVA.

A.12.3 Further, he presented detailed SPS to the forum (Copy attached as Annexure-A.VIII of agenda)

A.12.4 NRLDC representative stated that as per SCADA data available at NRLDC, maximum total MW loading of 400/220kV 500MVA ICT-1&2 at Ramgarh (RS), is observed in the range of 600-700MW during step up scenario and 200-300MW during step down scenario. Proposed SPS logic seems to be in order however, in view of permissible loading of ICTs during step down scenario (group-02), load relief may not be required in this case. Hence, opening of feeders in group-02 on

SPS action during contingency in step down scenario in proposed SPS may not be required. Rajasthan may further review w.r.t. this point.

A.12.5 Further, it was highlighted that 400/220kV 500MAV ICT-1&2 at Ramgarh have also become N-1 non-compliant after 500MVA ICT was diverted from Ramgarh to Bhadla. NRLDC requested Rajasthan to commission repaired or new ICT at Ramgarh.

A.12.6 Rajasthan representative informed that bid for new ICT at 400/220kV Ramgarh (RS) has been opened.

A.12.7 NRLDC representative stated that ICTs at almost all the 400/220kV stations in Rajasthan control area are N-1 non complaint. There are around 11(no.) 400/220kV stations where SPS have been implemented in ICTs. SPS is interim solution and Rajasthan need to expedite the commissioning of ICTs at all these stations for permanent solution.

A.12.8 MS, NRPC asked RVPN to modify the SPS as per the observations of NRLDC and thereafter it may be taken up for approval in the next OCC meeting. Further, Rajasthan to expedite the bid and other necessary process and ensure the timely commissioning of ICTs.

A.13. Issue of FTC for balance 765kV Bays (701, 702, 703, 705, 706) and Spare Reactor & ICT units w.r.t. M/s PMSTL at 765/400/220KV GIS Meerut substation (Agenda by Powergrid-NR1)

A.13.1. CGM Powergrid NR-1 intimated forum that the 765/400/220 kV, 2x1500 MVA + 2x500 MVA Meerut substation of UPPTCL was agreed in the 38th Standing Committee Meeting on Power System Planning of Northern Region (38th SCM) held on 30.05.2016. The substation has subsequently been implemented by Powergrid Meerut Simbhavali Transmission Limited (PMSTL) with 765 kV, 240 MVAR bus reactor under TBCB route. Further, following elements have also been implemented at Meerut substation by PMSTL:

i) Bay 701 (ICT-3 Future)
ii) Bay 702 (Tie Bay of ICT-3 Future and Future Line-2),
iii) Bay 703 (Future Line-2),
iv) Bay 705 (Tie Bay of ICT-2 and Future Line-I),
v) Bay 706 (Future Line-I),
vi) spare unit of 765 kV ICT,
vii) Spare unit of 765kV Bus Reactor

A.13.2. Powergrid mentioned that the system has been commissioned, except the 05 no. of future bays, spare ICT and spare reactor. Further, 05 no. of future bays, the spare ICT and reactor were made ready for charging along with other assets but could not be charged as First Time Charging Clearance was not issued by NRLDC citing that CEA / Standing Committee approval was not available for the

same. The details of spare ICT and spare bus reactor unit were not intimated by UPPTCL in the 38th SCM.

A.13.3. Representative of NRLDC informed that the cited matter was discussed in the 67th NRPC meeting and 214th OCC meeting of NRPC, wherein M/s UPPTCL was advised to take up the matter with Chief Engineer, PSPA Division, CEA for resolution of the issue.

A.13.4. MS, NRPC asked UPPTCL to confirm to CEA the details of 765 kV Bays (701, 702, 703, 705, 706), spare ICT and spare bus reactor implemented by PMSTL at Meerut substation.

A.14. Demolition and reconstruction of residential/ non-residential buildings in the substation premises at Ballbhgarh, Bassi, Mandola under RHTL and Hisar Sub Station under MBTL system through Additional Capitalization in Tariff Block 2019-24. (Agenda by Powergrid-NR1)

A.14.1. Representative of Powergrid NR-1 informed that Ballbhgarh, Bassi, Mandola and Hisar Sub-stations have completed 30 years of service life. Residential/ non-residential buildings in these substation premises are in dilapidated and non-liveable condition. Therefore, Powergrid has proposed to demolish and reconstruct quarters and Non-residential building (Transit Camp & Recreational Centre) at above stations after demolition of old and dilapidated quarters and old non-residential buildings.

A.14.2. He further informed that reconstruction of dilapidated township of Vijayawada Sub-station under ACE for 2019- 24 tariff period was approved by SRPC on same ground.

A.14.3. MS, NRPC stated that as the work is to be carried out through additional capitalization, the consent of states would be required. He suggested that structural assessment of these projects may be carried out by an appropriate agency, such as NCCBM. Subsequently, the proposal may be taken up for approval in the NRPC meeting.

A.15. Concern regarding imposition of shutdown charges by Rajasthan Rajya Vidut Prasaran Nigam Limited, Jaisalmer of their transmission lines for construction activities by POWERGRID, contrary to CERC Regulation. (Agenda by Powergrid-NR1)

A.15.1. Representative of Powergrid and RVPN informed that the issue has been resolved.

A.15.2. Representative of RVPN informed that a clarification has been issued by RVPN stating not to raise any transmission charges for RVPN power line crossings by 100 percent wholly owned subsidiaries of Powergrid on a reciprocal basis.

A.16. Frequent faults in 220kV lines of UPPTCL connected to POWERGRID, GIS

Bagpat; and UPPTCL's consent for rectification of Partial Discharge (PD) activity observed in 220 kV Main Bus 1 of POWERGRID, GIS Bagpat. (Agenda by Powergrid-NR1)

A.16.1. Representative of Powergrid NR-1 informed that 220 kV Transmission Lines of UPPTCL connected to POWERGRID, GIS Baghpat are tripping/auto-reclosing very frequently thus adversely affecting equipment life & financial burden on Powergrid. Further, recently Partial Discharge (PD) activity has been observed in 220 kV Main Bus-1. To rectify the PD shutdown of following three 220kV transmission elements of UPPTCL is required for 4 days

220 kV Baghpat (POWERGRID)- Baghpat (UPPTCL) ckt-I Line
220 kV Baghpat (POWERGRID)- Baghpat (UPPTCL) ckt-II Line
220 kV Baghpat (POWERGRID)- Modipuram (UPPTCL) ckt-I Line

A.16.2. The cited matter was discussed during 214th & 215th meeting of OCC held in Dec 2023 and Jan 2024 wherein it was directed to take up the necessary rectification at POWERGRID's GIS at Baghpat with UPPTCL's consent. However, no formal consent has been received from UPPTCL till date.

A.16.3. In this regard, representative of UPPTCL sated that most of the fault mentioned by Powergrid are due to auto-reclosing at Powergrid end. Further, both UPPTCL and UPSLDC agreed to facilitate the shutdown of above-mentioned lines.

A.17. Varanasi Islanding Scheme (Agenda by UPSLDC)

A.17.1. Representative of UPSLDC presented to the forum steady state study of the Varanasi Islanding Scheme.

A.17.2. NRLDC representative stated that island with two (02) machine case is not feasible as very low voltage at most of the nodes is observed in that case. Island will more likely to survive with one machine at Anpara TPS. Less loading of line (one machine on bar) will help in managing voltages. Logic may be wired irrespective of unit on bar i.e. scheme should work if either one or both Unit 4 & Unit 5 are in service. UFR may also be installed at 63 MVAr bus reactor at Anpara TPS, such that when f<48Hz and V<405kV, bus reactor is automatically tripped. It will further help to maintain system voltage.

A.17.3. UP representative stated that sufficient load will not be available during winter months, so NRLDC may share their view on the feasibility of island operation in winter months in one machine case also.

A.17.4. NRLDC representative stated that load in winter months is expected to remain low & the major issues are observed in off-peak scenario of winter. Accordingly, revised scheme with one unit may be submitted by UP to NRPC/NRLDC for finalisation in next OCC meeting.

A.17.5. MS, NRPC asked UPSLDC to revise the scheme as per the comments of NRLDC and thereafter it may be taken up again in the next OCC meeting for finalisation.

A.18. Review of switching -off of 765 KV Agra-Fatehpur lines on Voltage Regulation (Agenda by Powergrid NR-3)

A.18.1. Representative of Powergrid NR-3 stated that 765 KV Agra-Fatehpur lines is opened and closed frequently on daily basis on Voltage Regulation leading to theft of hardware fittings and accessories by miscreants. He requested that switching-off of 765 KV Agra-Fatehpur Lines may be avoided on Voltage Regulation to prevent theft and for grid stability and reliability.

A.18.2. NRLDC representative stated that lines were opened on voltage regulation in night hours during winter months. Due to low demand during winter months, MW loading of line is as low as 350-450MW during night hours and 1100-1150MW during day peak hours. Lines were opened to ensure grid security in view of high voltage, one circuit was opened at a time. As demand will increase after winter, voltage profile will also improve during night hours and frequent opening of line will not be required.

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

B.1 NR Grid Highlights for January 2024

Detailed presentation on grid highlights of Jan'2024 was shared by NRLDC in OCC meeting. The presentation as discussed in the meeting is attached as Annexure-B.I.

B.2 Grid Operation related issues

I. Expediting revival of 400kV Jodhpur-Kankroli & shutdown of 400kV Bhinmal-Kankroli and 400kV Bhinmal-Zerda:

Shutdown of 400kV Jodhpur (RVPNL)-Kankroli (PGCIL) (PGCIL) was approved from 1st Oct'23 for re-conductoring work of entire 188km for 4 months. Due to outage of 400kV Akal-Kankani, 400kV Jaiselmer-Kankani lines, there was delay in providing shutdown of 400kV Jodhpur-Kankroli line and shutdown was provided on 06.10.2023.

400kV Jodhpur-Kankroli is an important line for evacuation of wind generation from intrastate network of RVPN. With the commissioning of 400kV Fatehgarh II – FatehgarhIII – Jaisalmer link, the flow on intrastate network has also increased. To avoid any possibility of intrastate/ interstate RE generation curtailment due to other shutdowns in the complex, it is requested to expedite revival of 400kV Jodhpur-Kankroli line.

Further, a meeting was organized on 06.02.2024 to discuss scheme to relieve high loading of WR-NR Inter Regional Corridor (400 kV Bhinmal-Zerda line). In the meeting, following was decided:

i. Shutdown for interim arrangement shall be taken after revival of 400kV Jodhpur-Kankroli line with HTLS conductor.
ii. Rajasthan SLDC to explore possibility of shifting of load from Bhinmal to Kankroli or nearby substations. (load of 220kV substations fed from Bhinmal such as Bali, Pindwara, Sanchore, Dhaurimanna etc.) and check for any overloading of 220kV or below voltage level intrastate lines/ ICTs etc. including for nearby s/s such as Rajwest. Basecase may be shared with NRLDC.
iii. Rajasthan SLDC to discuss with DISCOM to regulate load at 400kV Bhinmal & shift some load to night time fed from 400kV Bhinmal to avoid huge variation in demand, voltage profile and avoid overloading. Supply from 400/220kV ICTs at Bhinmal may be radialised to avoid impact on major area, in case of overloading/ low voltages.
iv. Rajasthan to expedite commissioning of capacitors at underlying n/w of Bhinmal (already approved by NRPC forum).
v. Rajasthan SLDC to monitor any switching at Bhinmal station in view of reduction in fault level
vi. POWERGRID to complete the interim arrangement works within one day after shutdown of 400kV Bhinmal-Kankroli and 400kV Bhinmal-Zerda is provided make 400kV Kankroli-Zerda ckt1 and ckt 2 available.
vii. POWERGRID to expedite commissioning of already approved 3rd 315MVA ICT at 400kV Bhinmal, to be completed by 31st Mar 2024.
viii. POWERGRID to confirm whether DIA of 400kV Bhinmal-Zerda and 400kV Bhinmal-Kankroli can be closed during the interim period & during permanent bypass arrangement through mail.
ix. Protection settings to be reviewed at Kankroli, Zerda and adjacent stations of Kankroli & Zerda. Revised settings to be implemented by POWERGRID & GETCO before first time charging.
x. No approval would be required from PSPA division of CEA, as the interim arrangement is similar to final arrangement.
xi. NLDC/NRLDC to review ATC/TTC corridor on NR-WR path after the stabilization of interim arrangement.

POWERGRID & Rajasthan were requested to share their comments on aforementioned points.

POWERGRID representative stated that jack bus laying is required for commissioning of 400/220kV 315MVA ICT-3 at Bhinmal(PG) and shutdown of both 220kV bus at Bhinmal will be needed to complete the whole work. It was further informed that shutdown will be required for 10-12hrs during day time for 02 days. POWERGRID representative confirmed that DIA of 400kV Bhinmal-Zerda and 400kV Bhinmal-Kankroli at Bhinmal can be closed during the interim period & during permanent bypass arrangement.

Rajasthan was requested to coordinate with the DISCOM and plan the load management / load shifting to facilitate the shutdown at Bhinmal(PG).

Rajasthan representative stated that they have followed up with the DISCOM and advised them to plan the load management / load shifting / load shedding during shutdown period. DISCOM will plan the same within a week.

NRLDC representative requested Rajasthan to expedite the load management planning in coordination with DISCOM and suggested to schedule the shutdown on weekend days (non-working days). It was further requested to Rajasthan to discuss with DISCOM to regulate load at 400kV Bhinmal & shift some load to night time fed from 400kV Bhinmal to avoid huge variation in demand, voltage profile and avoid overloading. Supply from 400/220kV ICTs at Bhinmal may be radialised to avoid impact on major area, in case of overloading/ low voltages

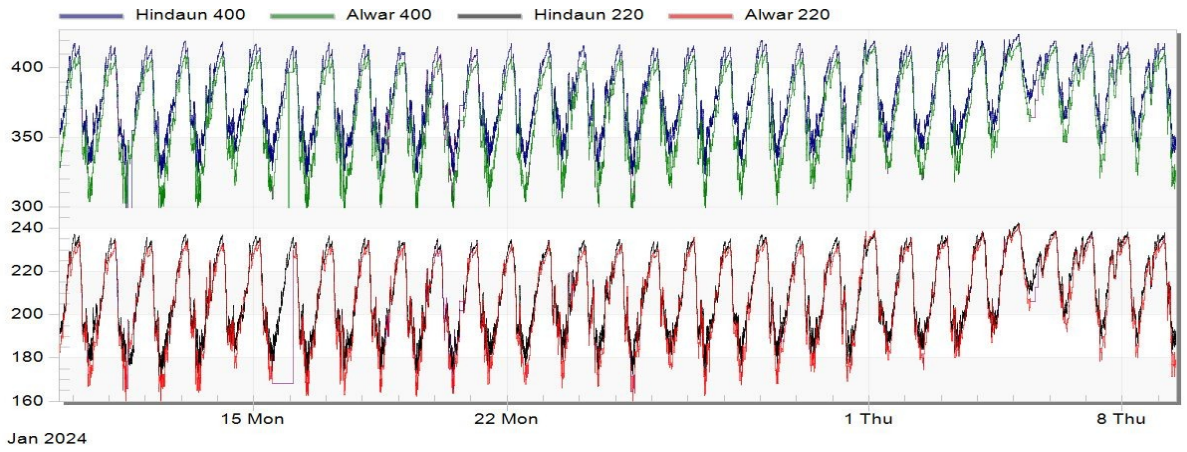
OCC forum requested Rajasthan to expedite the load management planning in coordination with DISCOM and facilitate the shutdown of 220kV Bus-1&2 at Bhinmal(PG) so that commissioning of ICT-3 at Bhinmal may be expedited.

