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 219 वीं बैठक का कार्यवृत |

**Subject:** Minutes of the 219th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 219वीं बैठक दिनांक 15.05.2024 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

The 219th meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 15.05.2024. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

**संलग्नक:**यथोपरि।

**Signed by Omkishor**
**Date: 28-05-2024 17:32:36**

(ओमकिशोर)
कार्यपालक अभियंता (प्रचालन)

**सेवा में,**

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

# Contents

# उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 219 वीं बैठक का कार्यवृत्त

The 219th OCC meeting of NRPC was held on 15.05.2024 through video conferencing.

## खण्ड-क:उ.क्षे.वि.स. PART-A:NRPC

### A.1. Confirmation of Minutes

Minutes of the 218th OCC meeting was issued on 03.05.2024. OCC confirmed the minutes of the meeting.

### A.2. Review of Grid operations of April 2024

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

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

- **Delhi**

  The variation between actual and anticipated peak demand is (-) 9.21% due to light rainfall in Delhi and adjoing areas in last week of April.

- **Himachal Pradesh**

  The Anticipation in Energy Requirement & Peak Demand in respect of Himachal Pradesh for the month of April, 2024 came on the lower side due to consistent bad weather.

- **Punjab**

  It is intimated that actual maximum demand and actual energy requirement are less as compared to anticipated maximum demand and anticipated energy requirement respectively because of rainfall in third and fourth week of April 2024 in the state of Punjab.

- **Rajasthan**

  The Actual Energy requirement w.r.t. Anticipated Energy requirement decreased by 6.4% and Actual Peak Demand w.r.t. anticipated Peak Demand decreased by 9.6% for April' 2024 due to not rising of expected temperature resulting in-sufficient summer load growth during the month of April 2024 in Rajasthan state.

- **Haryana**

The deviation in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures for the month of April 2024, was due to lesser demand from the agricultural sector comparative to last year data for the same period.

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

The maintenance programme of generating units and transmission lines for the month of June 2024 was deliberated in the meeting on 14.05.2024.

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

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

| State / UT | Availability / Requirement | Revised Energy (MU) | Revised Peak (MW) | Date of revision |
|---|---|---|---|---|
| CHANDIGARH | Availability | 190 | 380 | No Revision submitted |
| | Requirement | 189 | 428 | |
| | Surplus / Shortfall | 1 | -48 | |
| | % Surplus / Shortfall | 0.5% | -11.3% | |
| DELHI | Availability | 4963 | 7900 | 14-May-24 |
| | Requirement | 4000 | 7900 | |
| | Surplus / Shortfall | 963 | 0 | |
| | % Surplus / Shortfall | 24.1% | 0.0% | |
| HARYANA | Availability | 7671 | 11918 | 09-May-24 |
| | Requirement | 6477 | 14287 | |
| | Surplus / Shortfall | 1194 | -2369 | |
| | % Surplus / Shortfall | 18.4% | -16.6% | |
| HIMACHAL PRADESH | Availability | 1178 | 1787 | 08-May-24 |
| | Requirement | 1158 | 1824 | |
| | Surplus / Shortfall | 20 | -37 | |
| | % Surplus / Shortfall | 1.7% | -2.0% | |
| J&K and LADAKH | Availability | 2040 | 3310 | No Revision |
| | Requirement | 1842 | 3121 | |

| State / UT | Availability / Requirement | Revised Energy (MU) | Revised Peak (MW) | Date of revision |
|---|---|---|---|---|
| | Surplus / Shortfall | 198 | 189 | submitted |
| | % Surplus / Shortfall | 10.7% | 6.1% | |
| PUNJAB | Availability | 8100 | 16050 | 14-May-24 |
| | Requirement | 8100 | 16050 | |
| | Surplus / Shortfall | 0 | 0 | |
| | % Surplus / Shortfall | 0.0% | 0.0% | |
| RAJASTHAN | Availability | 9830 | 18340 | 13-May-24 |
| | Requirement | 9000 | 16500 | |
| | Surplus / Shortfall | 830 | 1840 | |
| | % Surplus / Shortfall | 9.2% | 11.2% | |
| UTTAR PRADESH | Availability | 15900 | 29130 | 09-May-24 |
| | Requirement | 15900 | 29130 | |
| | Surplus / Shortfall | 0 | 0 | |
| | % Surplus / Shortfall | 0.0% | 0.0% | |
| UTTARAKHAND | Availability | 1482 | 2560 | 08-May-24 |
| | Requirement | 1500 | 2600 | |
| | Surplus / Shortfall | -18 | -40 | |
| | % Surplus / Shortfall | -1.2% | -1.5% | |
| NORTHERN REGION | Availability | 51354 | 83900 | |
| | Requirement | 48166 | 84400 | |
| | Surplus / Shortfall | 3188 | -500 | |
| | % Surplus / Shortfall | 6.6% | -0.6% | |

## 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 219th 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.** In the meeting (219th OCC), UPPTCL representative mentioned that SCADA implementation for Unchahar islanding scheme is under progress.

**A.6.2.** With regard to Agra islanding scheme, UPPTCL representative apprised forum that procurement of UFR is under process and tender would be floated after general election 2024.

**A.6.3.** MS, NRPC mentioned that scheme for implementation of islanding scheme in Rajasthan control area has already been approved by NRPC forum and asked RRVPNL to go ahead with the execution of DPR prepared by them.

**A.6.4.** With regard to Patiala-Nabha Power Rajpura islanding scheme representative from Punjab SLDC informed that DPR for PSDF funding has been approved from their management and it has been submitted to PSDF Secretariat.

**A.6.5.** With regard to Kullu-Manali Islanding scheme, HPSLDC representative apprised forum that the Scheme is submitted to HPSLDC by HPSEBL on 14.05.2024 for scrutiny & further approval from appraisal committee of State Commission for funding from State PSDF.

**A.6.6.** With regard to Shimla-Solan Islanding scheme representative from HPSLDC intimated forum HPSEB has been taken up the matter with M/s GE and they have given clearance to enable the UFR setting of Bhaba HEP at 47.5 Hz. M/s GE has submitted a performa invoice for 100% advance payment regarding the same.

## 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 May 2024).

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

| Station | Capacity (MW) | PLF % (prev. months) | Normative Stock Reqd. (Days) | Actual Stock (Days) |
|---|---|---|---|---|
| SURATGARH TPS | 1500 | 0.91 | 17 | 2.1 |

## 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. System Protection Scheme (SPS) to address Overloading of 3x315 MVA ICTs at Allahabad SS (Agenda by Powergrid NR-3)**

**A.9.1.** EE(O), NRPC apprised forum that the cited matter was deliberated in 207th OCC meeting of NRPC, wherein issue of violation of N-1 contingency of 3X315 MVA ICTs at POWERGRID Allahabad SS was discussed and POWERGRID was asked to propose a System Protection Scheme at 400/220 kV Allahabad substation in consultation with UP to address the overloading issue till capacity augmentation.

**A.9.2.** Further, Powergrid Allahabad has deliberated with officials of UPPTCL and it was mutually agreed that a System Protection Scheme (SPS) at 400/220 kV Allahabad substation shall be devised in such a manner that in case load on any of the 3x315 MVA ICTs at Allahabad SS goes beyond 300 MW, SPS will automatically switch-off both circuits of 220 kV Allahabad (PG)-Rewa Road (UP).

**A.9.3.** NRLDC representative provided following comments on the SPS scheme:

- N-1 non-compliance of ICTs is already being highlighted by NRLDC and accordingly 4th 500MVA ICT has been approved and being implemented by POWERGRID. Therefore, SPS requirement will be there till ICT augmentation at Allahabad(PG).
- UP SLDC may check that in case of SPS operation, cascade tripping should not take place.
- SPS scheme already deliberated between POWERGRID and UPPTCL.
- Time delay for SPS activation may be reduced from 60sec to 500ms.

**A.9.4.** UPSLDC and UPPTCL representatives agreed with SPS proposal from POWERGRID.

**A.9.5.** UPSLDC representative stated that there is not likely to be cascade operation in case of this SPS operation. It was further informed that time grading may be included in SPS.

**A.9.6.** OCC forum agreed that although no major issues are observed in SPS, time delay for SPS activation w.r.t. overcurrent settings of ICT need to be checked by POWERGRID. Further, as per suggestion of UP

SLDC time delay in SPS logic may be explored by POWERGRID. Accordingly, the scheme may be deliberated in next OCC meeting.

**A.10. Commissioning work of Tehri PSP and its impact on operation of Tehri HPP and Koteshwar HEP (agenda by THDCIL)**

A.10.1. The cited matter was deliberated in the outage meeting of 219th NRPC and forum accorded in-principal approval for the said work subject to clearance from MoP and UP Govt. on the said subject.

A.10.2. NTPC representative stated that THDC shall confirm that sufficient makeup water would be ensured for Dadri Thermal and Dadri Gas Power Plants.

A.10.3. Tehri representative replied that at present one-fourth of the discharge in Ganga is due to water released from Bhagirathi and remaining three-fourth of the discharge in Ganga is due to water released from Alaknanda. Further the discharge in Ganga is 350 cumecs at present.

A.10.4. He mentioned that with shutdown of plant from 1st June, water will not be released from Koteshwar but discharge from Alaknanda in Ganga during the time is expected to cross 450 cumecs and henceforth it is envisaged that there should not be any problem related to availability of makeup water for Dadri thermal plant.

**A.11. Table Agenda 1: Review of System Protection Scheme (SPS) at 400kV substation Obra and Nehtaur. (Agenda by UPSLDC)**

A.11.1. UPSLDC vide letter dated 10.05.2024 has intimated that it has reviewed the SPS installed at 400kV S/S Obra and Nehtaur.

A.11.2. Based on review, UPSLDC has proposed some changes in the settings and logic of aforementioned scheme. (Copy attached as Annexure-A.III)

A.11.3. NRLDC representative provided following comments on the SPS scheme:

- Time delays in proposed revision may be reduced. Atleast for 105%/110% loading case, time delay may be reduced to maximum of 400-500ms
- Why SPS at Obra did not operate in recent tripping? UPSLDC and UPRVUN to clarify the same.
- For SPS at Nehtaur, how priority will be decided, any graded time delay for feeders.

A.11.4. In the meeting, UP SLDC informed the following:

- Reduction in Time delay is being discussed with site team.
- SPS didn't operate in recent tripping due to some faulty cable issue at Obra, same has been attended.
- UP SLDC will share the implemented logic which decided priority for Nehtaur SPS.

A.11.5. OCC forum agreed with proposed revision in SPS. Further, with regard to NRLDC comments on implemented logic which decides priority in Nehtaur SPS and time delay to be kept, agenda may be brought by UPSLDC in next OCC meeting.

**A.12. Table Agenda 2: Request to consider Off-load 400 kV Bus Split arrangement at 400/220 kV Maharanibagh Substation (Agenda by Powergrid NR-1)**

A.12.1 EE(O), NRPC apprised forum that Powergrid NR-1 is facing operational challenges at Maharanibagh GIS Substation due to its Double Main Bus Bar setup, leading to frequent and prolonged shutdowns for maintenance.

A.12.2 Further he mentioned that in the past four years, the 400 kV GIS at Maharanibagh Substation has undergone three complete shutdowns, each lasting 5-14 days, to resolve defects occurring between the circuit breaker compartment and the Bus Bar. In February 2018, the complete substation was in shutdown for 14 days continuously. In August 2023, an issue observed in gas-tight insulator inside the 400 kV Bus Bar-2, near Hyosung GIS Bay – 407 (Transformer-4), necessitating a 4-day shutdown of both 400 kV Bus Bars. This led to a complete interruption of power flow from the 400 kV side.

A.12.3 To address this, Powergrid NR-1 has proposed for a 400 kV Bus Bar splitting arrangement between ABB and Hyosung GIS. This arrangement aims to mitigate the risk of complete station shutdowns by allowing the disconnection of faulty segments while maintaining continuous power flow through the healthy side of the Bus Bar.

A.12.4 Further, CGM Powergrid mentioned that Technical feasibility has been assessed, and the financial implications, is approximately 8.7 Cr(Expenditure booking under Add Cap block 2024-2029).

A.12.5 In the meeting, Powergrid NR-1 representative presented the bus split arrangement at 400/220 kV Maharanibagh Substation to the forum.

A.12.6 MS, NRPC suggested that a committee of members from NRLDC, CTU, DTL, HVPN and UPPTCL may be constituted under chairmanship of Superintending Engineer (Operation), NRPC that would visit 400/220 kV Maharanibagh Substation and submit its report before the next OCC meeting regarding the need to consider the Off-load 400 kV Bus Split arrangement at 400/220 kV Maharanibagh Substation.

**A.13. Table Agenda 3: Low voltage at RVPN's 220 kV GSSs in the vicinity of 400 kV GSS Bhinmal (PG) - (Agenda by RVPN)**

A.13.1. RVPN vide mail dated 13.05.2024 has intimated that to control High loading of 400kV Bhinmal-Zerda line, following scheme was approved in 53rd NRPC

meeting as an immediate requirement (short term) to relieve high loadings on NR-WR inter regional lines:

**Phase-I (For Short term)**

- Bypassing of 400 kV Kankroli - Bhinmal-Zerda lines at Bhinmal to form 400 kV Kankroli - Zerda (direct) line #
- Reconductoring of 400 kV Jodhpur (Surpura)(RVPN) - Kankroli S/c line with twin HTLS conductor-188 km

# with necessary arrangement for bypassing Kankroli- Zerda line at Bhinmal with suitable switching equipment inside the Bhinmal substation.

A.13.2. A shutdown was taken by Power Grid for Bypassing of 400 kV Kankroli - Bhinmal-Zerda lines at Bhinmal to form 400 kV Kankroli - Zerda (direct) line on 07.03.2024 and bypassing work was completed on 08.03.2024.

A.13.3. Further, RVPN mentioned that the work for making necessary arrangement for bypassing Kankroli- Zerda line at Bhinmal with suitable switching equipment inside the Bhinmal substation was also initiated on 07.03.2024 with completion target of 3 months. While discussing/ allowing shutdown for bypassing one circuit of 400 kV D/C Zerda- Kankroli line, SLDC Raj had emphasized on the fact that such dip in voltage would be observed in summer and requested to complete the work within scheduled 3 months period as 400 kV Kankroli- Zerda line might be taken in at 400 kV GSS Bhinmal (PG) to improve the voltage of RVPN's 220 kV GSS in vicinity of 400 kV GSS Bhinmal (PG). NRLDC at that time had assured that improvement of voltage in and around 400 kV GSS Bhinmal (PG) shall be done by increasing the tap of 400/220 kV ICTs of Bhinmal (PG).

A.13.4. RVPN also stated that nowadays, summer load demand is of increasing trend and huge voltage drop at RVPN's 220 kV GSSs in the vicinity of 400 kV GSS Bhinmal (PG) is being observed resulting voltage fluctuations and further dip in voltages of tail end GSS is also being faced.

A.13.5. RVPN has requested Powergrid is requested to expedite the following works and update the current status

- Bay work for making necessary arrangement for bypassing Kankroli-Zerda line at Bhinmal with suitable switching equipment inside the Bhinmal (PG) substation and
- Commissioning of approved 3rd 400/220 kV ICT at 400 kV GSS Bhinmal (PG)

A.13.6. Meanwhile, RVPN requested NRLDC to advise 400 kV GSS Bhinmal (PG) to increase the tap of 400/220 kV ICTs to resolve the low voltage issue.

A.13.7. NRLDC representative stated the following:

- Low voltage issue is being faced at Bhinmal station. As per study carried out by NRLDC for Bhinmal station, low voltage issue are being observed during solar hours.
- In order to address and rectify low voltage issue being faced at Bhinmal end it was requested to take appropriate action at SLDC Rajasthan end.
- RTAMC NR-1, Powergrid had intimated that 400/220 KV 315 MVA ICT-3 at Bhinmal would be ready for charging by 31st March 2024. However, no further updates have been received. Hence RTAMC NR-1, Powergrid is requested to update present status regarding readiness of 315 MVA ICT-3 at Bhinmal for charging.
- As already intimated earlier SLDC 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.
- SLDC Rajasthan to expedite commissioning of capacitors at underlying n/w of Bhinmal.
- SLDC Rajasthan may kindly convey action taken regarding load segregate during day hours in order to control low volage at Bhinmal end.

A.13.8. SLDC representative stated that they have taken up with DISCOM for shifting load to night time to avoid low voltage issues during day time. However, till the time same is implemented, tap position of 400/220kV ICTs at Bhinmal may be changed.

A.13.9. NRLDC representative further added that Bhinmal is connected to ISTS RE complex via Fatehgarh3-Barmer-Bhinmal link. As the transmission system for RE evacuation is delayed, low voltage as well as oscillation related issues are being observed in the grid.

A.13.10. POWERGRID representative stated that turret/bushing of ICT has failed and the ICT is expected to be charged within next 15-20 days.

A.13.11. OCC forum agreed that since ICT-3 at Bhinmal is expected, there would be slight improvement in voltage profile of Bhinmal. Further, as agreed earlier Rajasthan SLDC may discuss with DISCOM to shift some load of Bhinmal area to night time. In case the issue is still not resolved after load shifting, the matter may be further deliberated. Meanwhile, Rajasthan may share studies done at their end with NRLDC.

## A.14. Table Agenda 4: Diversion of 1X200 MVA 220/132 kV ICT from Raiberelly (NR) to Ara (ER) Substation on replenishment basis. (Agenda by Powergrid NR-3)

A.14.1 Powergrid NR-1 representative informed that CTU vide OM in May'23 has allotted ERES-XXXVI for installation of 1X200 MVA 220/132 kV ICT at Ara S/s with completion schedule of Aug'24. Work has been awarded and civil works are under progress but the supply of 220/132kV, 200 MVA ICT is expected in July/Aug'24.

A.14.2 Further, he mentioned that 1 no. 200mVA,220/132kV ICT is available at raibarelly substation under regional spare of NR.

A.14.3 Due to the urgent requirement of 200 MVA, 220/132kV ICT at Ara Substation, Powergrid NR-3 requested forum to approve the diversion of 1X200 MVA, 220/132kV ICT from Raibarelly to Ara Substation on replenishment basis which shall be re-installed at Raibarelly Substation in 2 to 3 months.

A.14.4 In the meeting, Powergrid representative mentioned that presently there are two 220/132kV ICT available as regional spare in NR

- 1X200 MVA, 220/132kV ICT at Raiberelly
- 1X160 MVA, 220/132kV ICT at Sitarganj

A.14.5 OCC forum agreed to Powergrid request for diversion of 1X200 MVA 220/132 kV ICT from Raiberelly (NR) to Ara (ER) Substation on replenishment basis.

**A.15. Table Agenda 5: Commissioning of regional spare 315 MVA ICT 2 at DTL 400KV Tikrikalan (Mundka) Sub Station provided by PGCIL from 400KV Ballabhgarh Sub Station on returnable basis. (Agenda by DTL)**

A.15.1. DTL mentioned that 400KV Tikrikalan (Mundka) Substation of Delhi Transco Limited (DTL) has 400kV bays for 4 nos. 400KV transformers. However, the installed capacity is only 3 nos. 400/220KV ICTs i.e. 3x315MVA.

A.15.2. In the year 2019, there were three (03) nos. 315MVA 400/220 kV ICTs installed at 400KV Tikrikalan as ICT-2, ICT-3 & ICT-4 and bays for ICT-1 were vacant. 315MVA 400/220KV ICT-2 got damaged at Tikrikalan on dated 29.09.2019. Due to non-availability of spare transformer in DTL, NRPC designated regional spare transformer available at PGCIL Mandola was provided by PGCIL to DTL and the same was commissioned as ICT-1 in August 2020 in 400kV vacant bay(s) no. 406-407and thereby the transformation capacity was maintained at 3x315 MVA.

A.15.3. DTL has stated that the bays for ICT-2 (Bay No. 409 and 410) are lying vacant since the damage of ICT 2 in September 2019.

A.15.4. DTL informed forum that On 05.09.2022, 315MVA ICT-3 got damaged with the tripping of 400KV Mundka- Peeragarhi ckt-1 due to damage caused by DMRC while carrying out piling work for metro line. Due to non-availability of spare transformer in DTL, Powergrid was requested to provide a 315 MVA ICT on loan basis and in response Powergrid agreed to provide NRPC designated regional spare transformer 315MVA BHEL 1988 make ICT lying at 400KV Ballabhgarh as cold reserve since the year 2016 on returnable basis. However, this transformer could not be shifted from 400KV Ballabhgarh to DTL Tikrikalan substation due to start of construction of bridge over Nallah in January 2023 by Haryana water deptt. outside 400KV Ballabhgarh S/Stn.

A.15.5. As G-20 event which was to be held in Delhi was approaching near, therefore a proposal to provide 315MVA ICT from PGCIL Ludhiana was deliberated and

approved by NRPC in its meeting held in February 2023. This transformer was commissioned at 400KV Tikrikalan on 27.06.2023.

A.15.6. Due to load growth in West Delhi, DTL has already prepared scheme to install 4 nos. 500MVA power transformers at 400KV Tikrikalan. The case for procurement of these 4 no. transformers is under the tendering stage. Therefore, considering the load demand, regional spare 315 MVA BHEL 1988 make ICT at 400KV Ballabhgarh has also been shifted to 400KV Tikrikalan (DTL) and the same is to be commissioned at ICT- 2 location which got damaged at Tikrikalan in Sept. 2019. This transformer is likely to be commissioned in June, 2024 at Tikrikalan (DTL).

A.15.7. DTL requested forum for commissioning of regional spare 315 MVA BHEL 1988 make transformer as ICT 2 at DTL 400KV Tikrikalan (Mundka) Sub Station provided by PGCIL from 400KV Ballabhgarh Sub Station on returnable basis.

A.15.8. OCC forum agreed to the above mentioned DTL request.

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

## B.1 NR Grid Highlights for March 2024

NRLDC representative presented the major grid highlights of Northern region grid for April 2024 as shown below:

**Demand met details of NR**

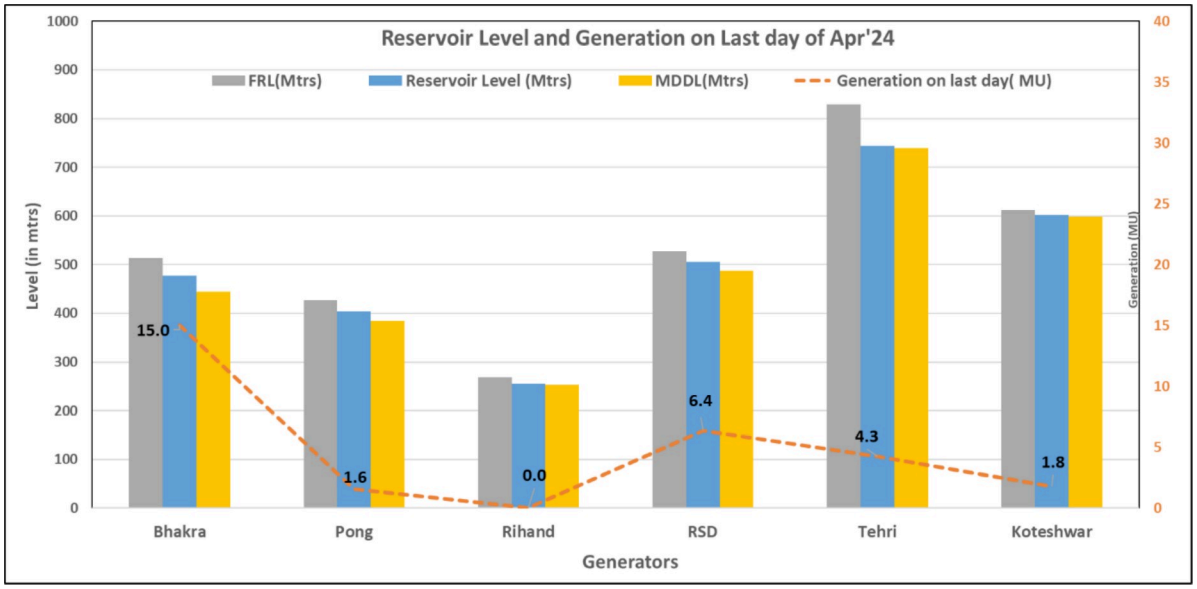
| S.No. | Constituents | Max Demand met (in MW) | Date & Time of Max Demand met | Max Consumption (in MUs) | Date of Max Consumption | Average Demand met (in Mus) |
|---|---|---|---|---|---|---|
| 1 | Chandigarh | 258 | 26.04.24 at 15:00 | 5.2 | 26.04.2024 | 4.4 |
| 2 | Delhi | 5447 | 26.04.24 at 15:20 | 108.8 | 26.04.2024 | 94.8 |
| 3 | H.P. | 9502 | 27.04.24 at 22:45 | 173.6 | 26.04.2024 | 155.7 |
| 4 | Haryana | 1819 | 09.04.24 at 07:00 | 33.8 | 12.04.2024 | 31.4 |
| 5 | J&K | 2924 | 10.04.2 | 55.8 | 10.04.2024 | 50.4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 4 at 07:00 | | | |
| 6 | Punjab | 9821 | 26.04.24 at 07:00 | 170.1 | 26.04.2024 | 153.7 |
| 7 | Rajasthan | 14283 | 29.04.24 at 10:30 | 292.0 | 25.04.2024 | 271.2 |
| 8 | Uttarakhand | 25462 | 30.04.24 at 22:21 | 511.4 | 29.04.2024 | 436.4 |
| 9 | U.P. | 2357 | 26.04.24 at 20:00 | 48.1 | 26.04.2024 | 43.5 |
| 10 | **Northern Region** | **62884** | **25.04.24 at 22:00** | **1360.3** | **29.04.2024** | **1241.4** |

***As per SCADA**
**Northern Region all-time high value recorded in April'24:**
**Nil**
**Frequency profile**

| **Month** | **Avg. Freq. (Hz)** | **Max. Freq. (Hz)** | **Min. Freq. (Hz)** | **<49.90 (% time)** | **49.90 – 50.05 (% time)** | **>50.05 (% time)** |
|---|---|---|---|---|---|---|
| **Apr'24** | 50.00 | 50.43 (18.04.24 at 18:04:20 hrs) | 49.55 (06.04.24 at 11:24:10 hrs) | 5.3 | 78.6 | 16.2 |
| **Apr'23** | 49.99 | 50.33 | 49.49 | 10.5 | 67.9 | 21.6 |

**Reservoir Level and Generation on Last Day of Month**




| | Parameters | | | Present Parameters | | LAST YEAR | |
|---|---|---|---|---|---|---|---|
| RESERVOIR | MDDL (Mts) | FRL (Mts) | Energy Content at FRL | Level (Mts) | Energy (MU) | Level (Mts) | Energy (MU) |
| Bhakra | 445.62 | 513.59 | 1,728.8 | **475.89** | 368 | **477.36** | 401 |
| Chamera-I | 748.75 | 760 | 753.95 | **756.49** | 8 | **-** | - |
| Koteshwar | 598.5 | 612.5 | 610.73 | **602.33** | 1 | **602.66** | 1 |
| Pong | 384.05 | 426.72 | 1,084 | **403.23** | 297 | **405.96** | 370 |
| RSD | 487.91 | 527.91 | 390.3 | **505.65** | 173 | **511.86** | 240 |
| Tehri | 740.04 | 830 | 1,164.11 | **742.12** | 12 | **752.95** | 78 |

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

## B.2 Tower collapse in J&K valley:

Due to massive landslides and hill sinking in the Ramban-Gool area of Jammu and Kashmir, a significant number of villages have been isolated from the affected area.