II. Critically low voltage at 400/220kV Hindaun & Alwar substations:

Serious concerns have been raised by NRLDC on the transmission related issues being observed in RVPN control area in various forums including NRPC and OCC forum. Sustained low voltage operations in several Rajasthan system pockets, like voltage dropping to 340 & 330 kV level at the 400kV Hindaun & Alwar substations respectively, are leading to risky & vulnerable grid operation, apart from the more serious concerns in the down-stream distribution sector.

It is to be noted that the issues is being highlighted by NRLDC since 2019-20, still the issue is pending and requires quick action from RVPN side as the situation is degrading with every passing day.

In 70 NRPC meeting held in Nov 2023, RVPN representative agreed to run Dholpur generating units for improving voltage profile in the area. However, the same is not being done and as a result drastically low voltages are being observed in these area during the day time as shown below:



In 215 OCC meeting,

- RVPN representative stated that they have taken up the matter with higher officials for running Dholpur generation. Same is expected to be approved shortly. Further, works for 400kV Dholpur S/s are also under progress. Capacitors have been approved from PSDF side and final approval is awaited from MoP side. Further, proposal for LILO of 400kV Agra-Sikar has also been taken up internally from RVPN side.

- OCC forum asked to expedite actions for improving the voltage profile at 400/220kV Hindaun & Alwar and nearby area.

NRLDC representative stated that in 70th NRPC meeting, Rajasthan agreed to run the Dholpur GPS units for improving voltage profile in Hinduan, Alwar complex. Rajasthan was requested to share update on running Dholpur GPS units and 400kV Dholpur S/s.

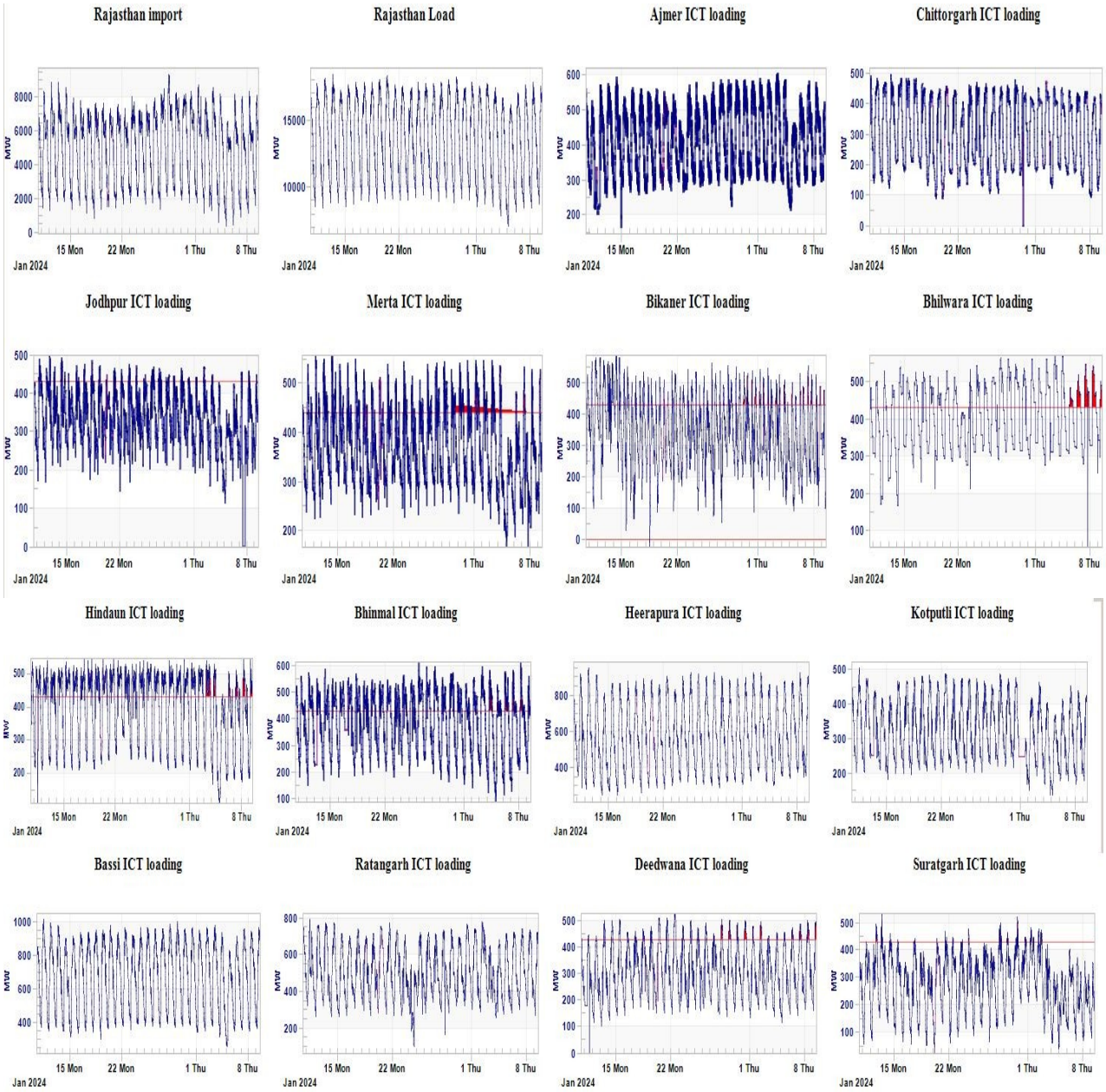
Rajasthan representative stated that finally it was decided to make 400kV Dholpur S/s under TBCB and approval for further process by BPC (Bid Process Coordinator) is pending at management level. It was further informed that final approval to run Dholpur GPS units is also pending at management level. Approval is getting delayed due to consideration of commercial aspects. Rajasthan stated that they will further discuss with management for approval in view of technical aspects, final decision is expected by February'2024 end.

NRLDC representative suggested that Rajasthan may approach SERC also to resolve the issue.

OCC forum requested Rajasthan to expedite actions for improving the voltage profile at 400/220kV Hindaun & Alwar and nearby area.

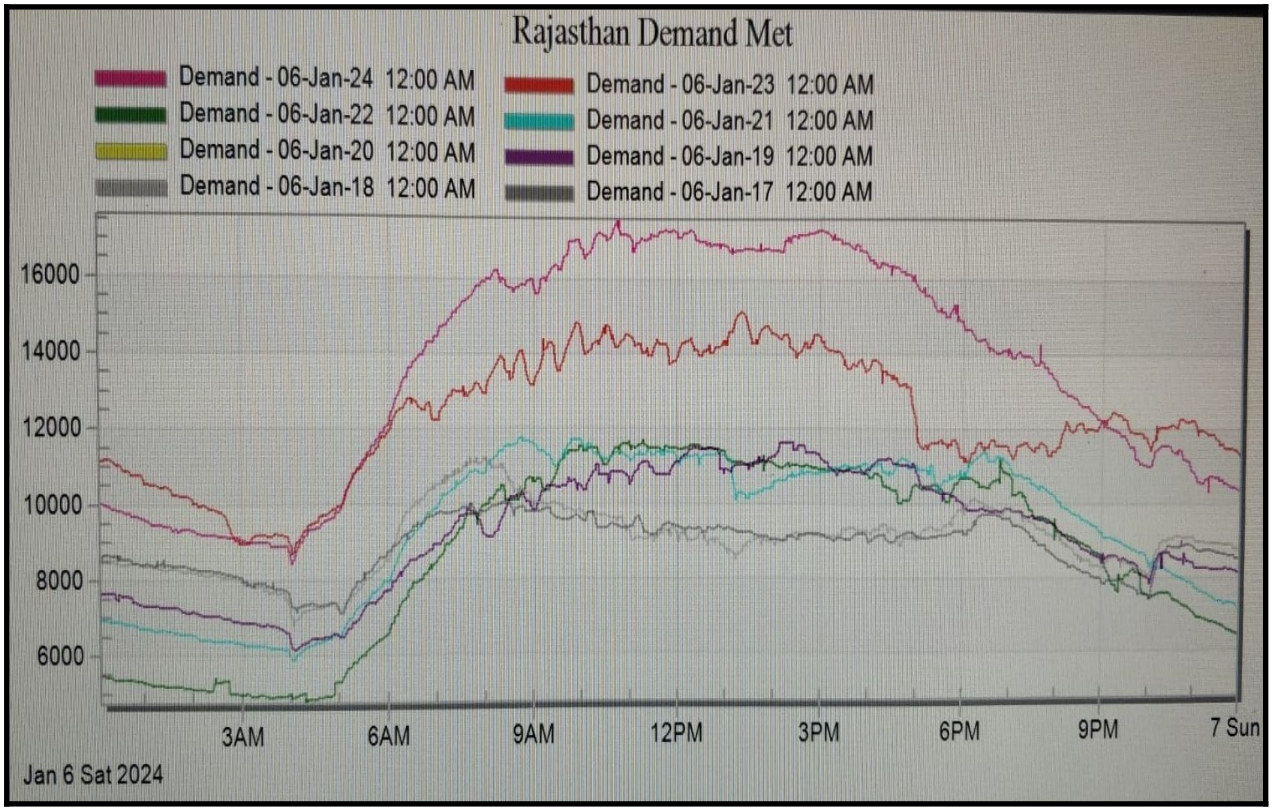
III. Severe constraints in Rajasthan state

It is being observed that loading of 400/220kV ICTs at number of RVPN substations continue to be on the higher side. Some of the such stations are shown below along with loading of 400/220kV ICTs for last 30 days:



NRLDC stated that from the data available at NRLDC, it is being observed that the loading of almost all 400/220kV substations (intrastate as well as interstate) is beyond their N-1 contingency limit during day-time. Such situation may always load loss in particular area of N-1 non-compliance apart from possibilities of major grid disturbance in Rajasthan control area.

Moreover, from the data at NRLDC & past discussions in OCC, it is seen that there has been considerable shifting of load in day-time by Rajasthan.



From the graph above, it can be clearly seen that there has been considerable increase in demand of Rajasthan during day time for last 2 years and load is being shifted to daytime which has led to critical operation of Rajasthan grid. As requested earlier, Rajasthan SLDC is requested to take up the matter with Rajasthan DISCOM, STU and higher management and highlight the critical situation of Rajasthan grid.

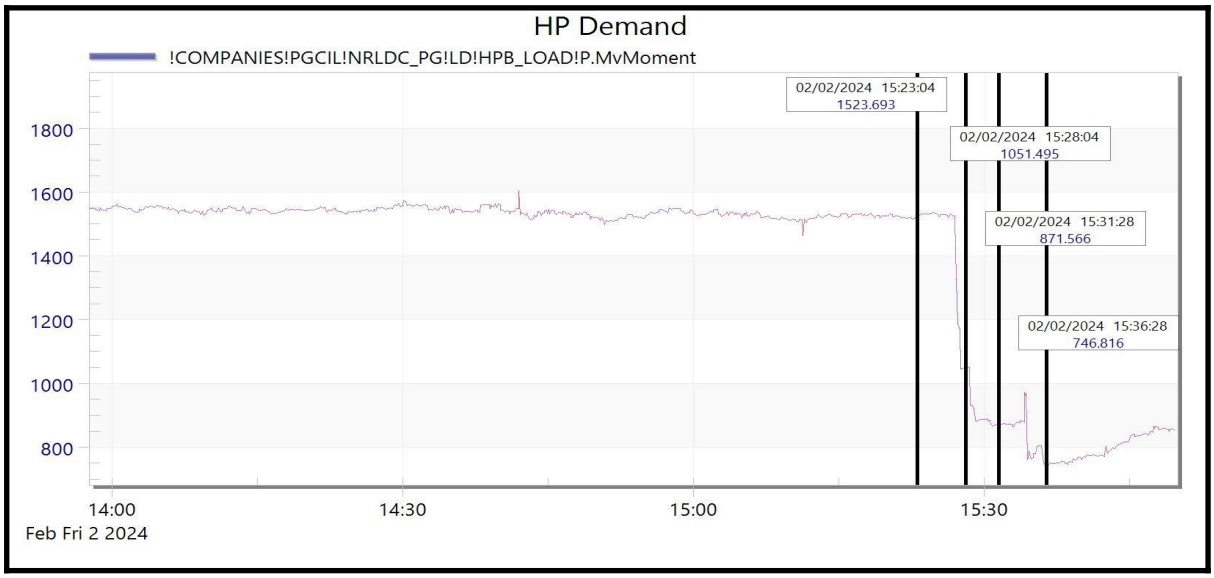
NRLDC requested Rajasthan to share any technical study done from RVPN side before shifting of load to day-time. Any assessments related to possible issues arising out of such change in supply hours such as low voltage, high reactive drawl, transmission system augmentation requirements etc. Rajasthan was requested to do the proper assessment and spread out the load to minimise such grid operation related issues

Rajasthan representative agreed that load mainly agricultural load has been shifted during day time, 12:00 hrs-15:00hrs time block in sync of RE generation as per the government direction. Grid operation related issues such as N-1 non-complaint of ICTs, network constraint etc has already been highlighted to the management. Further, as per preliminary discussion at LD level, it has been decided that after April-May, load spread out in six-six hours block will be done, load pockets are being identified.

OCC forum requested Rajasthan to asses the scenario before such load shifting exercise and highlight the possible issues arising out of such change in supply hours such as low voltage, high reactive drawl, transmission system augmentation requirements etc. to management. Forum suggested Rajasthan to do the proper assessment and spread out the load to minimise such grid operation related issues.