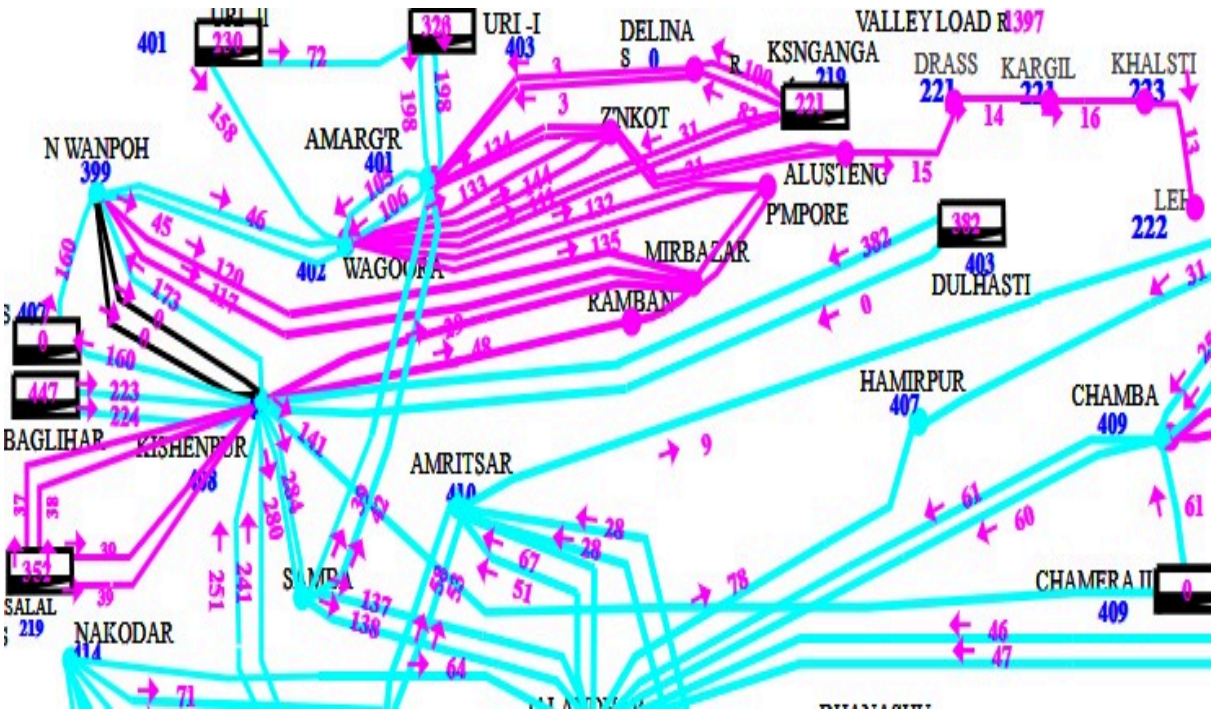
As per request of Powergrid, NR-2, in response to directives from the district administration and M/S JKPTCL officials, following transmission lines were taken under emergency shutdown:

| Element | Outage Time |
|---|---|
| **Out on Tower Collapse** | |
| 400kV Kishenpur-New Wanpoh -3 | 21:22 Hrs / 25.04.2024 |
| 400kV Kishenpur-New Wanpoh -4 | 21:22 Hrs / 25.04.2024 |

**Taken out as preventive measure**

| S. No. | Line Name | Owner | Outage Date & Time | | Revival Date & Time | |
|---|---|---|---|---|---|---|
| 1 | 400 KV Kishenpur-NewWanpoh (PG) Ckt-1 | POWERGRID | 26-04-2024 | 10:30 | 30-04-2024 | 13:17 |
| 2 | 400 KV NewWanpoh(PG)-Baglihar(JK) (JKSPDCL) Ckt-1 | POWERGRID, JKSPDCL | 26-04-2024 | 10:52 | 30-04-2024 | 13:59 |
| 3 | 220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1 | PDD JK | 26-04-2024 | 12:35 | 02-05-2024 | 13:11 |

Due to outage of the above mentioned transmission lines, Kashmir valley has remained connected to the Grid through 400kV Samba-Amargarh Ckt-1 & 2 only for 4-5 days. Even at present the connectivity of valley to the rest of the grid is through 4 lines only as shown below:




In 219OCC meeting, NRLDC requested Powergrid to expedite the restoration work of 400kV Kishenpur-New Wanpoh ckt 3 and 4 to ensure reliable power supply to Kashmir valley. It was also informed that 400kV Kishenpur-New Wanpoh ckt4 has

been revived on 13-05-2024 on ERS, however, 400kV Kishenpur-New Wanpoh ckt3 needs to be revived.

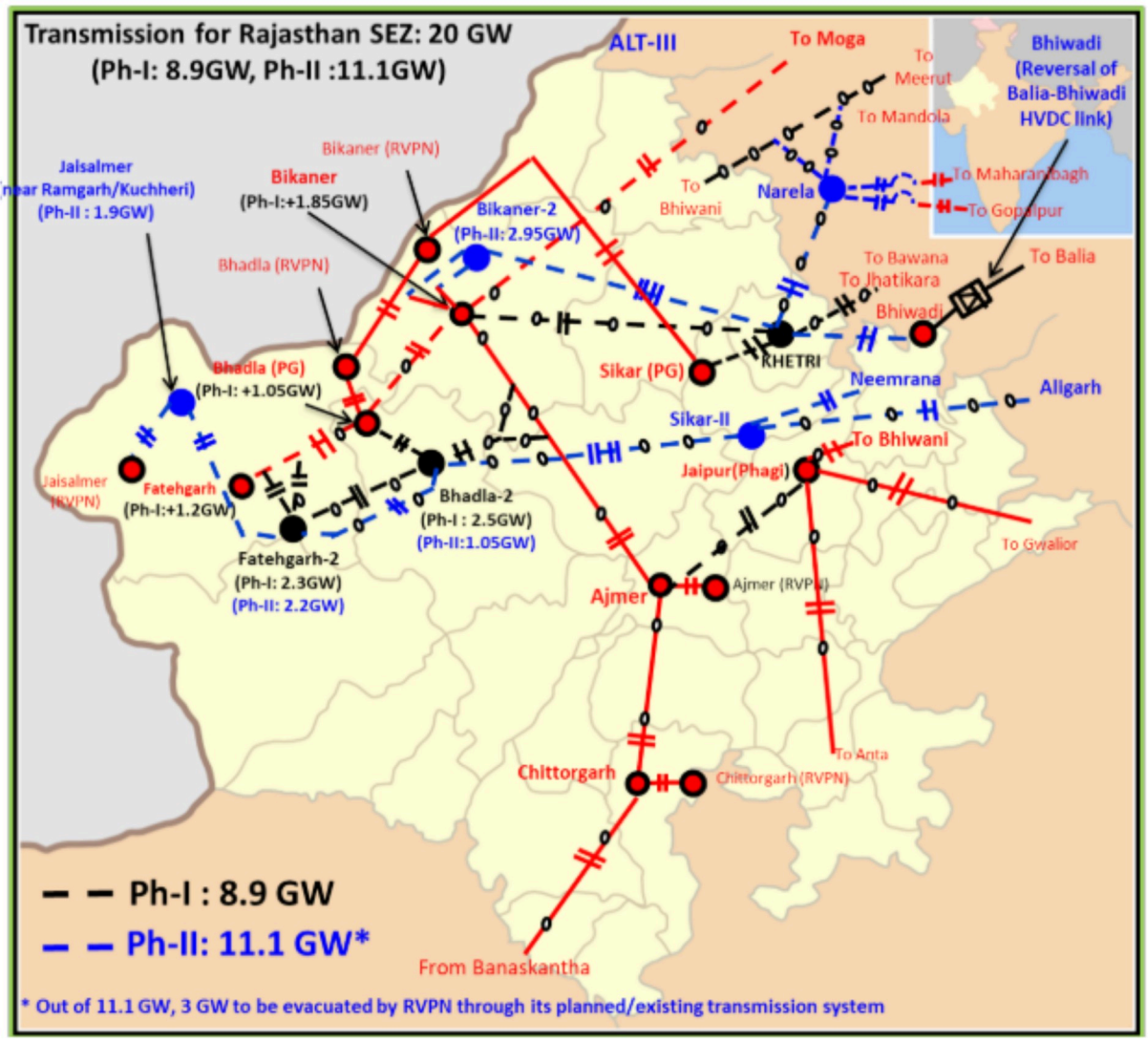
POWERGRID representative stated that land sinking was reported by local authorities to POWERGRID transmission line team. Accordingly, shutdown of number of lines was taken by POWERGRID. 3 towers have been damaged for 400kV Kishenpur ckt 3 and 4. Land sinking is still not stable and team Geological Survey of India is also on site. As the situation improves, rerouting of 3-5 locations would be required for 400kV Kishenpur-New Wanpoh ckt 3 and 4 as both lines are on same tower.

***OCC forum noted the information shared by NRPC. OCC forum requested POWERGRID to explore the possibility of charging 400kV Kishenpur-New Wanpoh 3 also on ERS. Moreover, it was suggested that actions may be taken for tower strengthening on all lines connecting to valley so that connectivity to valley remains reliable even when 400kV Kishenpur-New Wanpoh ckt 3 and 4 would be out for rerouting.***

**B.3 Expediting commissioning of Sikar-II transmission system**

Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under phase II –Part C was approved in 5th meeting of NRSCT held on 13.09.2019. Subsequently, SPV named POWERGRID Sikar Transmission Ltd., was acquired on 04.06.2021 and as per TSA implementation schedule was provided as Dec 2022 for commissioning of 765/400kV Sikar-II and associated transmission system.

There has been delay of more than one and half year with respect to commissioning of 765 KV Sikar 2 PG sub-station. Due to non-availability of Sikar 2 sub-station the Rajasthan ISTS RE system is already deeply stressed and the lines from RE complex remain heavily loaded. Nearly 2500-3000 MW RE generation has been connected in Western Rajasthan which does not have its associated EHVAC transmission system. There are issues related to high loadings in the RE complex and not feasible to provide major shutdowns of existing transmission lines such as outage of 765 KV Bikaner-Moga D/C line as it would further stress the available transmission system




In case of availability of 765 KV Bhadla2-Sikar-2 line, 765 KV-Bhadla 2-Sikar-2 lines and 765kV Sikar2- Aligarh and 400kV Sikar-2-Neemrana lines, the RE complex would be connected to load centers. Interconnection with load will also help to stabilise the grid and the impact of frequent transient fault impact could be minimized.

Recently, the proposed shutdown of 765kV Bikaner-Moga was discussed at NRPC level, wherein it was discussed that if this shutdown is allowed at present, there shall be RE curtailment of the order of 1500 MW to 3500 MW under different scenarios. In view of above, shutdown of 765 KV Bikaner - Moga D/C cannot be allowed in the present scenario considering the quantum of RE curtailment.
Accordingly, POWERGRID is requested to expedite commissioning of 765 KV-Bhadla 2-Sikar-2 lines and 765kV Sikar2- Aligarh and 400kV Sikar-2-Neemrana lines transmission lines along with Sikar2 substation and also 765kV Fatehgarh2-Bhadla2 2nd double circuit to ensure safe evacuation of RE generation and also to facilitate required shutdowns in RE complex.

In 219OCC meeting, POWERGRID representative stated that work are under progress and as intimated earlier, 765kV Bhadla2-Fatehgarh2 2nd D/C would be

charged shortly in June 2024 whereas 765/400kV Sikar-II S/s is likely to be charged by Sep 2024.

NRLDC representative stated that with existing network, it may not be possible to evacuate further RE generation, till additional transmission system including Sikar-II system is charged. The present grid is already under lot of stress in Western Rajasthan and all efforts are being made from NRLDC side to evacuate maximize evacuation of RE power. Therefore, actions are required from POWERGRID side on war footing basis. It was further mentioned that although 765kV Bhadla2-Fatehgarh2 2nd D/C would help to strengthen network at Fatehgarh-II, however, this shall increase loading on 765kV Bhadla2-Ajmer D/C which is already heavily loaded. Therefore, commissioning of 765/400kV Sikar-II along with associated transmission system is required at the earliest.

POWERGRID representative further stated that there can always be some delay in transmission system commissioning. Accordingly, system shall be planned such that even in case of some delay generation evacuation should not be effected.

CTUIL representative stated that RE generators get commissioned within 12-15 months whereas commissioning of transmission lines usually takes 2-3 years. It would not be practical to plan system for accommodating any delay in transmission system execution. As highlighted by NRLDC, 765kV Bhadla2-Fatehgarh2 2nd D/C, would increase loading on 765kV Bhadla2-Ajmer D/C and the angular difference would also be around 24-25deg even without any contingency.

***OCC forum asked POWERGRID to expedite commissioning of 765 KV-Bhadla 2-Sikar-2 lines and 765kV Sikar2- Aligarh and 400kV Sikar-2-Neemrana lines transmission lines along with Sikar2 substation and also 765kV Fatehgarh2-Bhadla2 2nd double circuit. Further, to control loading of 765kV Bhadla2-Ajmer D/C with commissioning of 765kV Fatehgarh2-Bhadla2 2nd D/C, the matter may be separately discussed at NRPC level.***

## B.4 Periodic Testing of Transmission elements and generating units

As per IEGC 2023 clause 40,

*“40. PERIODIC TESTING*

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

*(2) General provisions*

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

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

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

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

*(3) Testing requirements*

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

TABLE 9 : TESTS REQUIRED FOR POWER SYSTEM ELEMENTS

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

In accordance with above, Generators and HVDC/FACT owners were required to furnish the Testing schedule for 2024-25 by 31st October 2023.