IV. Major grid disturbance in HP grid

On 02.02.2024, 220 KV Baddi(HP)-Pinjore (HV) (HPPTCL) Ckt-1 &2 tripped at 15:27 hrs due to R-Y fault & Distance protection Zone 1 Operated from Pinjore end, resulting in tripping of multiple elements at 220kV Baddi and 220kV Kunihar substation. Further 132 kV system also tripped at kunihar station at 15:34 hrs due to overloading of 132kv system.
During this event demand of HP state got reduced by nearly 750MW,(demand got reduced to nearly 50%) as shown below:



Following element outage was reported:

S. No	Element name	Out Time	Revival Time	Reason
1	220 KV Baddi(HP)-Pinjore (HV) (HPPTCL) Ckt-1	15:27	18:25	Tripped on R-Y Fault & Distance protection Zone 1 Operated from Pinjore end
2	220 KV Baddi(HP)-Pinjore (HV) (HPPTCL) Ckt-2	15:27	18:00	
3	220KV/132KV Bus 1 &2 at Baddi (HP) along with all line (ie 220 KV Upper nangal-Baddi , 220KV Mandhala-Baddi, 220 KV Wardthman–Baddi & 220/132 kv 100MVA ICTs 1,2,3 & 220/132 kv 31.5MVA ICTs 4)	15:27	16:08	Due to overloading of lines.
4	220kV UperNangal- Madhala Ckt 2	15:27	16:03	
5	220KV Bus 1 &2 at Kunihar(HP) along with all line (ie 220 KV	15:28	16:17	

	Baddi –kunihar ckt1&2, 220KV Bhaba-Kunihar , 220 KV Jeori – Kunihar & 220/132 kv 200MVA ICTs 1 & 2)			
6	132 KV Bus 1&2 at kunihar along with all elements.	15:34	16:22	

HP representative was not present during the meeting. NRLDC representative raised concern over protection related issue at 220kV Kunihar, Baddi region of HP control area. Third party protection audit (recommended during 48th PSC meeting) is pending since Oct'2023.

V. Long outage of Fixed Series Capacitors

Following FSCs are out of service since long time in Northern region:

Name of Elements (Owner: POWERGRID)	Outage time/date	Reason of tripping	Expected Revival time/date
FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri (PG)	21.07/24.10.21	BHEL breaker hydraulic pressure could not be developed in B phase and (loss of N2 pressure) doesn't allow the FSC-1 taken into service as reported by CPCC3. OEM support stopped	--------
FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri (PG)	08.25/29.01.22	VME protection system was blocking the FSC back in service as reported by CPCC3. OEM support stopped	--------
FSC (39%) of 765 KV Koteshwar-Meerut (PG) Ckt-2 at Meerut(PG)	12.30/18.04.23	Capacitor bank current imbalance protection	--------
FSC(39%) of 765 KV Koteshwar-Meerut (PG) Ckt-1 at Meerut(PG)	08.41/08.06.23	B-Phase to ground fault occurred in the line (Fault Current: 9.0 kA, Fault Location: 100.8 KM from Meerut End) fault. FSC1 failed	------
FSC(40%) of 400 KV Kanpur-Ballabhgarh (PG) Ckt-2 at Ballabhgarh(PG)	10.25/23.09.22	DC earth fault in main power supply. Safety clearance required.	------
FSC(40%) of 400 KV	05.43/23.09.22	Forced shut down	------

Kanpur-Ballabhgarh (PG) Ckt-3 at Ballabhgarh(PG)		taken to attend DC earth fault in ckt-2. Safety clearance required.	
FSC(45%) of 400 KV Bareilly-Unnao (UP) Ckt-1 at Unnao(UP)	03.01.2023	Safety clearance is required	------
FSC(40%) of 400 KV Kala Amb(PKTL)-Sorang (Greenko) (Greenko) Ckt-1 at Kala Amb(PKTL)	09:47/26.09.2022	To attend unbalance current that is rapidly increasing in B-phase	------
FSC(40%) of 400 KV Kala Amb(PKTL)-Wangtoo(Greenko) (Greenko) Ckt-1 at Kala Amb (PKTL)	26.09.2022	Capacitor unbalance current alarm is persisting	------

POWERGRID NR1/NR2/NR3 & U.P. were requested to provide update regarding status of restoration works and expected revival dates in the meeting.

POWERGRID representative informed following details:

a) *FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-1&2 at Mainpuri (PG): There is no support from OEM (BHEL), continuous follow-ups are being done.*
b) *FSC of 765 KV Koteshwar-Meerut (PG) Ckt-1&2 at Meerut(PG): FSC in one of the circuit is healthy and same has not been able to take in service due to capacitor current unbalance issue.*
c) *FSC of 400 KV Kanpur-Ballabhgarh (PG) Ckt-2&3 at Ballabhgarh(PG): There is no technical support available from OEM (BHEL). Internal study was also done which suggested that FSC is not required now. We have also approached the CERC for decommissioning of these FSCs.*
d) *One of the FSC at Kala Amb is in ready to charge condition. There is issue related to damping resistor in another FSC. Issue has been taken up with OEM (SIEMENS).*
e) *FSC of 400 KV Bareilly-Unnao (UP) Ckt-1 at Unnao(UP): Out on capacitor current unbalance and will be taken into service in next 02-03 days.*

POWERGRID stated that they will share the updated status of FSC.

B.3 Sharing of ATC/TTC assessment and base-case with NRLDC

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

NRLDC stated that 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.

3.1 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 February'25 i.e. Morning Peak, Solar Peak, Evening Peak & Off-Peak hours as given below

S. No.	Scenario	Time of Scenario
1	Off-Peak	03:00 Hrs
2	Morning Peak	10:30 Hrs
3	Evening Peak	18:45 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, above exercise needs to be carried out regularly on monthly basis.

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.

NRLDC representative informed that ATC/TTC assessment was received from UP & Punjab SLDC only for M-11 scenarios. However, base case received from UP only that too not for all four time scenario.

NRLDC representative stated that online sessions were taken on 31.08.2023 & recently another session was also conducted on 10.01.2024 to encourage participation from SLDCs with regard to basecase preparation and ATC/TTC assessment

OCC forum requested all the states 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.

3.2 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 up to **August 2024, before 8.2.2024. Above was also requested vide mails dated 01.02.2024 by NRLDC. This needs to be practised as monthly exercise on regular basis.**

Data received from only Haryana & J&K SLDC. Data regarding M-6 scenarios are pending from other utilities.

It 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.

NRLDC representative informed that data and basecase has been received from UP & Haryana SLDC only however, base case not received for all four time scenario. Punjab & NR-2 has shared data only.

NRLDC requested all the states to share list of elements/LGB data/interconnection study results etc as per the approved procedure on monthly basis.

3.3 ATC/TTC of states for winter 2023-24 (M-1)

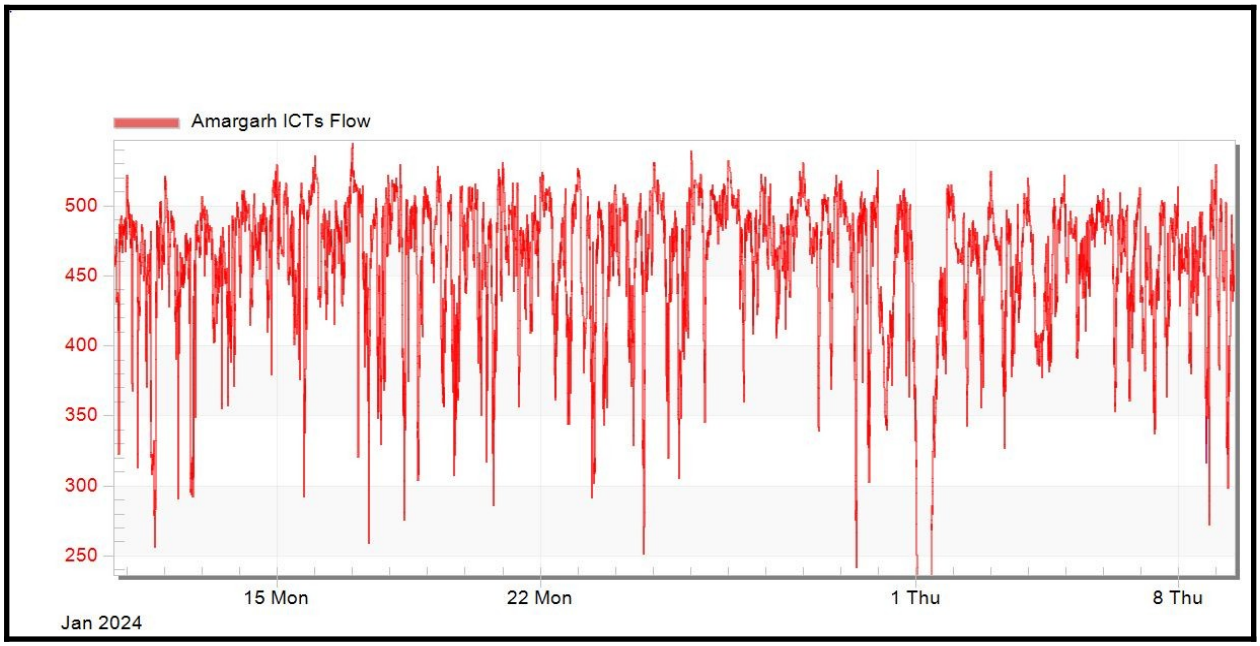
Latest ATC/TTC figures as available with NRLDC for the month of March 2024 is attached as Annexure-B.I of agenda. States are requested to go through these figures and provide any comments.

ATC/TTC assessment for winter 2023-24 has only been received from Rajasthan, UP, HP, Haryana, J&K and Uttarakhand.

NRLDC stated that none of the state is doing ATC/TTC assessment for M-1 on regular basis. Delhi, Punjab & UP SLDCs are requested to assess and share ATC/TTC assessment for February/ March 2024 at the earliest

3.4 Constraints observed during last month

Apart from various N-1 issues observed in Rajasthan as mentioned in previous agenda, loading above N-1 contingency limits was also observed for 400/220kV Amargarh ICTs. Plot of loading of 400/220kV 2*315MVA ICTs at Amargarh for last 30 days are shown below:



CTU representative informed that ICT-3 at Amaragrh(INDIGRID) will be commissioned by 2025 winter only.

As discussed in 215 OCC meeting, it is requested that,

- Delhi, Punjab & UP SLDCs assess and share ATC/TTC assessment for February/March 2024 at the earliest.
- All states to share data and base case for M-6 & M-11 timelines as discussed in the agenda.
- SLDCs to take actions to ensure that loading of ICTs and lines under their jurisdiction are below their N-1 contingency limits.
- Maximize internal generation in case of drawl near to the transfer capability limits.
- Forum agreed that in case no assessments for eleven months in advance are shared by SLDC, the existing ATC/TTC assessment could be published on website and considered for the said month.

OCC forum requested all the states that the basecases (for all four time scenario) as well as ATC/TTC assessments may be shared with NRLDC as per

CERC approved procedure. OCC members agreed to submit the data as well as basecases as per timelines discussed in 10.01.2024 & as per the CERC approved procedure.

B.4 Frequent forced outages of transmission elements in the month of January'24:

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	7	Rajasthan/ RAPS
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	3	Rajasthan/ RAPS
3	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	7	Rajasthan/ RAPS
4	220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1	3	Rajasthan/ RAPS
5	400 KV Akal-Barmer (RS) Ckt-1	3	Rajasthan
6	400 KV Bikaner-Bhadla (RS) Ckt-1	3	Rajasthan
7	400 KV Bikaner-Bhadla (RS) Ckt-2	3	Rajasthan
8	400 KV Agra-Unnao (UP) Ckt-1	5	UP
9	400 KV Bareilly-Unnao (UP) Ckt-1	3	UP
10	400 KV Bareilly-Unnao (UP) Ckt-2	3	UP
11	400 KV Muradnagar_2-Mathura (UP) Ckt-1	5	UP
12	400 KV Muktsar-Makhu (PS) Ckt-2	3	Punjab

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

Discussion during the meeting:

- **220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1:** *NRLDC representative raised concerned on frequent fault in line. Rajasthan representative stated that work of insulator replacement is being done in the line. Suspension insulators are being replaced with long rod insulators. Replacement of insulators have already been done in some part of the line and rest of the work will also be completed at the earliest.*

- **220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1 & 2 and 220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1 :** *NRLDC representative raised concerned on frequent tripping of line. Rajasthan representative stated that A/R has been kept off at RAPS_A end. It was further informed that lines pass through hill forest area and most of the faults are of transient nature.*

POWERGRID representative informed that similar issues of frequent faults in line passing through hilly areas were reported in their lines also. During TFR (tower footing resistance) review it was found that TFR value got degraded due to frequent lightening stroke. Accordingly remedial actions related to strengthening of earthing was taken. OCC forum suggested Rajasthan to conduct TFR review of the lines in this pocket. Accordingly, suitable remedial measures may be taken on the basis of TFR value. Rajasthan agreed to review the TFR of lines in this pocket.

- **400 KV Akal-Barmer (RS) Ckt-1:** *Rajasthan representative stated that in two (02) of the tripping fault occurred due to snapping of jumper. Due to high loading of lines issues of jumper snapping are arising. Rajasthan was requested to take remedial measures to minimise the jumper snapping cases.*

- **400 KV Bikaner-Bhadla (RS) D/C**: *NRLDC representative raised concern frequent tripping of 400 KV Bikaner-Bhadla (RS) D/C due to snapping of conductor. This D/C lines are very important in Rajasthan RE complex and tripping of these lines affected reliability and security of regional grid. Rajasthan representative stated that conductor of both the circuit are almost in damaged condition. Case for replacement of conductor of both the circuits has already been put up. Rajasthan was requested to expedite the same.*

- **400 KV Agra-Unnao (UP) Ckt-1:** *NRLDC representative raised concern frequent tripping of line and non-operation of A/R in line. UP representative stated that there was issue in PLCC at Agra end due to which carrier communication was not happening and A/R operation also didn't occur. On 29th Jan'24, issue in PLCC has been resolved, thereafter, no undesired tripping of line is observed.*

- **400kV Bareilly-Unnao D/C:** *NRLDC representative raised concern over frequent tripping of the line due to protection related issues at both the ends. Issue related to non-proper operation of autorecloser at both the ends was also raised. Issues has been highlighted in previous OCC meetings also, however no remedial actions has been taken yet. UP representative stated that issue of frequent faults in line is due to design related defects (clearance between conductus) in line. We are not able to find any solution to rectify this issue. On protection related issue, UP agreed to take suitable remedial actions to rectify the same at the earliest.*

- **400 KV Muradnagar_2-Mathura (UP) Ckt-1:** *NRLDC representative raised concerned on frequent faults in line. UP representative stated that during patrolling bird beat was found at fault location, cleaning of the lien at fault prone are aha been done. Insulators has also been replaced with polymer insulator.*

- **400 KV Muktsar-Makhu (PS) Ckt-2:** *NRLDC representative raised concerned on frequent faults in line. Punjab representative stated that*

prewinter cleaning of the line was done. Frequent faults are occurring due to damage of insulators. Insulators are to be replaced from porcelain to polymer type. Insulators has been procured and replacement work will be completed by 31st March.

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. 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 look into such frequent outages and share the suitable remedial measures taken/being taken in this respect.

B.5 Multiple element tripping events in Northern region in the month of January'24:

A total of 21 grid events occurred in the month of Jan'24 of which **08** are of GD-1 category, **02** are of GI-1 Category and **11** are of GI-2 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.III of Agneda.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Akal(RS) on 02nd January, 2024 (As per PMU at Jodhpur(RS), two consecutive B-N phase to earth faults are observed with delayed fault clearance time of 320ms and 1400ms respectively.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **05** events out of **21** grid events occurred in the month.

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 2nd Jan'24 (partial data received)
b) 400kV Koldam(NTPC) on 10th Jan'24
c) 220kV Jamalpur(BBMB) on 23rd Jan'24
d) 400/220kV Ratangarh(RS) on 28th Jan'24 (partial data received)
e) 400/220kV Chittorgarh(RS) on 30th Jan'24 (partial data received)
f) 220/132kV Pithoragarh(PG) on 31st Jan'24

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

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.6 Details of tripping of Inter-Regional lines from Northern Region for January' 24:

A total of 13 inter-regional lines tripping occurred in the month of January'24. The list is attached at **Annexure-B.IV 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.

NRLDC representative stated that details not received w.r.t. following trippings:

a) 220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt tripping on 09th Jan'24
b) 800kV HVDC Kurukshetra pole tripping on 10th & 11th Jan'24
c) 765kV Orai-Jabalpur ckt-1 on 20th Jan'24

POWERGRID representative stated that they will share the pending tripping details and reports. Regarding 765kV Orai-Jabalpur ckt-1 tripping it was informed that tripping occurred during OPGW work, there is not any protection related issue.

Regarding HVDC Kurukshetra tripping, POWERGRID representative informed that are majorly two issues, one is related frequent maloperation of 5008 cards and another related to software. Software has been updated 06 times. Continuous follow ups with OEM GE are being done to ensure its stability and reliability.

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.7 Grid disturbance at RAPS, KTPS generation complex on 05th jan'24:

On 05th Jan'24, 05:16hrs, multiple elements tripping occurred at RAPS, KTPS generation complex. Multiple 220kV lines tripped from 04:00hrs onwards. Generation was evacuating through limited evacuating lines and connectivity to the grid was also very limited. Thereafter, few of the 220kV lines tripped on overloading and further cascade tripping occurred. RAPS, KTPS generation also tripped due to loss of evacuation path 9on over frequency).
A detailed comprehensive report prepared by NRLDC has been shared to constituents and also available on NRLDC website. Communication through webex meeting and through letter with Rajasthan and RAPS was also done. NRLDC letter regarding the same is attached as **Annexure B.V of Agenda.** Observations and remedial action desired agreed/discussed during the communication with RAPS and Rajasthan were as follows:

Actions to be taken by Rajasthan:

- STU need to carry out O&M measures to control frequent tripping of lines.
- Dedicated SCADA display need be made for major load- generation pockets to ensure effective monitoring.
- SLDC Rajasthan need to deploy additional manpower for close monitoring of such pockets and list out actions for immediate intervention in emergency situations.
- SPS may be implemented in RAPS, Debari, Chittorgarh to avoid overloading of line and further chance of cascade tripping.
- Necessary actions need to be taken for RTU healthiness at site to ensure healthiness of SCADA data. To ensure the healthiness of SCADA data, as a long term measure, STU shall explore to replace old RTUs which are beyond repair.

Actions to be taken by RAPS

- RAPS-C need to immediately explore the possibility to have complete auxiliary supply from 400 kV level. RAPS-C also need to review for necessary changes required in auxiliary supply switchover mechanism to avoid such grid incident in

future. Possibility of connecting 220kV and 400kV part of RAPS-C via ICTs may be explored.

- It is requested to review the availability of SUTs at 400 KV RAPS-C & D station. As Unit-7&8 at RAPS-D is to be commissioned in near future, availability of SUTs at 400kV side is necessary to ensure the reliability of auxiliary supply.
- The tripping of SUTs of RAPS-C on high frequency need to be reviewed so that disturbance in 220 KV system should not affect unit operation at 400 KV system.
- An alarm system to flag any deficiency in wiring and control system need to be implemented. It will be helpful in early detection of discrepancy in system and further in decision making during real time scenario.

Link of report is:
https://nrldc.in/Websitedata/Docs/Documents/Tripping%20Report/Preminilary%20Report/2024/01%20Jan/2024_01_05_Grid%20event%20at%20%20KTPS_RAPS_Rajasthan.pdf

NRLDC representative requested Rajasthan and RAPS to share the status of remedial action taken / planned to be taken at their end.

Rajasthan & NPCIL representative stated that following actions has been taken:

Rajasthan:

- *Manpower has been increased in control centre at critical pockets for effective monitoring*
- *SCADA display has been made for important and critical generation-load complex for efficient monitoring.*
- *Operation and maintenance related remedial actions has also been started. Replacement of insulators in 220kV RAPS_A-Debari ckt is in process.*

NPCIL:

- *Installation of 400/220kV ICTs at RAPS-C is being reviewed by NPCIL headquarter. ICTs at Chittorgarh (RS) and Kota(PG) may also be used for strengthening of 220kV network in RAPS-KTPS complex.*
- *SUTs at RAPS-C has already been commissioned at 220kV level so that can't be planned at 400kV level now.*
- *Tripping of SUT on over frequency protection is being reviewed by NPCIL headquarter.*

OCC forum requested Rajasthan & RAPS to take suitable remedial measures to avoid such major grid disturbance in future and also share the details of remedial action taken / planned to be taken.

B.8 Grid disturbance at Chittorgarh(RS) on 30th Jan'24:

On 30th Jan'24 at 08:15hrs & 09:00hrs, multiple elements tripping occurred at Chittorgarh(RS). During antecedent condition, ICTs at Chittorgarh were N-1 non-compliant. Triggering incident was tripping of 400/220kV 315MVA ICT-2 along with 220kV Chittorgarh-Sawa ckt-2. Fault occurred on Sawa feeder however, ICT tripped along with the line on LBB re-trip initiation which was not desired. Tripping of 220kV

lines on overcurrent was also observed during the event. Thereafter, remaining system got overloaded and tripped subsequently. Detailed report of the tripping event prepared by NRLDC has already been shared and also available on NRLDC website. NRLDC communication to Rajasthan regarding expeditious action is attached as **Annexure-B.VI of Agenda.**

N*RLDC representative stated following point w.r.t. event:*

i) Proper operation of protection system need to be ensured. Protection operation at Chittorgarh S/s during the event need to be reviewed and necessary corrective actions need to be taken.

ii) Expeditious actions to enhance the transmission infrastructure to develop further connectivity to load stations is need of the hour. Limited connectivity is leading to overloading of multiple lines and tripping of few line is leading into major grid disturbance due to cascade tripping.

iii) Design logic and wiring of may be reviewed to avoid non-operation of SPS during desired condition.

OCC forum requested Rajasthan to take suitable remedial measures to strengthen the protection system to avoid such major grid disturbance in future and also share the details of remedial action taken / planned to be taken.

B.9 Grid disturbance at CCGT Bawana on 31st Jan'24 and 06th Feb'24:

Frequent events of multiple elements tripping has been observed in Delhi control area wherein significant quantum of load loss have been reported. Such frequent grid events are very detrimental to the safety and security of the state grid as well as to that of regional and national grid. The recent event of multiple elements tripping which occurred at 400/220kV CCGT Bawana and 220kV Narela is summarized below for ready reference, in this context:

i) On 31st January, 2024 at 03:17 Hrs, R-N phase to earth bus fault occurred at 400kV CCGT Bawana. On this fault, bus bar protection at CCGT Bawana didn't operate and fault cleared after tripping of 400kV transmission lines from remote end on back up protection. Complete blackout occurred at 400/220kV Bawana & CCGT Bawana. As reported, load loss of ~350MW and generation loss of ~260MW occurred in Delhi control area.

ii) On 06th February, 2024 at 10:10 Hrs, Y-N phase to earth occurred at 400kV CCGT Bawana, fault occurred due to snapping of Y-ph jumper of 400kV CCGT Bawana-Bahadurgarh ckt at CCGT Bawana end. Complete blackout occurred at 400/220kV CCGT Bawana. As reported, load loss of ~585MW and generation loss of ~475MW occurred in Delhi control area.

NRLDC representative stated following point w.r.t. event:

i) Bus bar protection at CCGT Bawana is not healthy. Therefore, any bus fault will lead to complete outage of 400/220kV CCGT Bawana as happened during grid event on 06th Feb'2024. As reported, only Main-2 bus bar protection was available

during the event, main-1 protection was out since long. Expeditious restoration of bus bar protection is required to avoid such event in future and redundancy of protection system also need to be maintained.

ii) Frequency of bus fault has increased. During last week itself, four (04) number of grid events have occurred such as at 400kV CCGT Bawana on 31st Jan'24 & 06th Feb'24 respectively, at 220kV Badarpur on 31st Jan'24 and at 220kV Narela on 06th Feb'24. Main reasons were the snapping of jumper / conductor. Necessary operation & maintenance related remedial actions need to be taken to minimize the occurrence of such faults.

DTL was requested that any shortcomings in the operation, maintenance and protection system may be rectified at the earliest. Necessary corrective actions may be taken to avoid such multiple elements tripping event in future.
CCGT Bawana representative stated that only Main-II bus bar relay was in service. Main-1 relay was sent to SIEMENS for repair work on 19th January, 2024. On 31st January, during the event bus bar protection failed to operate. During inspection it was found that intermittent communication failure from PU of one of the bay was leading to rebooting of Main-II bus bar relay. New PU and new fiber has been installed and Main-II bus bar relay has been made healthy. SIEMENS has committed to dispatch Main-I bus bar relay buy end of this month. Procurement of a spare relay is also in process.

NRLDC requested CCGT Bawana to revise the Z-4 time delay setting of distance protection from 160msec as bus bar protection is now healthy. Further, in view of frequent event of multiple elements tripping in Delhi control area leading to significant load & generation loss, DTL was requested to taken suitable remedial measures.

OCC forum requested DTL to take suitable remedial measures to strengthen the protection system to avoid such major grid disturbance in future.

B.10 Grid event in RE complex in Rajasthan:

On 17.12.23, 10.01.2024 & 15.01.2024, during fault on 400kV Bhadla-Bikaner(RS) ckts, RE generation dip in the range of 1500-2000MW observed, Due to significant dip in RE generation significant drop in frequency occurred. Asper analysis of PMU data of RE plants, some of the RE plants were found Non-compliant w.r.t CEA clause B2(3) and B2(7) (LVRT & HVRT requirement at Interconnection point). Details of the LVRT & HVRT response during the event is attached as **Annexure-B.VII of Agenda**.

In view of above, RE plants were requested to share the root cause analysis (RCA report) of LVRT/HVRT Non-compliance at POI of their respective plants along with

DR/EL & inverter logs data showing clearly the cause of generation loss/inverters tripping. Till date, preliminary analysis report received from ADANI and RENEW only. Root cause analysis report not received from any of the RE stations which are not complying during fault in grid.

NRLDC representative highlighted the issue of LVRT/HVRT non-compliance at some of the RE stations. It was informed that continuous follow-ups have been taken up with RE developers to share the root cause analysis (RCA report) of LVRT/HVRT Non-compliance at POI of their respective plants. However, details are not received from RE plants. RE plants were requested to share the root cause analysis (RCA report) of LVRT/HVRT Non-compliance at POI of their respective plants along with DR/EL & inverter logs data showing clearly the cause of generation loss/inverters tripping.

A standard format has also been circulated in the mail to report any such events (enclosed as Annexure-B.VII of agenda).

MS NRPC stated that possibility of including RE developers also in OCC and PSC forum shall be explored so that technical issues related to RE can be discussed.

B.11 Status of submission of DR/EL and tripping report of utilities for the month of January'24.

The status of receipt of DR/EL and tripping report of utilities for the month of January'24 is attached at **Annexure-B.VIII of Agneda**. 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. Also, it is observed that reporting status has improved however, reporting status from Punjab, Delhi, Rajasthan & J&K need further improvement.

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

NRLDC representative stated that reporting status from Punjab, Delhi, HP, Rajasthan & J&K need further improvement.

OCC forum emphasized the importance of DR/EL & tripping report data for analysis of the trippings. In addition, these data are also base for the availability verification. 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 the 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 trippings shall be uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx" within 24 hours of the events as per IEGC clause 37.2.c and clause 15.3 of CEA grid standard. Apart from prints of DR outputs, the corresponding COMTRADE files may please also be submitted in tripping portal / through email.

B.12 Frequency response characteristic:

Two FRC based event occurred in the month of **January-2024**. 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 FRC during the event (%)
1	05-Jan-24	05:16hrs	On 5 January, 2024, at 05:10 hrs, multiple trippings were reported at Kota TPS and RAPP nuclear units. According to SCADA data, the total generation loss during the event was approximately 1726 MW, with a concurrent demand loss of 410 MW. The net generation loss considered for Frequency Restoration Capability (FRC) computation is 1316 MW.	50.01	49.92	49.97	0.04	137
2	15-Jan-	13:59hrs	On 15-Jan-2024, at 13:59 hrs	50.05		50.02	0.0	

	24		phase-to-phase (R-B) fault occured on 400 kV Bhadla (Raj)-Bikaner (Raj)-1 line due to conductor snapping between tower location no. 456-457. This fault led to reduction in active power of RE plants connected to Bhadla, Bikaner, and Fatehgarh stations. As per the SCADA data, around 2000 MW generation reduction was observed in NR Solar generation. The net generation loss considered for Frequency Restoration Capability (FRC) computation is 2000MW.		49.91		3	74
3	15-Jan-24	14:06hrs	On 15-Jan-24, at 14:06 hrs phase-to-phase (R-Y) fault occured on the 400 kV Bhadla (Raj)-Bikaner (Raj)-2 line due to conductor snapping between tower location no. 456-457. This fault led to reduction in active power of RE plants connected to Bhadla, Bikaner,	50.05	49.84	50.01	0.04	23

			and Fatehgarh stations. As per the SCADA data, around 1800 MW generation reduction was observed in NR solar generation. The net generation loss considered for Frequency Restoration Capability (FRC) computation is 1800MW.					

Status of details/data received till date for aforementioned FRC events are as follows:

i) **05th Jan'24 event:** UP, NHPC, NTPC(Rihand TPS, Dadri TPS, Sungrauli TPS), Rajasthan only

ii) **15th Jan'24 event:** UP, HP, NTPC(Rihand TPS)

NRLDC requested memebers who haven't shared the data yet to share the data and analysis of FRC of their control area. It was also requested to share unit wise 1 sec resolution data of FRC.