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

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

Hence it is requested to submit the information with regard to testing plan as per IEGC 2023 including following details:

- The names of the Synchronous generators, Non Synchronous generators, HVDC and FACTS mentioned in the respective sheet.
- In case the name of any generator is missed, the SLDC may add the generators by adding additional rows. For the states, SLDCs to co-ordinate and furnish the testing schedule for all generators in their control area.
- For SPD, WPD the applicability of testing is as per IEGC 2023/ CEA technical standards for Connectivity. It is the responsibility of the SLDC to add the SPD, WPD connected to the STU network in the Non Synchronous generators sheet and furnish the testing schedule to NRPC.

***The agenda was already discussed in table agenda from NRPC sect. Discussion on AA.xxx may be referred.***

## B.5 Sharing of ATC/TTC assessment and basecase 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 Timeline*** |
|---|---|---|---|---|---|
| ***1. Revision 0 TTC/ATC Declaration for Month 'M'*** | *1(a)* | *Submission of node wise Load and generation data along with envisaged* | *SLDC* | *RLDC* | *10th Day of 'M-12' month* |
| | | *scenarios for assessment of transfer capability* | | | |
| | | *Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models* | | | |

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

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

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

**B.5.1 ATC/TTC assessment sharing 11 months in advance**

The procedure mentions that:

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

Accordingly, SLDCs are requested to send the PSSE cases for four scenarios for May'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.

***Basecase & ATC/TTC assessment was received from HP, Delhi, J&K, UP & Haryana SLDC only for M-12 scenarios.***

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

**B.5.2 Sharing of Data and study results for interconnection studies**

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

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

In line with above, utilities are requested to share the list of elements/LGB data/interconnection study results etc as per the approved procedure which are expected to be commissioned up to November 2024, before 08.05.2024. Above was also requested vide mails dated 29.04.2024 by NRLDC. This needs to be practised as monthly exercise on regular basis.

***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.***

**B.5.3 ATC/TTC of states for summer 2024 (M-1)**

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

In 218 OCC meeting, it was discussed that:

- ATC/TTC assessment for summer 2024 received from UP, Haryana, J&K, Uttarakhand.
- Punjab, Rajasthan, HP and Delhi were asked to assess and share ATC/TTC assessment for summer 2024 at the earliest
- CGM, SO, NRLDC highlighted that Punjab state is separate bid area and accordingly they need to assess and share their ATC/TTC assessments with NRLDC at the earliest.
- Punjab SLDC representative stated that they shall submit their ATC/TTC assessments within one week.

***In 219 OCC meeting, it was discussed that Delhi (10.05.2024), Punjab (14.05.2024) and Rajasthan (14.05.2024) have submitted their ATC/TTC assessments for summer 2024 with NRLDC recently. Comments from NRLDC would be shared shortly.***

**B.5.4 Constraints observed during last month**

It is being observed that loading of 400/220kV ICTs at number of RVPN substations continue to be on the higher side. Stations for which 400/220kV ICTs of Rajasthan and other states were not N-1 non-compliant are attached as Annexure-B.II of agenda.

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

***NRLDC representative mentioned that apart from the N-1 violations of 400/220kV ICTs in Rajasthan state, N-1 violations were also observed at 400/220kV Deepalpur, Bawana and Gorakhpur ICTs.***

***Haryana SLDC representative stated that ICT augmentation at 400/220kV Deepalpur is not foreseen as of now. However, 220kV Sonepat-Rai line is expected to be commissioned shortly which would help to slightly relieve loading of 400/220kV Deepalpur ICTs.***

***NRLDC representative stated that 220kV Sonepat-Rai line may be charged at the earliest so that during high demand of Haryana, the loading of 400/220kV Deepalpur ICTs is managed.***

***UP SLDC representative stated that ICT ugradation at 400/220kV Gorakhpur is expected by July 2024. Till the time, SPS would help and load is generally being kept radial from 400/220kV Gorakhpur.***

As discussed in last few OCC meeting, it was requested that,

- All SLDCs assess and share ATC/TTC assessment for Summer 2024 at the earliest. ATC/TTC assessment has not been received from Punjab, Rajasthan and Delhi for summer 2024.
- 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.

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

### a) Update of Important grid element document in line with IEGC:

In line with Chapter 6 section 29.2.(b) of IEGC, list of important grid elements in Northern region has to be compiled by NRLDC. Such elements shall be opened/closed only on instructions from NRLDC. It is requested to submit the list of all elements with details charged under their jurisdiction from 1.4.2023 till date including those expected to be commissioned till May 2024 so that the same could be included in the list.

However, response from most of the utilities is still pending.

The agenda was also discussed in 218 OCC meeting in which all utilities agreed to provide details before 30th April 2024.

In 219 OCC meeting, NRLDC representative informed that Indigrid, BBMB and HP SLDC have submitted data to NRLDC.

Based on data received from utilities and data available at NRLDC, updated draft document is available at following link.

*https://docs.google.com/spreadsheets/d/1rAbpBcZmAMZFM8SCuQgkCokOaXGHxf99/edit?usp=sharing&ouid=101952646418859842988&rtpof=true&sd=true*

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

***All utilities agreed to provide update.***

### b) Synchronisation issue of 765kV Bhadla2-Ajmer ckt 1 during high solar generation

EHV lines are generally being manually opened during evening time to control high voltages in the RE complex of Western Rajasthan owing to no solar generation. As a practice, in case of two ckts, the ckts are kept open on alternate basis everyday.

Recently, 765kV Bhadla2-Ajmer ckt 1 was opened to control high voltages in the RE complex as routine activity. The line was opened on 30-03-2024 at 18:04. The next day, given the rising trend in solar generation and as per normal practice, code was issued from NRLDC control room to charge the line at 08:39 on 31-03-2024. However, it was observed that there was delay in charging of line from POWERGRID side and the line was charged at 11:10 hrs, when the solar generation had already increased and oscillations to the tune of 15-20kV were being observed in the grid.

On enquiry, it was informed that there was some issue at Bhadla-2 end and the angular difference between 765kV Ajmer and Bhadla-2 substations was higher than 15degrees. Logic has been implemented in Bay Control Unit that incase angular difference between two adjacent substations is higher than 15 degrees, then line can not be closed. This led to delay in charging of important line in the RE complex.

It is to be noted that the angular difference considered as 15 degrees, is on the lower side in case of N-1 contingency. CEA manual on transmission planning criteria also specifies that angular difference of upto 30 degrees may be allowed in case of N-1 contingency.

Further, reservations have also been observed on loading limit of 765kV lines in RE complex. In the mail it is being mentioned that the safe loading limit of line is as per SIL i.e. 2200MW. This is different from the understanding at NRLDC level. It is understood that the transmission lines could be loaded to their thermal limits in case of N-1 contingency for short duration. The thermal limit for 765kV lines comes out as nearly 4200MW, however, considering high power flow and issues related to angular differences, limit of 3500MW is being considered while performing simulation studies. The issue was recently observed while studies were being done for shutdown of 765kV Bikaner-Moga D/C line for NHAI related works.

Following was discussed in 218 OCC meeting,

- CTUIL representative stated that limit of 30 degrees is being considered as per CEA planning criteria. Further, in the criteria it is mentioned that stability studies may be done incase angular separation is higher than 20 degrees which is also generally not required in case line length is not too much. Further, during planning stage, limit of 3400-3500MW is being considered for long 765kV EHVAC lines as the angular separation becomes high when loading crosses 3500MW incase of long lines although thermal limit is 4200MW. Further, incase the line length is more than 300km, generally inter-regional lines, the lines can be loaded upto 3100-3200MW during N-1 contingency.
- POWERGRID representative informed that the set angular difference is being revised at substations after communication was received from NRLDC side. At some substations, the limit shall be changed in consultation with OEM and it is pending for 765kV Bhadla2-Ajmer D/C would be changed after S/S OEM i.e. GE visit.
- OCC forum agreed that:
    - Maximum loading limit of 765kV lines to be considered as 3500MW for simulation studies as well as real-time grid operation

- All transmission licensees to check and make sure that limit of atleast 30 degrees is provided in BCU logic to avoid any issues during charging of line due to such angle limit in real-time grid operation

***POWERGRID representative stated that angular difference setting revision is pending at Fatehgarh-II and Chittorgarh (RVPN) Substations. Apart from this, setting has been increased at all other substations of POWERGRID NR-1.***

***All transmission licensees were requested to confirm whether limit of atleast 30 degrees has been provided in BCU logic.***

**c) Request for Rooftop Solar Installed Capacity and Monitoring Information**

As discussed in OCC-217, with the announcement of the 'PM Suryodaya Yojana', which aims to provide rooftop solar installations to 1 crore households, and the ambitious target of achieving 40 GW of rooftop solar capacity by 2026, it has become increasingly crucial to establish robust monitoring mechanisms for rooftop solar generation. In view of this, actions are required at SLDC/RLDC level for providing essential details regarding rooftop solar installations. A format outlining the necessary information, including rooftop solar installed capacity, regulatory frameworks followed, monitoring processes, and future plans for monitoring at SLDC and DISCOM level is shown below:

| S No | State/ SLDC | Discoms Name(s) | Rooftop Solar Installed Capacity as on date(MW) | Any Regulation/ Framework Followed pertaining to rooftop solar? (Y/N) If yes, explain and share the copy/link of the same | Monitoring Process followed at Discom level (App based/Manual/other means) | Monitoring Process followed at SLDC level (App based/Manual/other means) | Future Plans for Real time Monitoring. Details, if any. | Any Periodical reports being sent to MoP/RPC regarding rooftop generation by SLDC/ Discom? If yes, enclose a copy of the same. |
|---|---|---|---|---|---|---|---|---|
| 1 | Punjab | 1.<br>2. | | | | | | |
| 2 | Haryana | | | | | | | |
| 3 | Delhi | | | | | | | |
| 4 | Rajasthan | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5 | Uttar Pradesh | | | | | | | |
| 6 | Himachal Pradesh | | | | | | | |
| 7 | Uttarakhand | | | | | | | |
| 8 | Jammu and Kashmir (UT) | | | | | | | |
| 9 | Ladakh (UT) | | | | | | | |
| 10 | Chandigarh (UT) | | | | | | | |

Given the significant scale and importance of rooftop solar installations in ensuring the stability and security of our grid infrastructure, real-time monitoring is very much necessary. Cooperation in providing the requested information at the earliest will greatly assist us in implementing necessary measures for rooftop solar monitoring.

***It was informed that Chandigarh has already shared the data with NRLDC.***

***All states agreed to send the details at the earliest for further course of action in this regard.***

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

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

| S. NO. | Element Name | No. of forced outages | Utility/SLDC |
|---|---|---|---|
| 1 | 220 KV Auraiya(NT)-Sikandra(UP) (PG) Ckt-1 | 3 | NTPC/UP |
| 2 | 220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt-1 | 4 | POWERGRID/ UP |
| 3 | 220 KV Ballabhgarh-Charkhi Dadri (BB) Ckt-1 | 3 | BBMB |
| 4 | 220 KV Ganguwal(BB)-Mohali(PS) (PSTCL) Ckt-1 | 3 | BBMB/Punjab |
| 5 | 220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2 | 3 | POWERGRID/ Delhi |

| | | | |
|---|---|---|---|
| 6 | 220 KV Sarsawan(UP)-Khodri(UK) (UP) Ckt-1 | 3 | Uttarakhand/UP |
| 7 | 400 KV Bareilly-Unnao (UP) Ckt-2 | 3 | UP |
| 8 | 400 KV Lucknow(UP)-Bareilly(PG) (PG) Ckt-1 | 4 | POWERGRID/ UP |

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

**Discussion during the meeting:**

- **220 KV Auraiya(NT)-Sikandra(UP) (PG) Ckt-1:** *NRLDC representative raised concerned over non submission of DR/EL and tripping details from Auraiya end. NTPC was requested to submit the tripping details.*

- **220 KV Baghpat(PG)-Shamli(UP) (UP) Ckt-1:** *NRLDC representative raised concerned on frequent tripping of line and non-operation of A/R. Up representative stated that A/R operated at Shamli end, on 12th & 18th April tripping incident, there was successful A/R operation. Most of the faults were due to polymer insulation flashover, damaged insulators have been replaced. POWERGRID representative highlighted that as substation is GIS type, issue of partial discharge have been arisen due to frequent faults in line. UP has been requested to provide shutdown of the line so that issue if partial discharge can be addressed and A/R can be made healthy. UP was requested to coordinate with the POWERGRID to facilitate the shutdown and to take necessary actions to minimise the frequency of fault in line. UP agreed for the same.*

- **220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-2:** *NRLDC representative asked the reason of delayed clearance of fault and status of A/R operation at both ends. DTL and POWERGRID representative stated that A/R is healthy at their end. Further review would be done with respect to A/R operation and delayed clearance of fault.*

- **220 KV Sarsawan(UP)-Khodri(UK) (UP) Ckt-1:** *NRLDC representative raised concerned on frequent tripping of line, no submission of DR/EL and non-operation of A/R in the line. UP representative e informed that autorecloser lockout issue was observed. Further review was done, and A/R is not healthy and operational at Sarsawan(UP) end. PTCUL was requested to review the A/R operation status at Khodri end.*

- **400kV Bareilly-Unnao (UP) ckt-2:** *NRLDC representative raised concern over frequent tripping of the line and non-operation of A/R. UP representative stated that on 08th April, tripping occurred due to damage of B-ph pole of tie CB at Unnao end and on 23rd April, tripping occurred due to maloperation of REF protection of line reactor. On 24th April, shutdown of lie was taken for maintenance.*

- **400 KV Lucknow(UP)-Bareilly(PG) (PG) Ckt-1:** *NRLDC representative raised concern over frequent tripping of line and delayed clearance of fault on 28th April incident. POWERGRID representative informed that faults occurred due to kite thread and agriculture fire. A/R is healthy in line, further review would be done with respect to delayed clearance of fault on 28th April.*

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

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

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

A total of 12 grid events occurred in the month of March'24 of which **06** are of GD-1 category, **01** are of GI-1 Category and **05** 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.IV of agenda.