NRLDC representative stated that primary frequency response is not satisfactory at some of the ISGS and intrastate generating stations. Members are requested to analyse the PFR of units of their control area and take necessary corrective actions / tuning required to improve the PFR of generating units of their respective control area. States may plan to conduct the primary frequency response testing of their generating stations. Any tuning required may also be conducted in coordination with OEM.

NRLDC representative requested all the constituents to timely share the details of FRC w.r.t. their control area and also analyse the FRC of generating units of their control area.
OCC forum further requested to take corrective actions and also take initiative of conducting PFR testing of generating units for further turning and improvement. Constituents agreed for the same

B.13 Mock black start exercises in NR:

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*".

Mock Black-start exercise of power stations therefore needs to be carried out in-order to ensure healthiness of black start facility.

The winter months are off peak hydro period and therefore good time to carry out such exercises. Therefore, the schedule of mock exercise dates for different hydro & Gas power station need to be finalized. The power stations may propose the tentative date for mock black start exercise of their generating units. Power stations may confirm and inform to all the concerned persons of control centre/ substations to facilitate the exercise.

Mock black start exercise conducted during 2023-24:

i) Teheri HEP: conducted on 07th Dec'23
ii) Dadri GPS: conducted on 15th Dec'23

Mock black start exercise planned to be conducted during 2023-24:

i) Obra, Rihand HEP: Feb'24 by UP
ii) Malana-II HEP: Feb'24 by HP
iii) Tanakpur HEP: Feb'24 by NHPC
iv) Anta GPS: Feb'24 (last week)

NRLDC representative informed that mock black start exercise at Tanakpur HEP has been postponed till 15th March due to annual maintenance work in progress at Tanakpur HEP (informed by Tanakpur HEP via mail).

Members were requested to share the tentative schedule of mock black start exercise of generating stations in their respective control area. SLDCs shall submit the reports of black start exercise in their respective control area. SLDCs may also identify further generating stations/unit for black start exercise.

NRLDC representative stated that black start exercise has been conducted successfully for Tehri HEP and Dadri Gas during this season and black start exercises at few of hydro/gas plants are planned during Feb 2024 month.

OCC forum requested members to share tentative schedule for mock black start exercise of generating stations of their control area. Also share the report/observation of the mock exercise.

B.14 Revision of document: System Restoration Procedure and System Protection Scheme:

NRLDC has been issuing 'System Restoration Procedure document of Northern Region' and details of System Protection Scheme in Northern Region on annual basis. Documents has been revised and updated. The document has been published on 31st Jan'24 and same is available on NRLDC website on below link:

System Restoration Procedure document:

https://nrldc.in/download/system-restoration-procedure-for nr_2024/?wpdmdl=13253&lang=en

System Protection Scheme in NR:

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

Document is password protected and password has already informed to all the NR constituents through letter dated 31st Jan 2024.

OCC forum noted the same.

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 — Jan-2024
◎ HARYANA — Dec-2023
◎ HP — Oct-2023
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Dec-2023
◎ RAJASTHAN — Jan-2024
◎ UP — Jan-2024
◎ UTTARAKHAND — Feb-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 — Dec-2023
◎ HARYANA — Dec-2023
◎ HP — Oct-2023
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Dec-2023
◎ RAJASTHAN — Dec-2023
◎ UP — Dec-2023
◎ UTTARAKHAND — Dec-2023
◎ BBMB — Dec-2023
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>

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<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>Sep-2023</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Feb-2024</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jul-2023</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>Jan-24</td></tr><tr><td>◎</td><td>HARYANA</td><td>Dec-23</td></tr><tr><td>◎</td><td>HP</td><td>Jan-24</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Dec-23</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Dec-23</td></tr><tr><td>◎</td><td>UP</td><td>Dec-23</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Oct-23</td></tr></table>J&K and Ladakh and Chandigarh are 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 Sysytem 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>Status:
<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. Likely completion schedule is 31.03.2024</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>
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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 tender has been scrapped. Retendering will
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	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. Out of 13 Nos. of reactors, 10 Nos. have been erected and three are under erection. Tentative charging plan is
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. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. 01 No. of 125 MVAR reactor is under final inspection. Tentaive charging plan is 31.03.2024.

Annexure-A-I.I

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24	02 No. of bays shall be utilized for LILO-II of 220kV Jatwal-Bishnah Transmission Line, the work of which is delayed due to severe ROW problem at Location No. 1 near Grid Substation Jatwal where the Land owner is not allowing erection of Tower. The Deputy Commissioner Samba has been approached for intervention and facilitating the erection of Tower. He is persuading the Land owner to get the work completed. Updated in 210th 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	Jul'24	Updated in 205th 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 Total: 7	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
				• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 215th OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd 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	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• 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
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	Jan'24	Updated in 214th OCC by HPPTCL
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	HPPTCL to update the status.
				• 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	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Mar'24	Forest approval is pending for 220 KV Pali - Sector 56 D/C line. Updated in 215th OCC by HVPNL
				• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	Mar'24	Updated in 205th 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	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
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	Mar'24	Updated in 216th OCC by HVPNL. **Status:** Work was held up due to ROW at T.L. No. 7,8,11,12 & 13 by the farmers of Jajji villagers during July'23 and now the matter has been resolve and work under progress from 01.08.2023. The erection work of T.no. 1 is pending due to non availability of shut down at 220KV Mohana-Smk line and 220KV Jajji-Mohana line. • PLCC protection coupler and Forest approval is also pending.
				• Sonepat - HSIISC Rai 220kV D/c line	Mar'24	Updated in 212th OCC by HVPNL. **Status:** Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely. Now, the matter is under approval from competent authority of Nigam.,
				• Sonepat - Kharkhoda Pocket A 220kV D/c line	31.07.2024	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. The Survey work has been completed.
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: 02/2017. Permission for forest, Highway & pipeline crossing is awaited from concerned department as updated in 215th 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 28.02.2024 as updated in 216th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'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.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL. _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
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	Mar'24	SCDA System & PLCC work pending at 220 KV S/stn. Rajokheri Updated in 215th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Feb'24	Updated in 211th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Feb'24	Updated in 211th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Jul'24	Updated in 205th 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	Mar'24	Work is completed, agreement is expected to be signed by March 2024. Updated in 216th 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)	Mar'24	Work is completed, agreement is expected to be signed by March 2024. Updated in 216th 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 205th OCC by HVPNL. **Status:** Under Tendering process
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	Mar'25	Updated in 216th OCC by HVPNL. **Status:** Tendering under progress.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	Jul'24	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. The Survey work has been completed.
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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220 kV D/C Kankroli(PG) - Nathdwara line	Mar'24	Price bid opened on 29.01.2024 as updated bu RVPN in 216th 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.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Mar'24	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 Mar'24 as Updated in 216th 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	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is ready for commissioning. Case for Initial Charging is in process at NRLDC.Updated in 214th 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'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

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

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
14	JKPTCL			10			JKPTCL, Kashmir:10 procured (out of which 3 on loan to JKPTCL, Jammu)
15	HVPN						HVPN does not have ERS Set. Technical Specifications have been finalized
16	PSTCL	400 kV	1666.43	2	2		
		220 kV	7921.991				
17	UPPTCL 1- Meerut	132KV	27508.321	24 Nos(15 Running+9 Angle)		400 kV S/s Gr. Noida	ERS will be also be used in other voltage level lines.
		220KV	14973.453				
		400KV	6922.828				
	UPPTCL 2-Prayagraj	765KV	839.37	24 Towers		220 kv S/s phulpur	ERS will also be used in other voltage lines.
		400KV	1804.257				
		220KV	2578.932				
		132KV	4714.768				
18	POWERLINK						
19	POWERGRID HIMACHAL TRANSMISSION LTD						
20	Powergrid Ajmer Phagi Transmission Limited						
21	Powergrid Fatehgarh Transmission Limited						
22	POWERGRID KALA AMB TRANSMISSION LTD						
23	Powergrid Unchahar Transmission Ltd						
24	Powergrid Khetri Transmission Limited						
25	POWERGRID VARANASI TRANSMISSION SYSTEM LTD						
26	ADANI TRANSMISSION INDIA LIMITED		2090	1 Set (12 towers)	1 set (12 towers)	Sami (Gujarat)	Make-Lindsey ERS set available for 400KV & 500KV rating can be used for lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can reduce due to increase in Tower Height & nos of conductors.
27	BIKANER KHETRI TRANSMISSION LIMITED		482				
28	FATEHGARH BHADLA TRANSMISSION LIMITED	500 kV HVDC 400 kV HVAC	291				
29	NRSS-XXXI(B) TRANSMISSION LTD	400 kV	577.74	Not Available	Not Available		In the advance stage of process of finalising arrangement for providing ERS on need basis with other transmission utility (M/s INDIGRID).
30	ARAVALI POWER COMPANY PVT LTD	765 kv HVAC					

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

FGD Status

Updated status of FGD related data submission

NTPC (27.02.2023)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (18.07.2023)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (18.07.2023)
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. (17.10.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (18.06.2022)
ANPARA-C TPS

HGPCL (14.09.2022)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (18.06.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (17.10.2022)
Prayagraj TPP
APCPL (25.02.2022)
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#1 (Target: 31-01-2022), 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: 31-12-2022), PANIPAT TPS U#7 (Target: 31-12-2022), PANIPAT TPS U#8 (Target: 31-12-2022), 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: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
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)

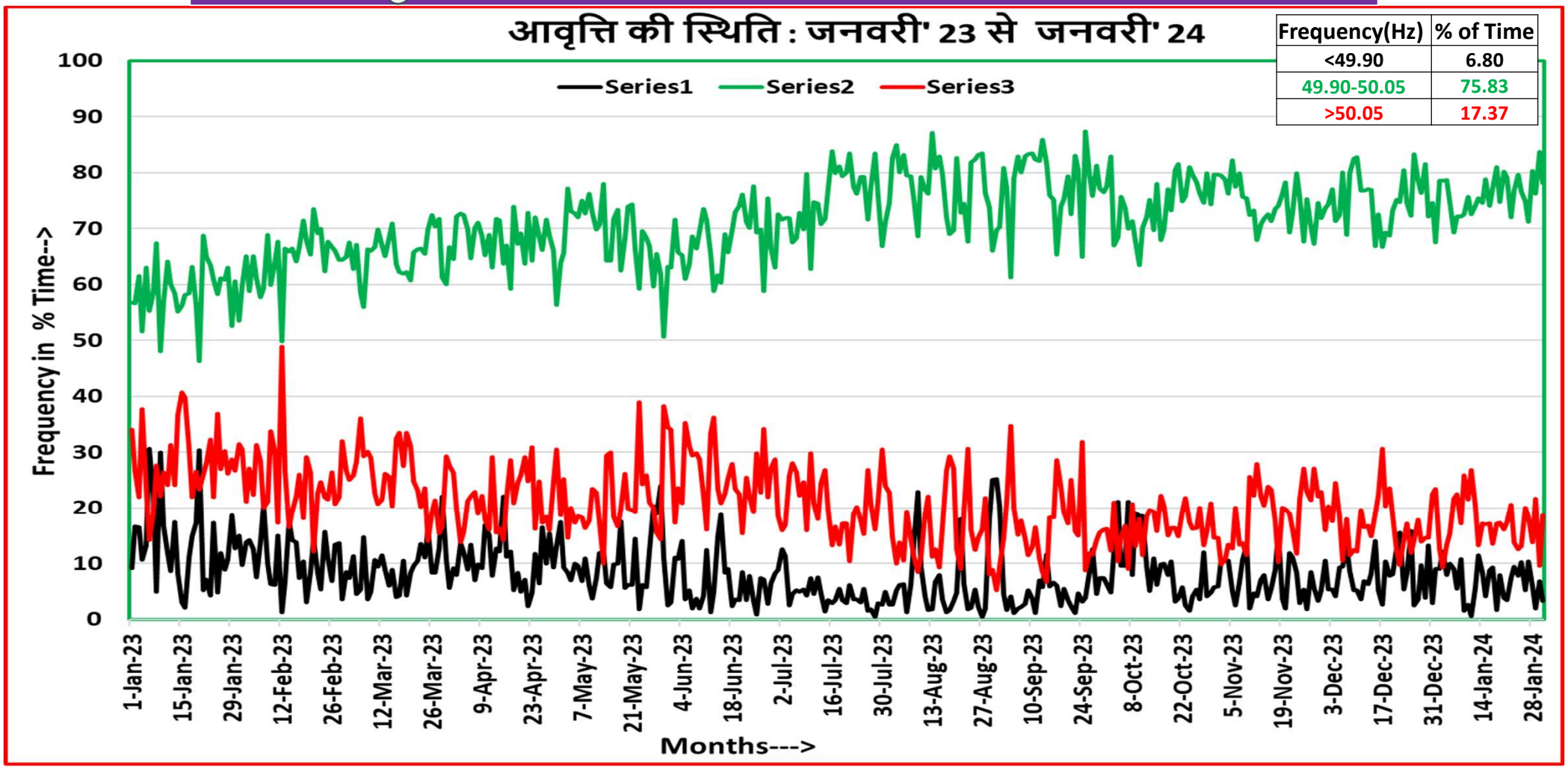
Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH 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: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)