Maximum delayed clearance of fault observed in event of multiple elements tripping at 132kV Sewa-II(NHPC) on 29th April, 2024 (As per PMU at Kishenpur(PG), 3-phase fault with delayed fault clearance time of 400ms is observed).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **02** events out of **12** grid events occurred in the month. In 02 (no.) of grid events, there was no fault in the grid.

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

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

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

a) 220kV Uperlanangal(HPSEBL) on 19th April'24

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

*NRLDC requested NHPC to share the detailed analysis of multiple element tripping incident at 132kV Sewa-II(NHPC) on 29th April, 2024 wherein delayed clearance of ~40msec was observed. Any protection related corrective actinons may to be taken if required. NHPC agreed for the same.*

*On multiple elements tripping at 220kV Upperla Nangal(HP), HP representative informed that fault occurred on 220kV Upperla Nangal-Kinvin ckt, this line is new line, charged during march 2024. On this fault CB of the line at Upperla Nangal failed to open leading to LBB operation resulting in multiple element tripping. DR/El of the event has already been shared and as a remedial measure breaker would be replaced.*

*NRLDC representative raised concern over delayed submission of DR/EL, submission of incorrect files and non-submission of detail tripping report by the constituents. Non availability of tripping details leads to incomplete analysis of grid incidents which may lead to further delay in remedial actions.*

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

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

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

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

A total of 10 inter-regional lines tripping occurred in the month of April'24. The list is attached at Annexure-B.V of agenda**.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 37.2(c) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

*On frequent tripping of HVDC Champa-Kurukshetra link, NRLDC representative requested POWERGRID to share the details of root cause of maloperation, status of follow-up actions with GE and identified remedial measure to avoid such unwanted tripping in future.*

*POWERGRID representative stated that operation of T-zone protection on 7th April was correct operation. There was one incident of hand tripping due to damage of reactor. Reactor w.r.t. Pole-1 & 3 has been restored and work is in progress w.r.t. Pole-2&4. Further continuous coordination and monitoring with GE is being done in software upgradation process to ensure that issues in present software version can be addressed.*

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

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

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

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

Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the tripping shall be **uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx"** within 24 hours of the events as per IEGC clause 37.2(c) and clause 15.3 of CEA grid standard.

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

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

***Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the tripping shall be uploaded on Web Based Tripping Monitoring System***

***"http://103.7.128.184/Account/Login.aspx" within 24 hours of the events as per IEGC clause 37.2.c and clause 15.3 of CEA grid standard.***

## B.11 Frequency response characteristic:

The FRC based event occurred in the month of **April-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 FRP during the event |
|---|---|---|---|---|---|---|---|---|
| 1 | 03-Apr-24 | 05:30hrs | On 03 April 2024, at 05:30 hrs (non-solar hours), 220kV Suhela-Bhatapara ckt 1 tripped on single phase to ground fault. Subsequently other ckt II tripped on overloading. This resulted in blackout of 220kV Shuhela, Paraswani, Bemitara & Saraipalli s/s of Chhattisgarh(WR). The load loss of 1235 MW as per SCADA data has been considered for FRC computation. | 49.96 | 50.075 | 50.02 | 0.064 | 1.01 |
| 2 | 06-Apr- | 11:24hrs | On 06th April, 2024, at 11:24 | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 24 | | hrs(solar hrs), 400kV Bhadla(RS)-Bikaner(RS) ckt 1 tripped due to R-Y phase to phase fault. As per PMU at Bhadla2(PG), R-Y phase to phase observed, which cleared within 100msec. As per SCADA, total NR RE generation loss of 4870MW (ISTS RE loss:3884MW & Rajasthan Solar loss: 986MW) was observed. Punjab, Uttar Pradesh and Rajasthan has reported load shedding of 339MW, 124MW & 165MW respectively due to df/dt relay operation. Therefore net generation loss of 4242MW (4870-339-124-165) has been considered for FRC computation. | 50.03 | 49.537 | 49.766 | -0.27 | 0.85 |
| 3 | 19-Apr-24 | 10:28hrs | On 19th April 2024, at 10:28 generation loss of approx. 1040 MW occurred in RE complex of Rajasthan. At the same instant, as per PMU at 400kV | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Fatehgarh2(PG), a voltage dip of approx. 24kV (ph-ph) was observed across all phases. Therefore, generation loss of 1040MW has been considered for FRC computation. | 50.06 | 49.93 | 50.006 | -0.05 | 1.64 |
| 4 | 23-Apr-24 | 20:14hrs | On 23 April 2024, at 20:15 hrs, 400 kV Tiroda-Warora-2 tripped on R-E fault from both ends. 400 kV Tiroda-Warora-1 also tripped on R-E fault Zone 2 from Warora end but did not tripped from Tiroda end. It resulted in busbar protection to operate on both buses at 400 kV Tiroda substation leading to tripping of APML Tiroda Unit-1,2 & 3 (660 MW) ;765/400 kV ICT-1 and Bus reactor-1 & 2. As per SCADA data, generation loss of around 1800 | 50.06 | 49.912 | 49.97 | -0.08 | 0.83 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | MW was observed due to loss of evacuation path. | | | | | |

As per IEGC 2023 Clause 30.10.(n), "Each control area shall assess its frequency response characteristics and share the assessment with the concerned RLDC along with high resolution data of at least 1 (one) second for regional entity generating stations and energy storage systems and 10 (ten) seconds for the state control area."

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

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

Status of details received from constituents is:

| FRC data submission status | | | | | |
|---|---|---|---|---|---|
| S. No | Control Area | Event Date | | | |
| | | 03-04-2024 | 06-04-2024 | 19-04-2024 | 23-04-2024 |
| 1 | Punjab | Received | Received | Received | Received |
| 2 | Haryana | Received | Not Received | Not Received | Not Received |
| 3 | Rajasthan | Received | Received | Received | Received |
| 4 | Delhi | Not Received | Not Received | Not Received | Not Received |
| 5 | Uttar Pradesh | Received | Received | Received | Received |
| 6 | Uttarakhand | Not Received | Not Received | Not Received | Not Received |
| 7 | Chandigarh* | Not Received | Not Received | Not Received | Not Received |
| 8 | Himachal Pradesh | Received | Received | Received | Received |
| 9 | J&K(UT) and Ladakh(UT) | Not Received | Not Received | Not Received | Not Received |
| 10 | Dadri -2 (TH) | Not Received | Not Received | Not Received | Not Received |
| 11 | Jhajjar (TH) | Not Received | Not Received | Not Received | Not Received |
| 12 | Rihand-1 (TH) | Received | Received | Received | Received |
| 13 | Rihand-2 (TH) | Received | Received | Received | Received |
| 14 | Rihand-3 (TH) | Received | Received | Received | Received |
| 15 | Shree Cement (TH) | Not Received | Not Received | Not Received | Not Received |
| 16 | Singrauli (TH) | Not Received | Not Received | Not Received | Not Received |
| 17 | Tanda-2 (TH) | Not Received | Not Received | Not Received | Not Received |
| 18 | Unchahar stg-4 (TH) | Not Received | Not Received | Not Received | Not Received |
| 19 | Unchahar (TH) | Not Received | Not Received | Not Received | Not Received |
| 20 | Anta (G) | No Gen | No Gen | Not Received | Not Received |
| 21 | Auraiya (G) | No Gen | No Gen | Not Received | Not Received |
| 22 | Dadri (G) | No Gen | No Gen | Not Received | Not Received |
| 23 | AD Hydro (H) | No Gen | No Gen | No Gen | No Gen |
| 24 | Bairasiul (H) | Not Received | Not Received | Not Received | Not Received |
| 25 | Bhakra (H) | Not Received | Not Received | Not Received | Not Received |
| 26 | Budhil (H) | No Gen | No Gen | No Gen | Not Received |
| 27 | Chamera-1 (H) | Not Received | Not Received | Not Received | Not Received |
| 28 | Chamera-2 (H) | Not Received | Not Received | Not Received | Not Received |
| 29 | Chamera-3 (H) | Not Received | No Gen | Not Received | Not Received |
| 30 | Dehar (H) | Not Received | Not Received | Not Received | Not Received |
| 31 | Dhauliganga (H) | No Gen | No Gen | Not Received | Not Received |
| 32 | Dulhasti (H) | Not Received | Not Received | Not Received | Not Received |
| 33 | Karcham (H) | No Gen | Received | No Gen | Received |
| 34 | Kishenganga | Not Received | Not Received | Not Received | Not Received |
| 35 | Koldam (H) | No Gen | No Gen | No Gen | Received |
| 36 | Koteswar (H) | Received | Received | Received | Received |
| 37 | Malana-2 (H) | Not Received | Not Received | Not Received | Not Received |
| 38 | Nathpa Jhakri (H) | Received | Not Received | No Gen | Received |
| 39 | Parbati-2 (H) | No Gen | No Gen | No Gen | No Gen |
| 40 | Parbati-3 (H) | No Gen | No Gen | No Gen | Not Received |
| 41 | Pong (H) | No Gen | No Gen | No Gen | Not Received |
| 42 | Rampur (H) | Not Received | Not Received | No Gen | Not Received |
| 43 | Sainj (H) | No Gen | No Gen | No Gen | Not Received |
| 44 | Salal (H) | Not Received | Not Received | Not Received | Not Received |
| 45 | Sewa-II (H) | Not Received | Not Received | Not Received | Not Received |
| 46 | Singoli Bhatwari (H) | Not Received | Not Received | Not Received | Not Received |
| 47 | Sorang (H) | No Gen | No Gen | No Gen | Not Received |
| 48 | Tanakpur (H) | Not Received | Not Received | Not Received | Not Received |
| 49 | Tehri (H) | Received | No Gen | No Gen | Received |
| 50 | Uri-1 (H) | Not Received | Not Received | Not Received | Not Received |
| 51 | Uri-2 (H) | Not Received | Not Received | No Gen | Not Received |

*NRLDC representative highlighted that FRC/FRP computation sheet received from UP and HP only. Other SLDCs were requested to conduct the FRC/FRP*

*computation as per procedure and timeline specified in IEGC 2023. Haryana, Rajasthan and Punjab agreed for the same.*

*Among ISGS, data have been received from Rihand NTPC, Koteshwar HEP, Koldam HEP, Tehri HEP and Nathpa Jhakri HEP only. Other ISGS also requested to share the FRC data of their respective stations for each reportable event. Tehri Hep was requested to 01 sec data of the event. NHPC & Tehri HEP agreed for the same.*

Detail of Frequency Response Performance during the aforementioned events are as follows:

| Frequency response Performance | | | | | | | |
|---|---|---|---|---|---|---|---|
| S. No | Control Area | Event Date | | | | | |
| | | 03-04-2024 | 06-04-2024 | 19-04-2024 | 23-04-2024 | 02-05-2024 | 10-05-2024 |
| 1 | Punjab | 0.80 | 0.23 | 0.99 | 3.00 | 0.83 | 5.58 |
| 2 | Haryana | 0.32 | 0.54 | 1.03 | -0.48 | -0.31 | 3.93 |
| 3 | Rajasthan | 0.99 | 2.82 | 1.20 | 0.52 | -9.56 | -0.41 |
| 4 | Delhi | -0.48 | 0.75 | -2.70 | -1.35 | -6.53 | 0.34 |
| 5 | Uttar Pradesh | 0.85 | 0.46 | 0.27 | 0.92 | 0.62 | 1.04 |
| 6 | Uttarakhand | 1.51 | 0.13 | -1.33 | -1.05 | -1.29 | -3.10 |
| 7 | Chandigarh* | NA | NA | NA | NA | NA | NA |
| 8 | Himachal Pradesh | 0.06 | -0.40 | 0.50 | 4.20 | 2.33 | 3.87 |
| 9 | J&K(UT) and Ladakh(UT) | -0.07 | 0.20 | -0.17 | -3.10 | -0.29 | -0.20 |
| 10 | Dadri -1 (TH) | -4.28 | 1.81 | 5.45 | 2.02 | 4.46 | 10.96 |
| 11 | Dadri -2 (TH) | 0.76 | 1.94 | -0.26 | -5.25 | -23.97 | -13.11 |
| 12 | Jhajjar (TH) | 0.00 | 2.11 | 4.07 | 8.80 | 0.00 | -3.04 |
| 13 | Rihand-1 (TH) | -0.90 | 0.00 | 5.11 | 1.77 | -1.82 | 8.96 |
| 14 | Rihand-2 (TH) | 2.56 | 0.02 | -8.46 | 1.81 | 3.04 | -0.24 |
| 15 | Rihand-3 (TH) | 0.00 | 0.54 | -2.80 | 3.37 | 7.54 | -2.51 |
| 16 | Shree Cement (TH) | 1.83 | 1.72 | 4.42 | -1.42 | -1.87 | -2.64 |
| 17 | Singrauli (TH) | 1.60 | 0.81 | 0.41 | 4.06 | 1.41 | 1.63 |
| 18 | Tanda-2 (TH) | 2.62 | 0.71 | 4.79 | -8.01 | 2.65 | -13.46 |
| 19 | Unchahar stg-4 (TH) | -1.09 | -0.16 | 5.28 | 3.26 | -0.04 | -3.46 |
| 20 | Unchahar (TH) | 0.36 | -0.12 | 0.00 | 4.77 | -0.43 | 1.80 |
| 21 | Anta (G) | No Gen | No Gen | -0.01 | -0.31 | 0.54 | -0.32 |
| 22 | Auraiya (G) | No Gen | No Gen | -0.02 | 0.29 | 0.70 | 0.52 |
| 23 | Dadri (G) | No Gen | No Gen | -0.13 | 7.21 | -0.93 | 4.75 |
| 24 | AD Hydro (H) | No Gen | No Gen | No Gen | No Gen | No Gen | 0.00 |
| 25 | Bairasiul (H) | 0.00 | 0.00 | 0.00 | 0.02 | 0.18 | -0.03 |
| 26 | Bhakra (H) | 0.09 | 0.02 | 0.08 | -0.01 | 0.07 | -0.26 |
| 27 | Budhil (H) | No Gen | No Gen | No Gen | 0.00 | No Gen | 0.49 |
| 28 | Chamera-1 (H) | -0.65 | 0.00 | -0.10 | 3.51 | 4.23 | 2.62 |
| 29 | Chamera-2 (H) | 0.00 | 0.14 | 2.66 | -0.93 | No Gen | -0.09 |
| 30 | Chamera-3 (H) | Poor | No Gen | 2.11 | 4.19 | No Gen | 3.74 |
| 31 | Dehar (H) | -6.31 | 0.09 | 0.15 | 0.42 | -0.24 | 1.58 |
| 32 | Dhauliganga (H) | No Gen | No Gen | 3.41 | 4.92 | No Gen | -3.06 |
| 33 | Dulhasti (H) | 5.69 | 0.00 | -2.35 | 3.14 | 0.00 | 0.00 |
| 34 | Karcham (H) | -0.01 | 1.86 | 0.00 | -115.44 | 0.00 | 7.38 |
| 35 | Kishenganga | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.34 |
| 36 | Koldam (H) | No Gen | No Gen | No Gen | 38.77 | No Gen | 28.61 |
| 37 | Koteshwar (H) | 2.51 | 0.00 | -2.01 | 1.94 | No Gen | 0.00 |
| 38 | Malana-2 (H) | NA | NA | NA | NA | NA | NA |
| 39 | Nathpa Jhakri (H) | 2.81 | 1.42 | No Gen | 6.09 | No Gen | -2.77 |
| 40 | Parbati-2 (H) | No Gen | No Gen | No Gen | No Gen | No Gen | No Gen |
| 41 | Parbati-3 (H) | No Gen | No Gen | No Gen | 9.50 | No Gen | 0.00 |
| 42 | Pong (H) | No Gen | No Gen | No Gen | 0.85 | -0.24 | -2.82 |
| 43 | Rampur (H) | 1.57 | -0.25 | No Gen | 9.72 | No Gen | -13.60 |
| 44 | Sainj (H) | No Gen | No Gen | No Gen | 0.31 | No Gen | 0.00 |
| 45 | Salal (H) | -0.28 | -0.38 | 0.37 | 0.14 | 0.47 | 1.08 |
| 46 | Sewa-II (H) | 0.00 | 1.20 | 0.00 | 14.81 | 0.00 | 11.06 |
| 47 | Singoli Bhatwari (H) | -0.18 | No Gen | No Gen | -1.06 | No Gen | 0.21 |
| 48 | Sorang (H) | No Gen | No Gen | -0.15 | -0.22 | 0.33 | -3.83 |
| 49 | Tanakpur (H) | -3.76 | 0.01 | -0.34 | 0.35 | 0.10 | 3.92 |
| 50 | Tehri (H) | 1.40 | No Gen | No Gen | 7.90 | No Gen | 2.82 |
| 51 | Uri-1 (H) | 0.01 | 1.89 | -0.16 | 0.92 | 0.18 | -0.16 |
| 52 | Uri-2 (H) | 0.00 | 0.00 | No Gen | 0.00 | 2.21 | -3.13 |

Memebers were requested to analyse the frequency response of their respective control area and share the FRC/FRP analysis of generating stations along with unit wise 01 sec data of for the aforementioned event.

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

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

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

**B.12 Mock trial run and testing of black start facilities at generating stations in Northern Region**

As per Indian Electricity Grid Code (IEGC) clause 34.3

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

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

*NRLDC representative requested regional entity generating stations to conduct the dead bus charging of their units on rotation basis as per availability of schedule under intimation to the NRLDC. Testing of Diesel generator sets and other standalone auxiliary supply source to be used for black start shall also be done on a weekly basis.*

*SLDCs were also requested to ensure the same in their respective control area. This will ensure the healthiness of blackstart facility at generating stations. Further, NRLDC shall coordinate with the ISGS and states to conduct the mock black start exercise of subsystems.*

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

***Details only received from AD Hydro HEP, Anta GPS, Koteshwar HEP, SJVN, Budhil, Chamera-III, Auraiya GPS, Punjab and Uttarakhand.***

***Members were requested to share the tentative schedule of mock black start exercise of generating stations in their respective control area and to share the quarterly report of testing of Diesel generator sets and other standalone auxiliary supply source. SLDCs were also requested to share the tentative schedule plan of mock black start exercise of generating stations in their respective control area and also share the report of the same.***

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

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

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

*NRLDC representative stated that, in view of the above, concerned constituents / utility were requested to share the tentative schedule plan for conducting mock testing of SPS in their respective control area during 2024-25 in format attached as Annexure-B. VIII of agenda. In this regard, a communication has already been sent to constituents through NRLDC letter dated 01.05.2024.*

**Details only received from Uttarakhand & UP.**

***Members were requested to share the tentative schedule of mock testing of SPS implemented on their control area and also share the report of the same.***

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

As per IEGC clause 17

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

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

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

*Therefore, availability of disturbance recorder with standardization, time sync and correct nomenclature and station event logger need to be ensured by users at the station of their respective control area. During grid event analysis it is observed that DRs at many stations are not configured as per standard. Issue of time synchronization has also been observed.*

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

*Details have been received from UP and Haryana only.*

***OCC forum requested all the members to share the status of their control area and ensure the standardization of recording instruments at all the stations of their control area.***

## 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:<br>◎ CHANDIGARH — Sep-2019<br>◎ DELHI — Jan-2024<br>◎ HARYANA — Mar-2024<br>◎ HP — Feb-2024<br>◎ J&K and LADAKH — Not Available<br>◎ PUNJAB — Mar-2023<br>◎ RAJASTHAN — Apr-2024<br>◎ UP — Apr-2024<br>◎ UTTARAKHAND — Apr-2024<br>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:<br>◎ CHANDIGARH — Not Available<br>◎ DELHI — Dec-2023<br>◎ HARYANA — Mar-2024<br>◎ HP — Apr-2024<br>◎ J&K and LADAKH — Not Available<br>◎ PUNJAB — Dec-2023<br>◎ RAJASTHAN — Mar-2024<br>◎ UP — Mar-2024<br>◎ UTTARAKHAND — Mar-2024<br>◎ BBMB — Mar-2024<br>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:<br>◎ CHANDIGARH — Not Available<br>◎ DELHI — Increased<br>◎ HARYANA — Increased<br>◎ HP — Increased<br>◎ J&K and LADAKH — Increased<br>◎ PUNJAB — Increased<br>◎ RAJASTHAN — Increased<br>◎ UP — Increased<br>◎ UTTARAKHAND — Increased<br>◎ BBMB — Increased</td></tr>
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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.<br>Further, progress of FGD installation work on monthly<br>basis is monitored in OCC<br>meetings.</td><td>Status of the information submission (month) from states / utilities is as under:<br><table><tr><td>◎</td><td>HARYANA</td><td>Sep-2023</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Mar-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.<br>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:<br><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:<br><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>Mar-24</td></tr><tr><td>◎</td><td>HP</td><td>Mar-24</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Feb-24</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Mar-24</td></tr><tr><td>◎</td><td>UP</td><td>Mar-24</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Feb-24</td></tr></table>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>The status of ADMS implementation in NR is enclosed in Annexure-A.I.II.<br><table><tr><td>◎</td><td>DELHI</td><td>Scheme Implemented but operated in manual mode.</td></tr><tr><td>◎</td><td>HARYANA</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>HP</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Under implementation.</td></tr><tr><td>◎</td><td>UP</td><td>Scheme implemented by NPCIL only</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Scheme not implemented</td></tr></table></td></tr>
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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.<br>220kV Reactors - 1x25 MVAR Reactor at Dhuri has been commissioned on dated 27th January 2023. |
| ix | PUNJAB | Nakodar | 1x25 MVAr at 220 kV | 1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February 2023. |
| x | PTCUL | Kashipur | 1x125 MVAR at 400 kV | SLDC informed that PTCUL has intimated that bid extension has been done till 30.05.2024. |
| xi | RAJASTHAN | Akal | 1x25 MVAr | 1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022. |

| | | | | |
|---|---|---|---|---|
| xii | RAJASTHAN | Bikaner | 1x25 MVAr | 1x25 MVAR Reactor at Bikaner has been commissioned on dated 24th June 2023. |
| xiii | RAJASTHAN | Suratgarh | 1x25 MVAr | 1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November 2022. |
| xiv | RAJASTHAN | Barmer & others | 13x25 MVAr | 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, 07 Nos. have been commissioned and rest are under progress. Tentative charging plan is to be intimated by Rajasthan SLDC. |
| 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 testing which is expected to done by end of May 2024. Tentaive charging plan is to be |