List of Participants of 216th OCC Meeting held in Jaisalmer, Rajasthan

1. Sh. V. K. Singh, Member Secretary, NRPC
2. Sh. D. K. Meena, Superintending Engineer (Operation), NRPC
3. Sh. Omkishor, Executive Engineer (Operation), NRPC
4. Sh. Praveen Jangra, Executive Engineer (Commercial), NRPC
5. Sh. Vipul Kumar, Assistant Executive Engineer (Operation), NRPC
6. Sh. Lokesh Aggarwal, Assistant Executive Engineer (Protection), NRPC
7. Sh. Somara Lakra, Chief General Manager, NRLDC
8. Sh. Kamaldeep, Deputy General Manager, NRLDC
9. Sh. Deepak Kumar, Assistant Manager, NRLDC
10. Sh. R.N. Gupta, Chief General Manager, Powergrid
11. Sh. Pradeep Kumar, Chief General Manager, Powergrid
12. Sh. Jairam Yadav, Senior General Manager, Powergrid
13. Sh. Sandeep Kumawat, Deputy General Manager, Powergrid
14. Sh. Dipak Kumar, GSM (E&C), NHPC
15. Sh. Pankaj Saxena, Superintending Engineer, UPPTCL
16. Sh. Amit Narain, Superintending Engineer (R&A), UPSLDC
17. Sh. Mohsin Khan, Assistant Executive Engineer (R&A), UPSLDC
18. Sh. Mukul Bhargava, Superintending Engineer (SOLD), Rajasthan SLDC
19. Sh. Kamal Patidar, Executive Engineer (SOLD), Rajasthan SLDC
20. Sh. Sanjay Mathur, Executive Engineer (P & P), RVPN
21. Sh. Sandeep Kumar, Additional Superintending Engineer, PSPCL
22. Sh. Nitesh Bansal, Senior Executive Engineer (Operation), Punjab SLDC
23. Sh. S.K. Sinha, Additional General Manager, Delhi SLDC
24. Sh. Vivek Gupta, Executive Engineer, HVPN
25. Sh. Raj Kumar, Superintending Engineer, DHVBN
26. Sh. Arif Rahman, Deputy General Manager (GCGT), PPCL
27. Sh. Ashish Dabral, Senior Manager (O&M), THDC
28. Sh. Amit Hooda, Senior Manager (Commercial), APCPL
29. Sh. S K Goyal, Superintending Engineer (E&I), NPCIL
30. Sh. Avinash Kumar, Vice President (Operation) LPGCL Lalitpur
31. Sh. Vishal Roy, Senior Deputy General Manager, Powergrid NR-1
32. Sh. Jagat Ram, General Manager, Powergrid NR-2
33. Sh. A.K. Singh, Deputy General Manager, Powergrid NR-3
34. Sh. Kumar Gautam, Deputy General Manager, Powergrid
35. Sh. Narender Meena, Chief Manager (ULDC), Powergrid
36. Sh. Yashpal Chaudhary, DUM Jaisalmer Fatehgarh-2, Powergrid

प्रचालन समन्वय उपसमिति की बैठक
जनवरी- 2024

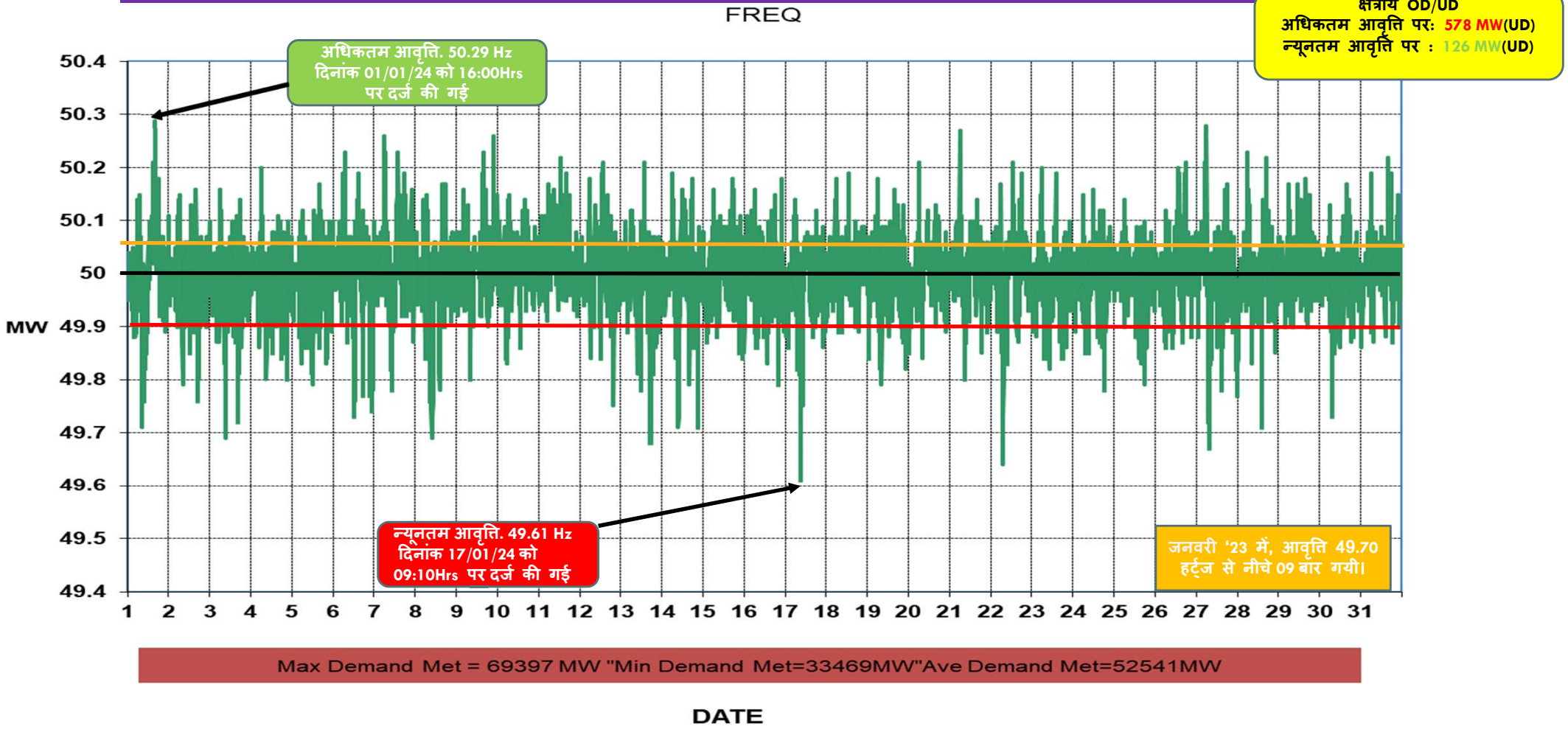
आवृत्ति की स्थिति: जनवरी -2023 से 2024



Frequency(Hz)	% of Time
<49.90	6.80
49.90-50.05	75.83
>50.05	17.37

जनवरी -2024 के दौरान आवृत्ति की स्थिति

(As per 5 Minute SCADA data)



पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	जनवरी 2023	फ़रवरी 2023	मार्च 2023	अप्रैल 2023	मई 2023	जून 2023	जुलाई 2023	अगस्त 2022	सितम्बर 2023	अक्टूबर2023	नवम्बर 2023	दिसंबर 2023	जनवरी 2024
< 49.7 Hz(%)	1.25	0.32	0.16	0.24	0.24	0.22	0.09	0.47	0.11	0.53	0.10	0.17	0.12
<49.8 Hz(%)	3.60	1.95	1.26	1.68	1.48	0.86	0.66	1.63	0.57	1.99	0.96	1.40	0.92
<49.9 Hz(%)	13.30	10.75	9.03	10.54	9.83	8.42	4.60	7.11	5.21	8.87	6.83	7.83	6.80
49.90-50.05 Hz(%)	**58.70**	**64.68**	**63.84**	**67.90**	**68.48**	**67.83**	**74.96**	**77.25**	**77.86**	**74.42**	**74.36**	**75.21**	**75.83**
50.05-50.10 Hz(%)	15.26	14.59	17.86	12.54	13.25	15.59	15.64	13.28	13.32	13.53	13.74	10.47	11.91
>50.10 Hz(%)	12.34	8.49	7.99	6.46	8.44	8.15	4.79	2.35	3.61	3.18	5.06	6.49	5.47
>50.20 Hz(%)	1.83	1.49	1.28	0.88	0.77	1.09	0.80	0.23	0.32	0.14	0.66	0.53	0.41
औसत आवृत्ति	50.00	50.00	50.00	49.99	49.99	50.01	50.01	50.00	50.00	49.99	50.00	49.99	49.99

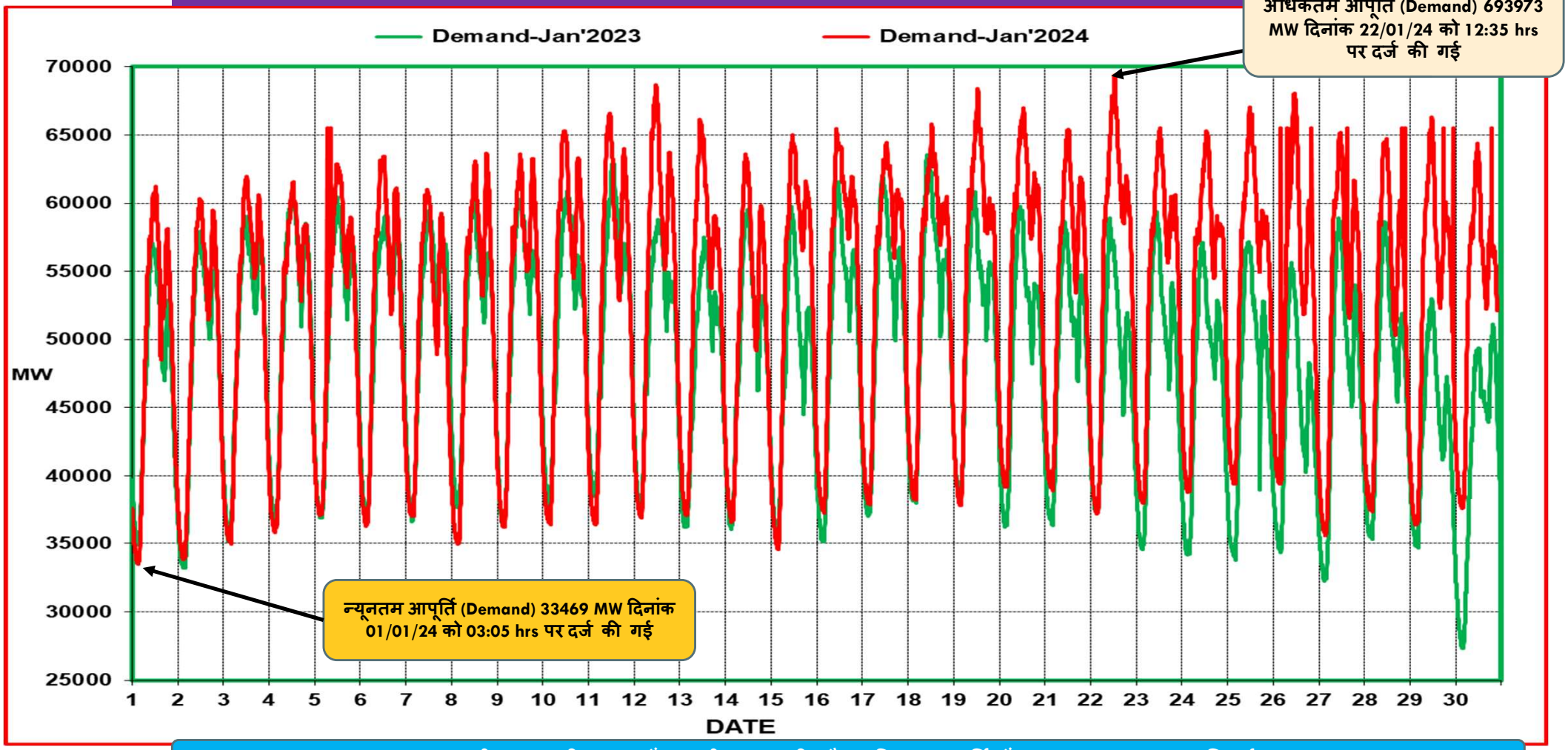
जनवरी-2023 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

राज्य	अधिकतम मांग (MW) (in Jan'24)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Dec'23)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Jan'24)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Dec'23)	दिनांक
पंजाब	9370	19.01.24 at 12:30	15293	24.06.23 को 11:45 बजे	172.48	25.01.2024	344.1	24.06.2023
हरियाणा	9530	19.01.24 at 12:45	12768	28.06.22 को 11:56 बजे	167.48	16.01.2024	273.1	18.08.2023
राजस्थान	17949	20.01.24 at 11:00	17840	02.09.23 को 14:45 बजे	335.77	20.01.2024	371.6	04.09.2023
दिल्ली	5816	22.01.24 at 10:52	7695	29.06.22 को 15:10 बजे	96.98	19.01.2024	153.5	28.06.2022
उत्तर प्रदेश	22703	26.01.24 at 10:59	28284	24.07.23 को 21:43 बजे	417.27	22.01.2024	580	03.09.2023
उत्तराखंड	2405	19.12.23 at 08:00	2594	14.06.22 को 21:00 बजे	48.76	12.01.2024	56.2	17.06.2023
हिमाचल प्रदेश	2235	20.01.24 at 07:00	2071	06.01.23 को 09:45 बजे	39.29	24.01.2024	38.37	29.12.2023
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	3107	12.01.24 at 20:00	3044	02.02.23 को 20:00 बजे	66.75	26.01.2024	64.6	20.01.2023
चंडीगढ़	201	24.01.24 at 09:00	426	08.07.21 को 15:00 बजे	5.93	24.01.2024	8.4	08.07.2021
उत्तरी क्षेत्र #	69397	22.01.24 at 12:35	81048	04.09.23 को 14:50 बजे	1317.95	19.01.2024	1792.7	04.09.2023

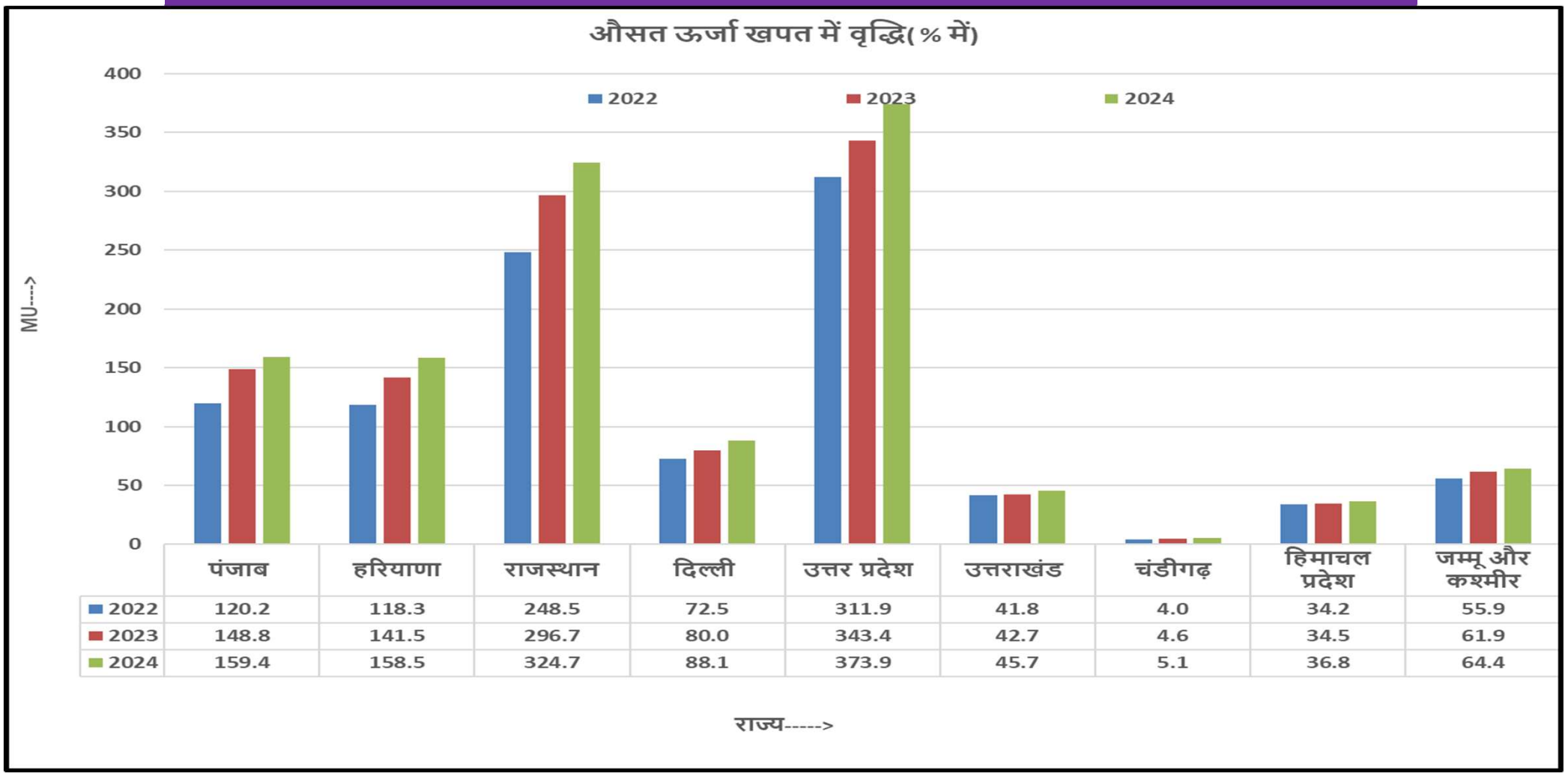
उत्तरी क्षेत्र अधिकतम मांग (Demand Met) as per SCADA Data