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<br>Total: 8 | Utilized: 6<br>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<br>Total: 6 | Utilized: 2<br>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<br>Total: 6 | Utilized: 4<br>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<br>Total: 8 | Utilized: 6<br>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<br>Total: 6 | Utilized: 2<br>Unutilized: 4 | • Network to be planned for 4 bays | - | PTCUL to update the status. |
| 6 | Shahjahanpur, 2x315 MVA 400/220 kV | Commissioned: 6<br>Approved/Under Implementation:1<br>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<br>Total: 8 | Utilized: 4<br>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<br>Total: 8 | Utilized: 6<br>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<br>Total: 6 | Utilized: 2<br>Unutilized: 4 | • 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line. | Dec'24 | Issue related to ROW as intimated in 218th OCC by HVPNL.<br>**Status:**<br>Work was stalled since 29.07.2021 due to ROW issues and farmers agitation and further restarted on 9.10.2023 with the help of district administration. Now, work was again stalled since30.11.2023 due to severe ROW issues.<br>Expected to be completed by 31.12.2024.<br>Foundation 209/212. Erection 193/212. Stinging 37.8/50.3 km |
| | | | | • 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line. | Oct'25 | Line work awarded to M/s R S Infra Projects Pvt. Ltd. Noida, Uttar Pardesh on dated 09.03.2024. Work of route plan and route alignment has been started by the firm as intimated in 218th OCC by HVPNL. |
| 10 | Jind 400/220kV S/s | Commissioned: 4<br>Approved:4<br>Total: 8 | Utilized: 4<br>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<br>Under Implementation: 4<br>Total: 10 | Utilized: 6<br>Unutilized: 0<br>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<br>Total: 6 | Utilized: 2<br>Unutilized: 2<br>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 | May'24 | Work completed and FTC is pending.Updated in 219th 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 | - | Tendering process is yet to be started.Updated in 219th OCC by HPPTCL |
| | | | | • Network to be planned for 2 bays | - | HPPTCL to update the status. |
| 13 | 400/220kV Kadarpur Sub-station | Commissioned: 8<br>Total: 8 | Utilized: 0<br>Unutilized: 8 | • D/C line Kadarpur - Sec-56 Gurugram. | May'24 | Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue.<br>Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration..<br>Updated in 218th OCC by HVPNL |
| | | | | • S/C line Kadarpur - Sec-52 Gurugram | May'24 | Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue.<br>Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration..<br>Updated in 218th OCC by HVPNL |
| | | | | • S/C line Kadarpur - Pali | May'24 | Initial proposal of LILO of 220kV Pali-Sector 56 Line and Pali-Sector 52 line was descoped due to forest issue.<br>Proposl to evacuate power from 220kV D/C Pali-Sector 56 line to Sector 56 and 52 with bunching of lines is under consideration..<br>Updated in 218th OCC by HVPNL |
| | | | | • 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 |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 14 | 400/220kV Sohna Road Sub-station | Commissioned: 8<br>Total: 8 | Utilized: 4<br>Unutilized: 4 | • 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.<br>**Status:-**<br>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<br>Aprroved: 2<br>Total: 10 | Utilized: 4<br>Unutilized: 4<br>Under Implementation:2 | • 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali | Mar'25 | Contract awarded on 8.08.23 to M/s Skipper with completion in March 25.Updated in 218th OCC by HVPNL |
| | | | | • LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line | Commissioned | Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL |
| | | | | • 220kV D/C for Sector78, Faridabad | 30.09.2024 | Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 218th OCC by HVPNL. |
| | | | | • Prithla - Sector 89 Faridabad 220kV D/c line | Jul'25 | Work awarded to M/s Man Structurals Pvt Ltd. JV M/s Aquarian Enterprises on 09.01.2024.<br>Contractual date: 06.05.2025 and Tentative date of completion :06.05.2025<br>Route has been approved and further work is in progress.Updated in 218th OCC by HVPNL |
| 16 | 400/220kV Sonepat Sub-station | Commissioned: 6<br>Under Implementation:2<br>Total: 8 | Utilized: 2<br>Unutilized: 4<br>Under Implementation:2 | • LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat | Mar'24 | Updated in 216th OCC by HVPNL.<br>**Status:**<br>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.<br>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.<br>• PLCC protection coupler and Forest approval is also pending. |
| | | | | • Sonepat - HSIISC Rai 220kV D/c line | Mar'24 | Updated in 218th OCC by HVPNL.<br>**Status:**<br>Provision PTCC clearance received on 21.02.2024. The interstate connectivity aggremment has also been completed on 19.04.2024. Integration of telemetry data is pending, which is under process. FTC documents also submitted on Portal. |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| | | | | • Sonepat - Kharkhoda Pocket A 220kV D/c line | 08.03.2025 | Updated in 212th OCC by HVPNL.<br>**Status:**<br>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.<br>Both bays are under construction and erection of electrical equipment is under progress.<br>Tetative date of completion of both bays at PGCIL end is end of July 2024. |
| 17 | 400/220kV Neemrana Sub-station | Commissioned: 6<br>Total: 6 | Utilized: 4<br>Unutilized: 2 | • LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG) | - | Work is under progres. Stub Setting: 14/2017. Permission for Highway is awaited from concerned department as updated in 218th OCC by RVPNL. |
| 18 | 400/220kV Kotputli Sub-station | Commissioned: 6<br>Total: 6 | Utilized: 4<br>Unutilized: 2 | • Kotputli - Pathreda 220kV D/c line | - | Date of bid opening has been extended up to 30.04.2024 as updated in 218th OCC by RVPNL. |
| 19 | 400/220kV Jallandhar Sub-station | Commissioned: 10<br>Total: 10 | Utilized: 8<br>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<br>Total: 6 | Utilized: 4<br>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<br>Total: 8 | Utilized: 4<br>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.<br>_____<br>• 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<br>Total: 6 | Utilized: 4<br>Unutilized: 2 | • Network to be planned for 2 bays | Commissioned | • Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC |
| 23 | 400/220kV Fatehpur Sub-station | Commissioned: 8<br>Under Implementation:2<br>Total: 10 | Utilized: 6<br>Unutilized: 2<br>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).<br>_____<br>• 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<br>Under Implementation:2<br>Total: 12 | Utilized: 10<br>Unutilized: 0<br>Under Implementation:2 | • Abdullapur – Rajokheri 220kV D/c line | Sep'24 | Line charged from Rajokheri end on 09.02.2020. The work of construction was awarded to M/s IKE ltd but due to non completion of work firm is blacklisted, Now the pending work of SCADA , Telemetry and Data Integration is being carried out departmentally through OeM M/s ZIV . After completion of these statutory requirement of NRLDC the load will be taken from the Abdullapur. Tentative date of completion of work will be 30.09.2024. Updated in 218th OCC by HVPNL |
| | 400/220kV Pachkula | Commissioned: 8<br>Under tender:2<br>Total: 10 | Utilized: 2<br>Unutilized: 4 | • Panchkula – Pinjore 220kV D/c line | Commissioned | Updated in 218th OCC by HVPNL |
| | | | | • Panchkula – Sector-32 220kV D/c line | May'24 | All Line work stands completed, The integration work with SLDC,Panipat at 220kV Sector-32,Panchkula end is in progress.Updated in 218th OCC by HVPNL |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 25 | 400/220kV Panchkula Sub-station | 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 | Unutilized: 4<br><br>Under Implementation:2 | • 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<br><br>Approved in 50th NRPC- 1 no.<br><br>Total: 8 | Utilized: 6<br><br>Under Implementation:2 | • Amritsar – Patti 220kV S/c line | May'24 | Work is completed, agreement is expected to be signed by May 2024. Updated in 218th OCC by PSTCL. |
| | | | | • Amritsar – Rashiana 220kV S/c line<br>(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) | May'24 | Work is completed, agreement is expected to be signed by May 2024. Updated in 218th OCC by PSTCL. |
| 27 | 400/220kV Bagpat S/s | Commissioned: 8<br><br>Total: 8 | Utilized:6<br><br>Unutilized: 2 | • Bagpat - Modipuram 220kV D/c line | Commissioned | Updated in 201st OCC by UPPTCL |
| 28 | 400/220kV Bahardurgarh S/s | Commissioned: 4<br><br>Approved: 4<br><br>Total: 8 | Utilized:2<br><br>Unutilized: 2 | • LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL | Mar'25 | Updated in 205th OCC by HVPNL.<br>**Status:**<br>Under Tendering process |
| | | | | • Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL) | Mar'25 | Updated in 216th OCC by HVPNL.<br>**Status:**<br>Tendering under progress. |
| | | | | • Bahadurgarh - Kharkhoda Pocket B 220kV D/c line | 08.03.2025 | Updated in 218th OCC by HVPNL.<br>**Status:**<br>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.<br>The Survey work has been completed. |
| 29 | 400/220kV Jaipur (South) S/s | Commissioned: 4<br><br>Total: 4 | Utilized:2<br><br>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<br><br>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<br>_____<br>• Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC |
| 31 | 400/220kV, Kankroli | Commissioned: 6<br><br>Total: 6 | Utilized: 4<br><br>Unutilized: 2 | • 220 kV D/C Kankroli(PG) - Nathdwara line | Jul'24 | Price bid opened on 29.01.2024, tender dropped due to price variation. Retendering would be done after general election as updated by RVPN in 218th OCC. |
| 32 | 400/220kV, Manesar | Commissioned: 8<br><br>Total: 8 | Utilized: 4<br><br>Unutilized: 4 | • Network to be planned for 2 bays | - | Status:-<br>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.<br>The 2nos bays may be utilised by HVPNL in future. |
| 33 | 400/220kV, Saharanpur | Commissioned: 6<br><br>Under Implementation:2<br><br>Total: 8 | Utilized: 6<br><br>Unutilized: 0<br><br>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 |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 34 | 400/220kV, Wagoora | Commissioned: 10<br>Total: 10 | Utilized: 6<br>Unutilized: 4 | • Network to be planned for 4 bays | - | PDD, J&K to update the status. |
| 35 | 400/220kV, Ludhiana | Commissioned: 9<br>Total: 9 | Utilized: 8<br>Unutilized: 1 | • Network to be planned for 1 bay | May'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 May'24. Updated in 218th OCC by PSTCL. |
| 36 | 400/220kV, Chamba (Chamera Pool) | Commissioned: 3<br>Under tender:1<br>Total: 4 | Utilized:3<br>Unutilized: 0<br>Under tender:1 | • Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line | Commissioned | Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is commissioned on 20.01.2024. Updated in 217th OCC by HPPTCL. |
| 37 | 400/220kV, Mainpuri | Commissioned: 6<br>Under Implementation:2<br>Total: 8 | Utilized: 6<br>Unutilized: 0<br>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<br>Total: 8 | Utilized: 6<br>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 ADMS implementation in NR:**

| Sl. No. | State / UT | Status | Remarks |
|---|---|---|---|
| 1 | DELHI | Scheme Implemented but operated in manual mode. | A committee has been constituted under the chairmanship of GM, SLDC Delhi to formulate the logic for implementation of ADMS. Delhi SLDC informed that two meetings have been held by the committee and SoP is to be formed by the committee. |
| 2 | HARYANA | Scheme not implemented | An internal Committee of HVPNL officers has been constituted for preparation of the Detailed Project Report and Tender Documents for implementation of ADMS. The DPR is under preparation. |
| 3 | HP | Scheme not implemented | HP SLDC imentioned that HPSEB had intimated that initially 142 Nos. of feeders were identified for operation under ADMS functionality but most of these feeders were from same sub-station. Therefore, now they have increased the no. of sub-station and identified the non-critical feeders. Load relief to be given through these feeders is under finalization. The revised feeder list would be shared by HPSEBL with the SLDC upon finalization of same. |
| 4 | PUNJAB | Scheme not implemented | i. A committee comprising of following officers of PSPCL & PSTCL has been constituted to finalize the logic regarding implementation of Automatic Demand Management System in Punjab Control Area.<br>A meeting in this regard was held on dated 26-02-2024 at PSLDC Complex, Patiala. The committee deliberated various loading scenarios and proposed the following logic for the management of demand:<br>1. If the frequency sustains below 49.90 Hz for duration of 3 minutes, the Automatic Demand Management System will initiate a 50% reduction in the Over Drawl.<br>2. In case the frequency falls further below 49.85 Hz, the Over Drawl will be reduced to zero. |
| 5 | RAJASTHAN | Under implementation. Likely completion schedule is 31.03.2024 | RVPN informed that the issue of cyber security of link between SATNAM centre and SLDC control room is still pending. Final testing is rescheduled for 02.07.2024. |
| 6 | UP | Scheme implemented by NPCIL only | i. A meeting regarding ADMS was held on 15.01.2023 with the UPPCL under the chairmanship of MD UPPTCL<br>ii. A committee formed for identification of load at 33 kV level under the chairmanship of Director (Distribution), UPPCL.<br>iii. Another committee under the chairmanship of Director UPSLDC shall identify the technical and operational requirement for ADMS implementation<br>iv. The software at the SLDC end for ADMS shall be available with ULDC phase –III SCADA system which is under implementation and likely to be commissioned by March 2025.<br>v. In order to operate identified 33 kV feeders under ADMS scheme, integration of 132 kV substations with SCADA system is under implementation in the Reliable Communication Scheme and expected date of completion of the scheme is October 2024. |
| 7 | UTTARAKHAND | Scheme not implemented | i. UPCL has prepared a system architecture in which all the non-monitored sub-stions have been selected and 11kV feeders have been considered for ADMS operation. For the scheme, discom has also done group-wise selection of feeders and quantum of MW relief to be given for automatic demand response at 11kV level has also been decided. UPCL has awarded the tender for implementation of the aforementioned scheme to M/s Metergy Pvt.Ltd.<br>ii. As per the status report submitted by M/s Metergy Pvt.Ltd, the survey work of 30 nos. incomer sites have been completed and order has been placed by UPCL for hardware equipments. |

# 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) |

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|---|---|
| **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) |

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|---|---|
| **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) |

## 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<br>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<br>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)

Annexure-A.III

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र लि०
यू0पी0एस0एल0डी0सी0 परिसर, विभूति
खण्ड–।।,गोमती नगर, लखनऊ–226010
ई–मेल : sera@upsldc.org

**U.P. State Load Despatch Centre Ltd.**
UPSLDC Complex, Vibhuti Khand – II
Gomti Nagar, Lucknow- 226010
E-mail: sera@upsldc.org

No: **1617**/SE(R&A)/EE-II/ Dated: - **10.05.** 2024

**SE (Operations), 18 – A SJSS Marg,**
**Katwaria Sarai, New Delhi,**
**110016. (seo-nrpc@nic.in)**

**Subject: -Agenda on review of System Protection Scheme (SPS) at 400kV substation Obra and Nehtaur.**

It is to inform that UPSLDC has reviewed the SPS scheme installed at 400kV S/S Obra and Nehtaur. Based on review, UPSLDC proposes some changes in the settings and logic of aforementioned schemes.

Revised and existing SPS scheme of both the substations is enclosed for inclusion in the agenda of 219th OCC meeting of NRPC, so that the same may be discussed and approved.

Encls: As above

**(Amit Narain)**
Superintending Engineer (R&A)

No: /SE(R&A)/EE-II/ Dated: - 2024

Copy forwarded to via e-mail following for information and necessary action:-

1. Chief Engineer (PSO), UPSLDC Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Chief General Manager, (Obra) Thermal Power Station, Obra, Sonbhadra Pin code-231219.
3. General Manager, NRLDC 18-A, SJSS Marg, Katwaria Sarai, New Delhi–110016.
4. Superintending Engineer (System Control), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
5. M/s Western UPPTCL400/220/33kV Substation, Kalapathar, Indirapuram, Ghaziabad, Uttar Pradesh- 201014 (wupptcl.ro@gmail.com).

**(Amit Narain)**
Superintending Engineer (R&A)

## Revised Logic for SPS (System Protection Scheme) for ICTs at Obra TPS and load relief

| Name of Substation | ICT Rating | Tripping Logic -I | | | Tripping Logic -II | | |
|---|---|---|---|---|---|---|---|
| | | %setting | Time Delay | Priority of feeder for load cut off | %setting | Time Delay | Priority of feeder for load cut off |
| 400kV Obra TPS | 315 MVA ICT -I | Above 95% of rated current | 5 sec for Group 1. 2 min for Group 2 | **Group 1.** 220 kV Obra-Rewa Road ckt 1 &2 simultaneously **Group 2.** 220 kV Obra- Mirzapur line | Above 105% of rated current | 1500 msec | **1.**220 kV Obra-Rewa Road ckt 1 &2 simultaneously **2.**220 kV Obra- Mirzapur lines trip |
| | 315 MVA ICT -II | Above 95% of rated current | 5 sec for Group 1. 2 min for Group 2 | | Above 105% of rated current | 1500 msec | |
| | 240 MVA ICT -III | Above 95% of rated current | 5 sec for Group 1. 2 min for Group 2 | | Above 105% of rated current | 1500 msec | |

| Load relief : | | |
|---|---|---|
| Group 1 | 220 kV Obra-Rewa Road ckt 1 | 50 MW |
| | 220 kV Obra-Rewa Road ckt 2 | 50 MW |
| Group 2 | 220 kV Obra- Mirzapur line | 150 MW |

Existing Approved Logic for proposed SPS (System Protection Scheme) for ICTs at Obra TPS and load relief

| Name of Substation | ICT Rating | Tripping Logic -I | | | Tripping Logic -II | | | Tripping Logic –III (Applicable when one of the 315 MVA ICT trip) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | %setting | Time Delay | Priority of feeder for load cut off | %setting | Time Delay | Priority of feeder for load cut off | %setting | Time Delay | Action |
| 400kV Obra TPS | 315 MVA ICT -I | Above 95% of rated current | 5 sec for Group 1. 2 min for Group 2 | Group 1. 220 kV Obra-Rewa Road ckt 1 &2 Group 2. 220 kV Obra-Mirzapur line | Above 105% of rated current | Instantaneous | 220 kV Obra-Rewa Road ckt 1 &2 and 220 kV Obra- Mirzapur lines trip simultaneously | Above 70% of rated current prior to tripping | Instantaneous | 220 kV Obra-Rewa Road ckt 1 &2 and 220 kV Obra-Mirzapur lines trip simultaneously |
| | 315 MVA ICT -II | Above 95% of rated current | 5 sec for Group 1. 2 min for Group 2 | | Above 105% of rated current | Instantaneous | | Above 70% of rated current prior to tripping of 315 MVA ICT | Instantaneous | |
| | 240 MVA ICT -III | Above 95% of rated current | 5 sec for Group 1. 2 min for Group 2 | | Above 105% of rated current | Instantaneous | | Above 70% of rated current prior to tripping of 315 MVA ICT | Instantaneous | |