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



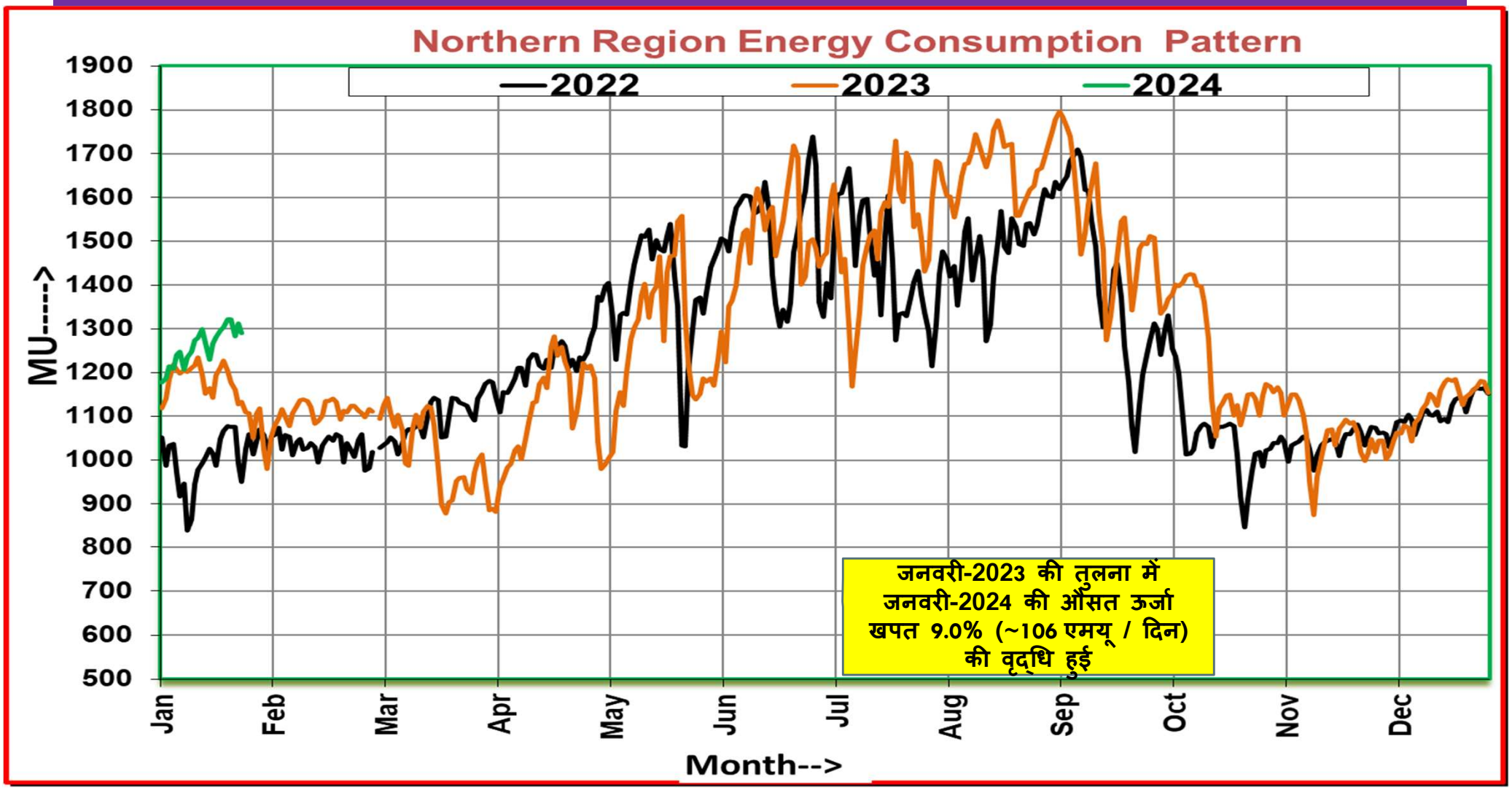
जनवरी -2023 की तुलना में जनवरी -2024 की औसत विद्युत आपूर्ति में 8.4% (~4062 MW) वृद्धि हुई

उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृदधि(% में) जनवरी-2024/ जनवरी-2023 / जनवरी-2022

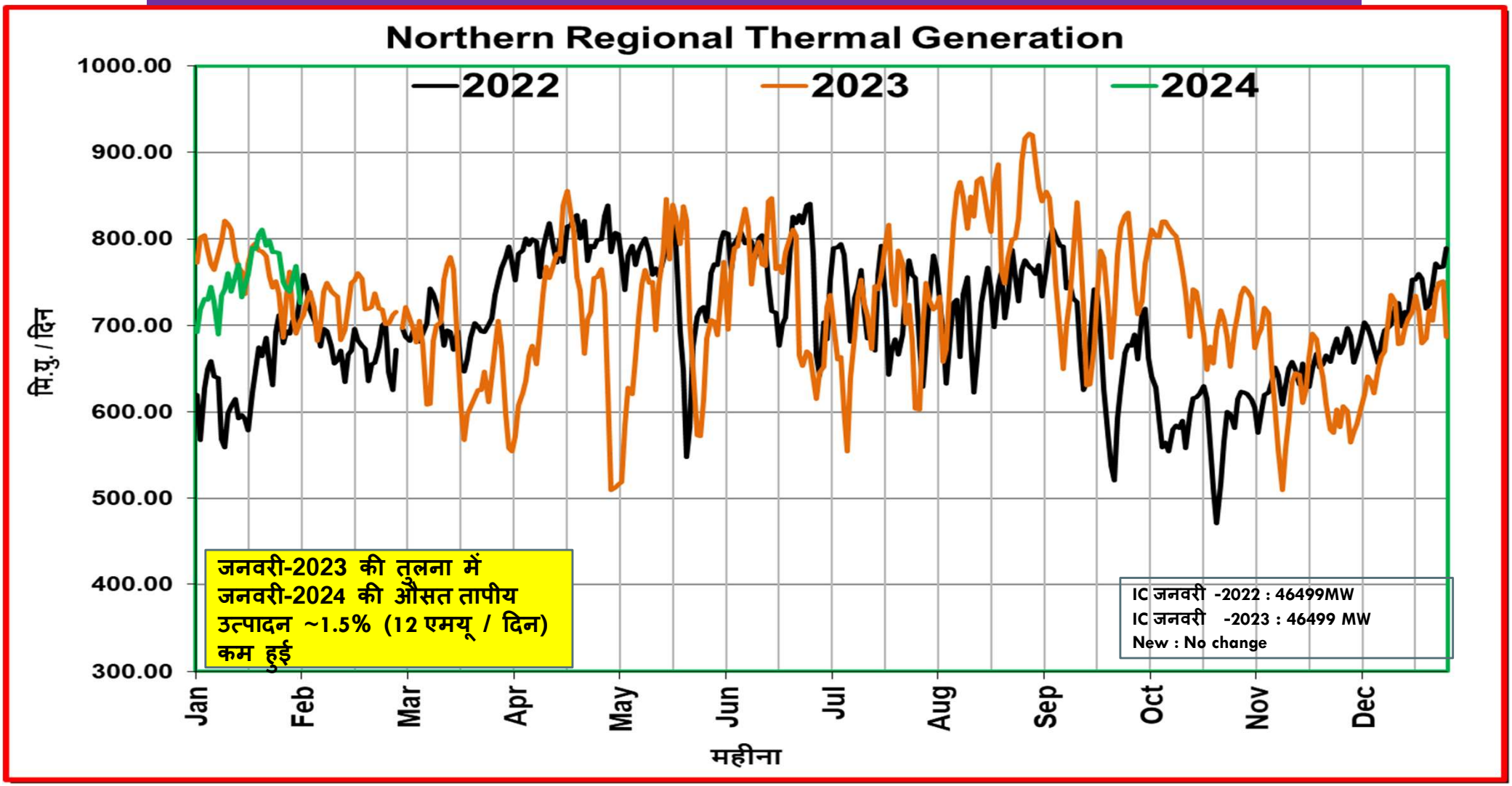


	पंजाब	हरियाणा	राजस्थान	दिल्ली	उत्तर प्रदेश	उत्तराखंड	चंडीगढ़	हिमाचल प्रदेश	जम्मू और कश्मीर
2022	120.2	118.3	248.5	72.5	311.9	41.8	4.0	34.2	55.9
2023	148.8	141.5	296.7	80.0	343.4	42.7	4.6	34.5	61.9
2024	159.4	158.5	324.7	88.1	373.9	45.7	5.1	36.8	64.4

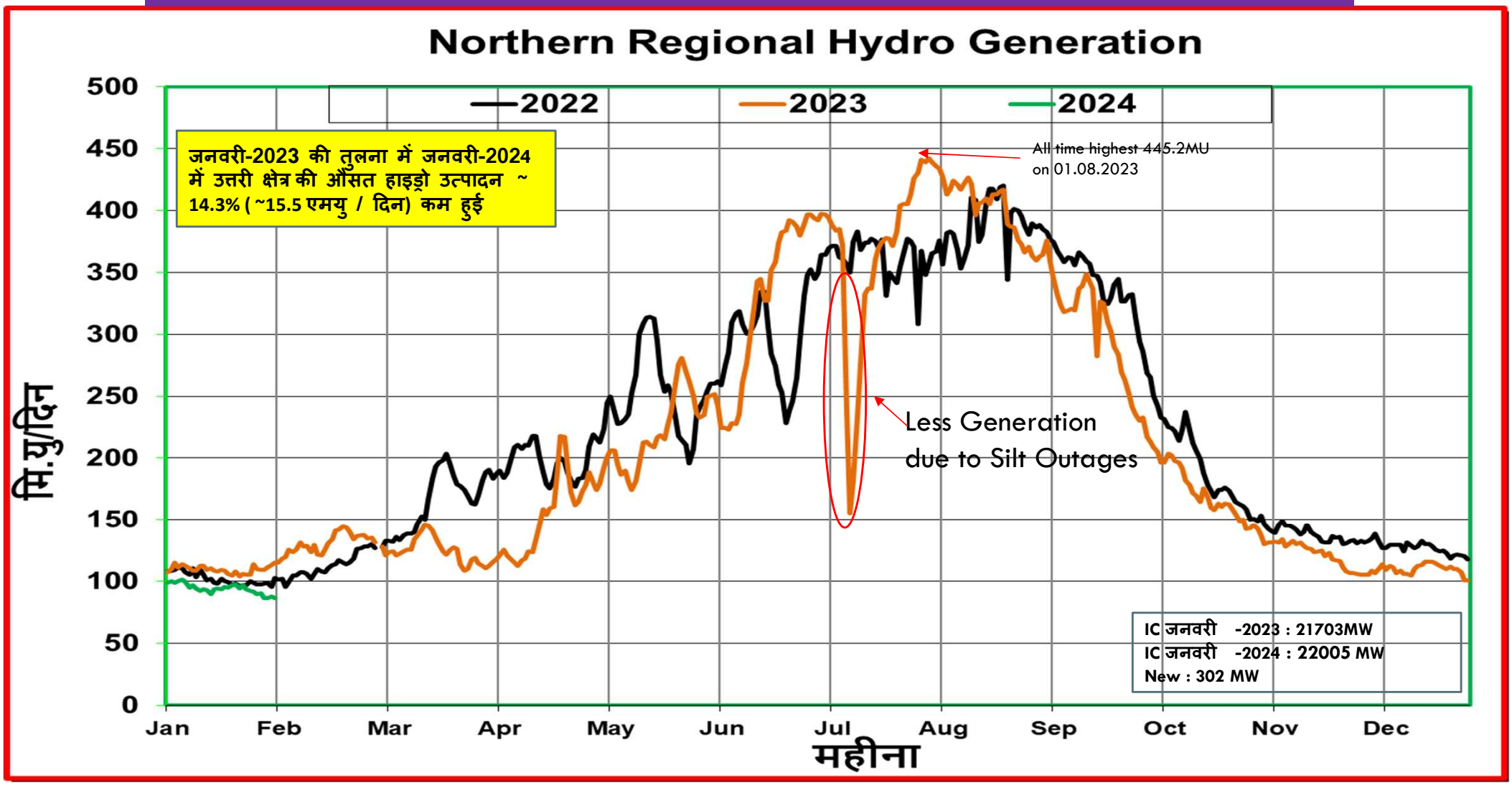
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



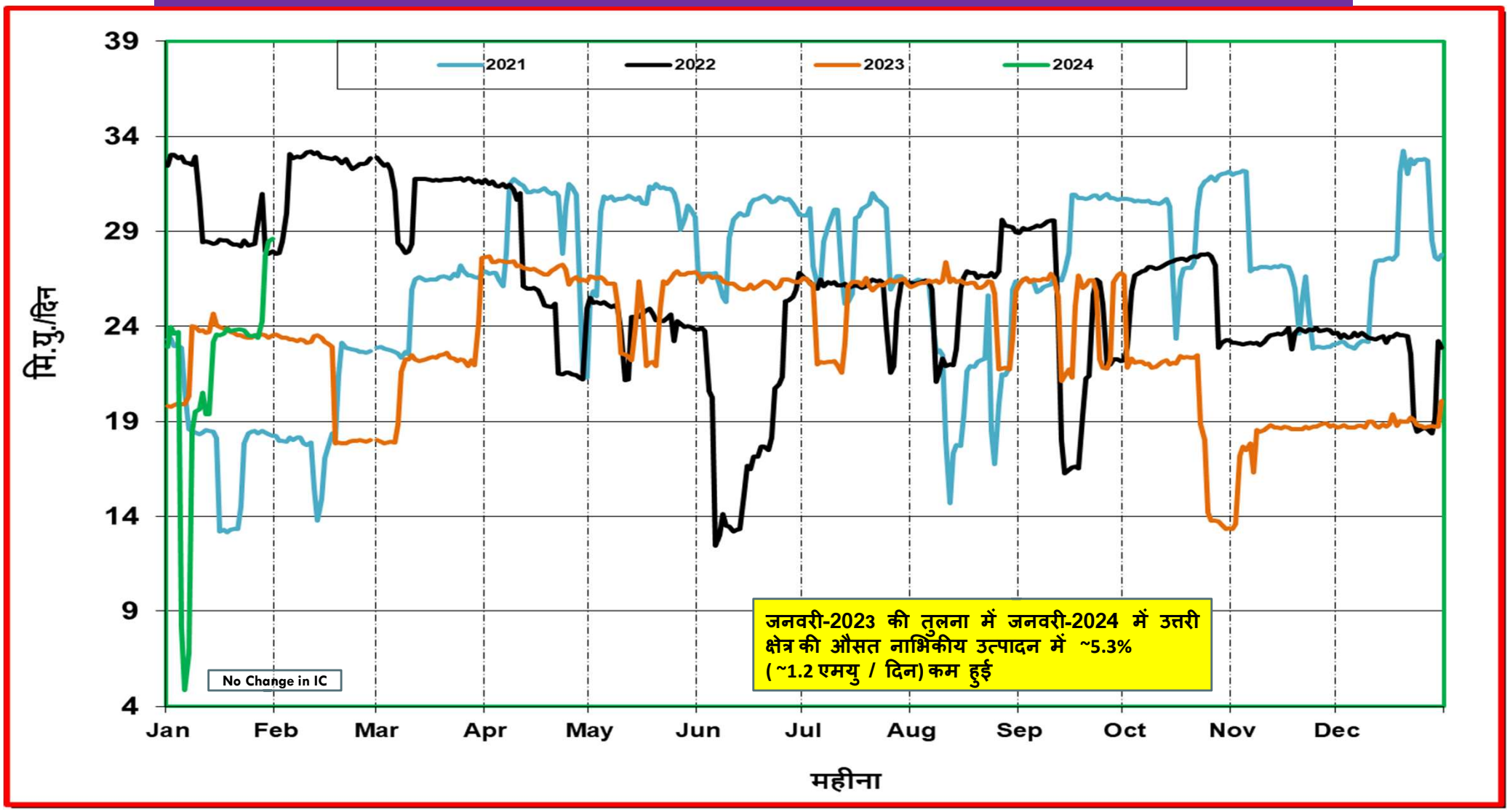
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(MUs/Day)



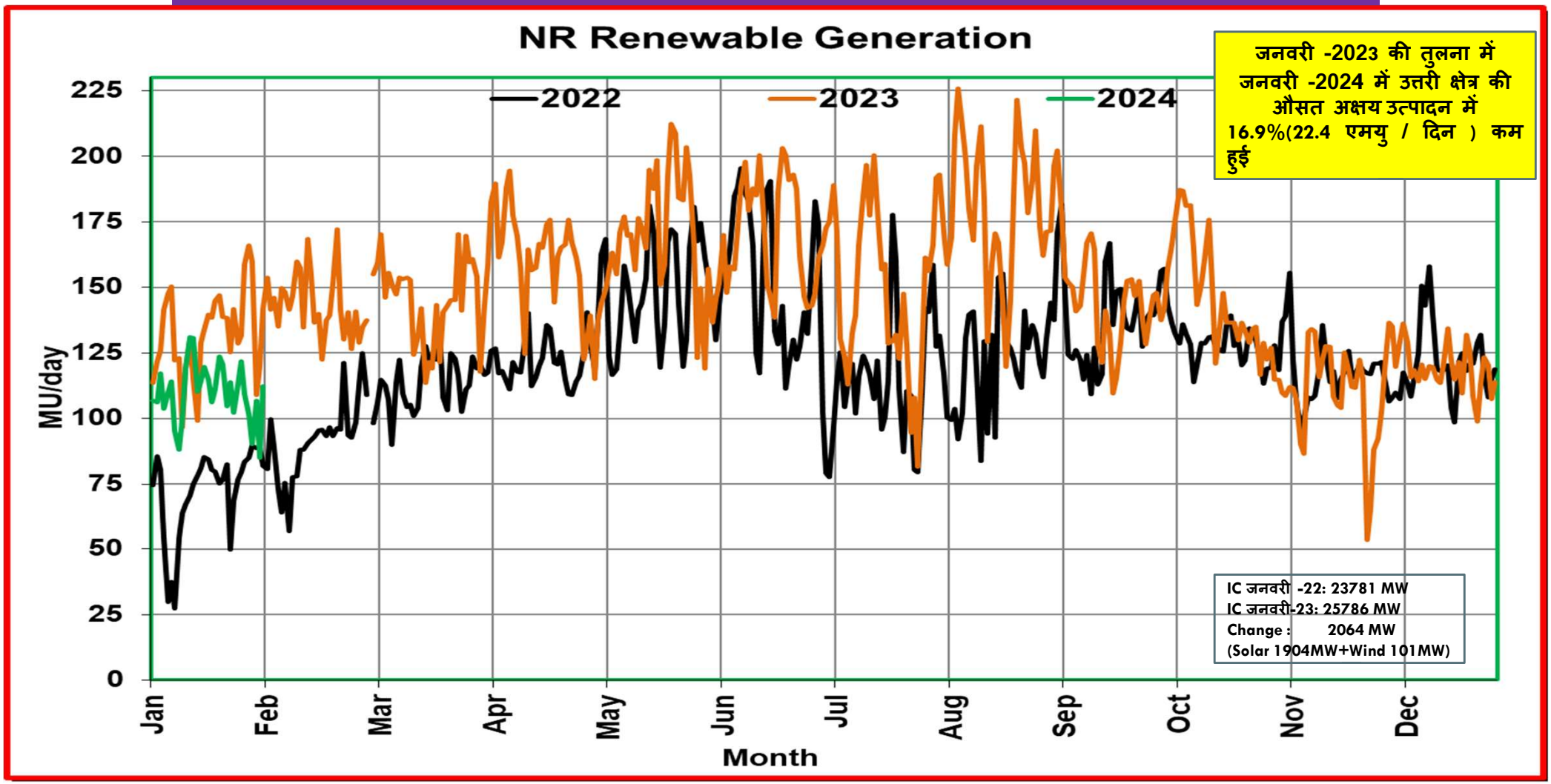
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(MUs/Day)



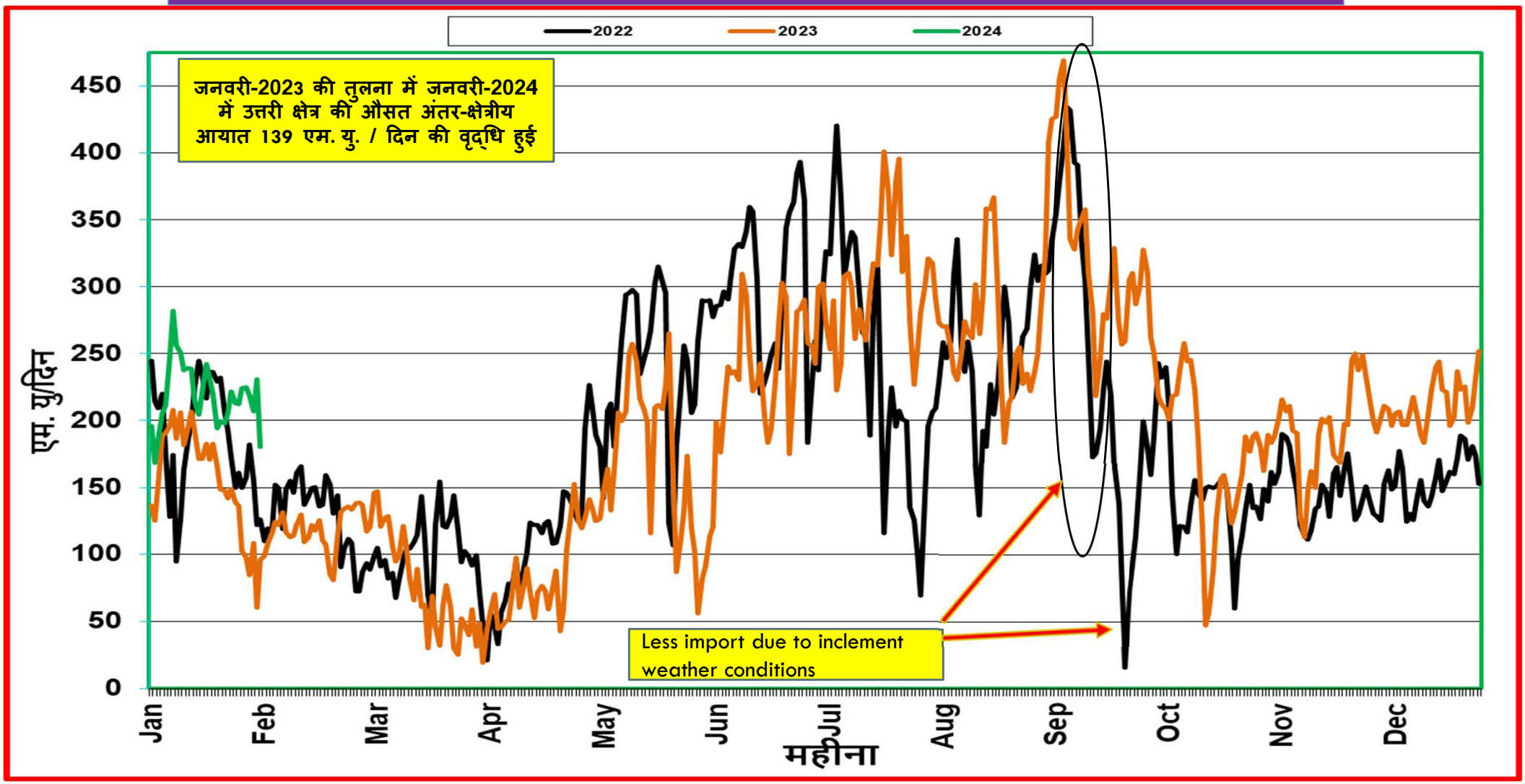
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (MUs/Day)



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



अंतर-क्षेत्रीय आयात(MUs/Day) की स्थिति



वास्तविक सारांश -
जनवरी-2023 बनाम जनवरी-2024

	जनवरी-2023 (मि.यु. /दिन)	जनवरी-2024 (मि.यु. /दिन)	जनवरी माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	766.36	754.49	-11.87
जलीय (Hydro) उत्पादन	109.46	93.93	-15.53
नाभिकीय (Nuclear) उत्पादन	22.87	21.65	-1.22
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	79.72	218.87	139.15
अक्षय (Renewable) उत्पादन	132.165	109.741	-22.42

RE Penetration

	Maximum Daily MU Penetration			
	Jan '2024		Record upto Dec '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	2.69	14-01-2024	12.28	01-04-2020
Rajasthan	10.72	03-01-2024	36.47	22-10-2021
UP	2.73	27-01-2024	4.72	22-03-2023
NR	10.24	11-01-2024	20.69	02-04-2023

Outage Summary For Jan 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	338	239	124	115	73.2%	26.8%	51.9%	48.1%	577
UPPTCL	137	194	97	97	58.5%	41.5%	50.0%	50.0%	331
RRVPNL	23	175	78	97	22.8%	77.2%	44.6%	55.4%	198
PSTCL	61	47	28	19	68.5%	31.5%	59.6%	40.4%	108
HVPNL	32	30	13	17	71.1%	28.9%	43.3%	56.7%	62
BBMB	15	45	19	26	44.1%	55.9%	42.2%	57.8%	60
DTL	9	20	11	9	45.0%	55.0%	55.0%	45.0%	29
NTPC	11	14	3	11	78.6%	21.4%	21.4%	78.6%	25
ADHPL	24	0	0	0	100.0%	0.0%	NA	NA	24
HPPTCL	7	10	3	7	70.0%	30.0%	30.0%	70.0%	17
PTCUL	5	8	1	7	83.3%	16.7%	12.5%	87.5%	13
NHPC	8	4	2	2	80.0%	20.0%	50.0%	50.0%	12
NRSS36	1	11	9	2	10.0%	90.0%	81.8%	18.2%	12
PDD JK	10	1	0	1	100.0%	0.0%	0.0%	100.0%	11
SJVNL	8	0	0	0	100.0%	0.0%	NA	NA	8
Cleansolar_Jodhpur	6	1	0	1	100.0%	0.0%	0.0%	100.0%	7
PKTCL	2	3	1	2	66.7%	33.3%	33.3%	66.7%	5
AHEJ3L	0	4	2	2	0.0%	100.0%	50.0%	50.0%	4
AMP Energy Green Private L	0	4	1	3	0.0%	100.0%	25.0%	75.0%	4
MAHINDRA	3	1	0	1	100.0%	0.0%	0.0%	100.0%	4
THDC	0	4	2	2	0.0%	100.0%	50.0%	50.0%	4
APMPL	1	2	0	2	100.0%	0.0%	0.0%	100.0%	3
Azure	2	1	1	0	66.7%	33.3%	100.0%	0.0%	3
NRSS XXIX	0	3	3	0	0.0%	100.0%	100.0%	0.0%	3
RAILWAYS	3	0	0	0	100.0%	0.0%	NA	NA	3
ACME	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
AREPRL	1	1	0	1	100.0%	0.0%	0.0%	100.0%	2
ESUCRL	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
PKATL	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
Saurya Urja	1	1	0	1	100.0%	0.0%	0.0%	100.0%	2
NPCIL	0	1	0	1	NA	NA	0.0%	100.0%	1
Total	711	827	401	426	63.9%	36.1%	48.5%	51.5%	1538

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))	
Oct-23	966	707	331	376	74.5%	25.5%	1673
Nov-23	935	631	347	284	72.9%	27.1%	1566
Dec-23	1078	658	331	327	76.5%	23.5%	1736
Jan-24	**711**	**827**	**401**	426	**63.9%**	**36.1%**	**1538**


धन्यवाद