**Note- 1-SPS shall operate if any one of the condition is met that is logic mentioned above is OR.**

**2- In Tripping logic III, pre disturbance loading has been used for actuation of SPS in order to avoid inherent time taken by SPS . SPS shall operate instantaneously if predisturbance loading is above 70 % AND any one of the 315 MVA ICT gets tripped.**

| Load relief : | | |
|---|---|---|
| Group 1 | 220 kV Obra-Rewa Road ckt 1 | 50 MW |
| | 220 kV Obra-Rewa Road ckt 2 | 50 MW |
| Group 2 | 220 kV Obra- Mirzapur line | 150 MW |

O/C

## Revised Logic for proposed SPS (System Protection Scheme) for ICTs at 400 kV substation Nehtaur and load relief

| Name of Substation | ICT Rating | Tripping Logic -I | | | Tripping Logic -II | | |
|---|---|---|---|---|---|---|---|
| | | %setting | Time Delay | Priority of feeder for load cut off | %setting | Time Delay | Priority of feeder for load cut off |
| 400 kV substation Nehtaur | 200 MVA ICT -I | Above 100% of rated current | 5 sec | 1. 132 kV Nagina<br>2.132 kV Kiratpur<br>3 132 kV Morna<br>4 132 kV Chandpur | Above 110% of rated current | 1500 msec | 1. 132 kV Nagina<br>2.132 kV Kiratpur<br>3 132 kV Morna<br>4 132 kV Chandpur |
| | 200 MVA ICT -II | Above 100% of rated current | 5 sec | | Above 110% of rated current | 1500 msec | |
| | 200 MVA ICT -III | Above 100% of rated current | 5 sec | | Above 110% of rated current | 1500 msec | |

| Sl.No. | Load relief | |
|---|---|---|
| 1 | 132kV Nagina feeder | 36 MW |
| 2 | 132kV Kiratpur feeder | 33 MW |
| 3 | 132kV Morna feeder | 11MW |
| 4 | 132kV Chandpur feede | 52MW |

## Existing Approved Logic for proposed SPS (System Protection Scheme) for ICTs at 400 kV substation Nehtaur and load relief

| Name of Substation | ICT Rating | Tripping Logic -I | | | Tripping Logic -II | | | Tripping Logic –III (Applicable when one of the 200 MVA ICT trip) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | %setting | Time Delay | Priority of feeder for load cut off | %setting | Time Delay | Action | %setting | Time Delay | Action |
| 400 kV substation Nehtaur | 200 MVA ICT -I | Above 100% of rated current | 5 sec | 1. 132 kV Nagina 2.132 kV Kiratpur | Above 110% of rated current | Instantaneous | 132 kV Nagina and 132 kV Kiratpur shall trip simultaneously | Above 55% of rated current prior to tripping of 200 MVA ICT | Instantaneous | 132 kV Kiratpur, Morna, Chandpur and Nagina shall trip simultaneously |
| | 200 MVA ICT -II | Above 100% of rated current | 5 sec | | Above 110% of rated current | Instantaneous | | Above 55% of rated current prior to tripping of 200 MVA ICT | Instantaneous | |

**Note- 1-SPS shall operate if any one of the condition is met that is logic mentioned above is OR.**

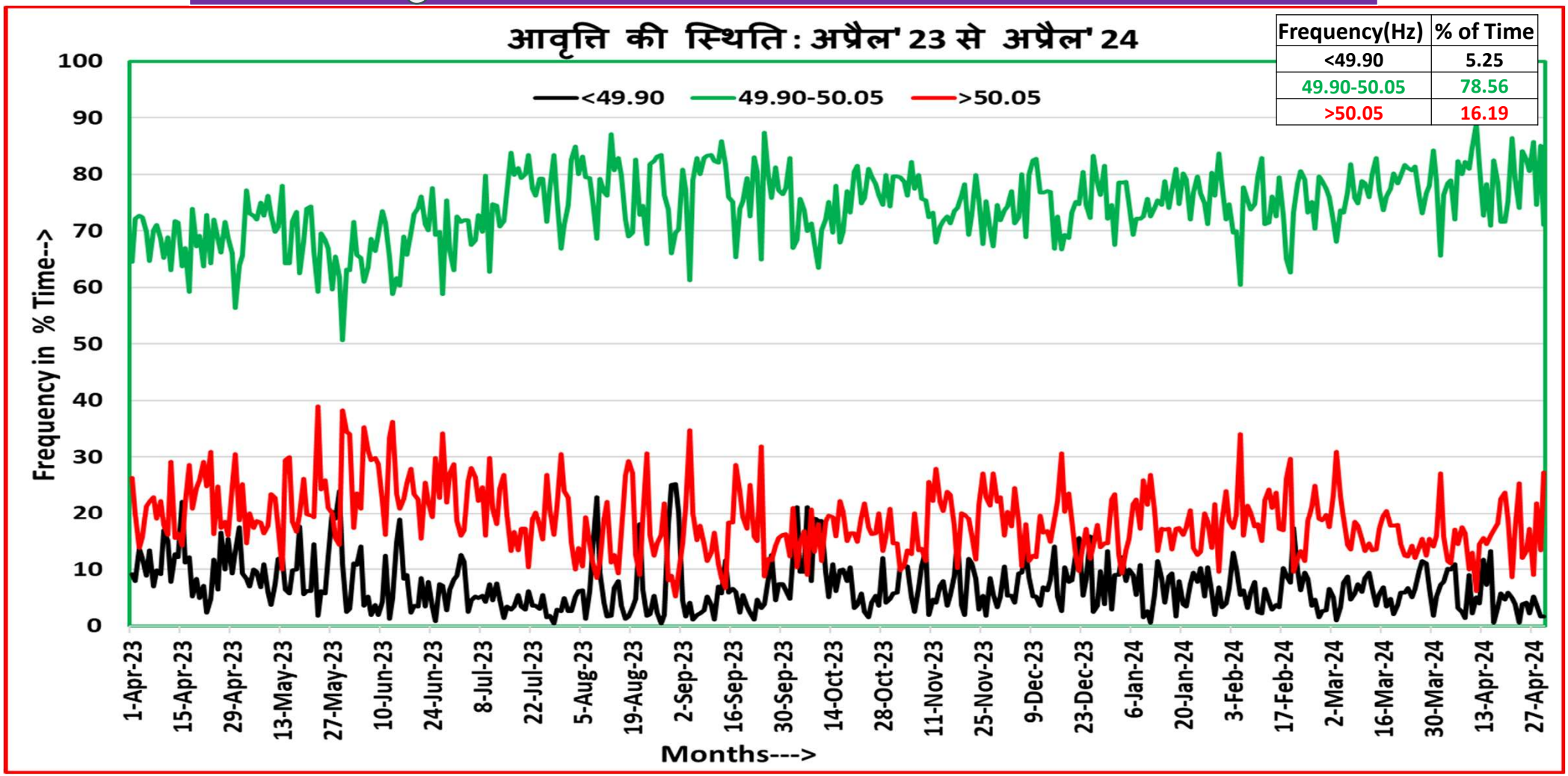
**2- In Tripping logic III, pre disturbance loading has been used for actuation of SPS in order to avoid inherent time taken by SPS . SPS shall operate instantaneously if predisturbance loading is above 55 % AND any one of the 200 MVA ICT gets tripped.**

| Sl.No. | Load relief | |
|---|---|---|
| 1 | 132kV Nagina feeder | 36 MW |
| 2 | 132kV Kiratpur feeder | 33 MW |
| 3 | 132kV Morna feeder | 11MW |
| 4 | 132kV Chandpur feeder | 52MW |

O/C

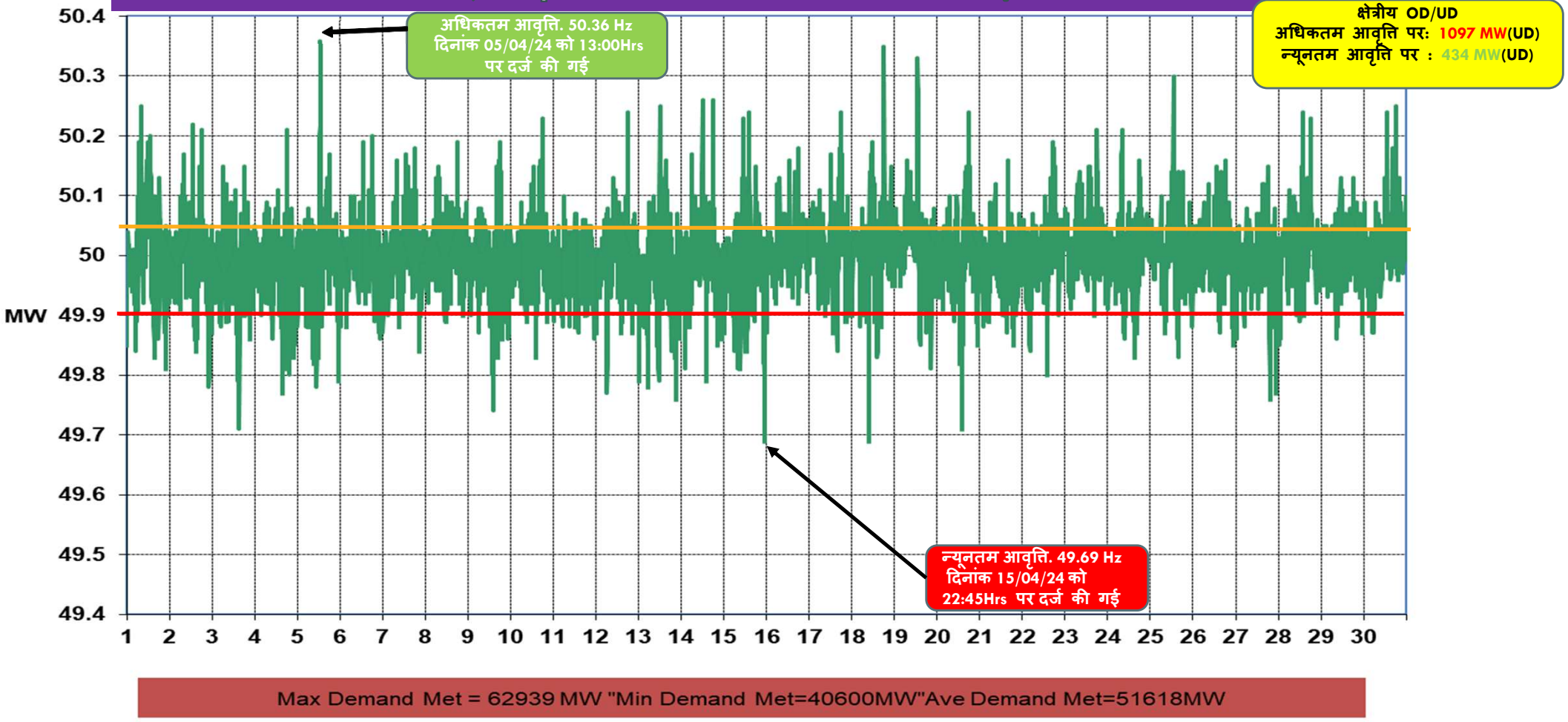
# प्रचालन समन्वय उपसमिति की बैठक
# अप्रैल- 2024

# आवृत्ति की स्थिति: अप्रैल -2023 से 2024




| Frequency(Hz) | % of Time |
|---|---|
| <49.90 | 5.25 |
| 49.90-50.05 | 78.56 |
| >50.05 | 16.19 |

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



# पिछले एक साल मे आवृत्ति की स्थिति

| आवृत्ति बैंड | अप्रैल 2023 | मई 2023 | जून 2023 | जुलाई 2023 | अगस्त 2022 | सितम्बर 2023 | अक्टूबर 2023 | नवम्बर 2023 | दिसंबर 2023 | जनवरी 2024 | फ़रवरी 2024 | मार्च 2024 | अप्रैल 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 49.7 Hz(%) | 0.24 | 0.24 | 0.22 | 0.09 | 0.47 | 0.11 | 0.53 | 0.10 | 0.17 | 0.12 | 0.095 | 0.065 | 0.030 |
| <49.8 Hz(%) | 1.68 | 1.48 | 0.86 | 0.66 | 1.63 | 0.57 | 1.99 | 0.96 | 1.40 | 0.92 | 0.797 | 0.479 | 0.432 |
| <49.9 Hz(%) | 10.54 | 9.83 | 8.42 | 4.60 | 7.11 | 5.21 | 8.87 | 6.83 | 7.83 | 6.80 | 6.239 | 6.022 | 5.254 |
| 49.90-50.05 Hz(%) | ***67.90*** | ***68.48*** | ***67.83*** | ***74.96*** | ***77.25*** | ***77.86*** | ***74.42*** | ***74.36*** | ***75.21*** | ***75.83*** | ***74.06*** | **77.51** | **78.56** |
| 50.05-50.10 Hz(%) | 12.54 | 13.25 | 15.59 | 15.64 | 13.28 | 13.32 | 13.53 | 13.74 | 10.47 | 11.91 | 14.118 | 12.262 | 11.178 |
| >50.10 Hz(%) | 6.46 | 8.44 | 8.15 | 4.79 | 2.35 | 3.61 | 3.18 | 5.06 | 6.49 | 5.47 | 5.581 | 4.204 | 5.010 |
| >50.20 Hz(%) | 0.88 | 0.77 | 1.09 | 0.80 | 0.23 | 0.32 | 0.14 | 0.66 | 0.53 | 0.41 | 0.565 | 0.657 | 0.539 |
| औसत आवृत्ति | 49.99 | 49.99 | 50.01 | 50.01 | 50.00 | 50.00 | 49.99 | 50.00 | 49.99 | 49.99 | 50.00 | 50.00 | 50.00 |

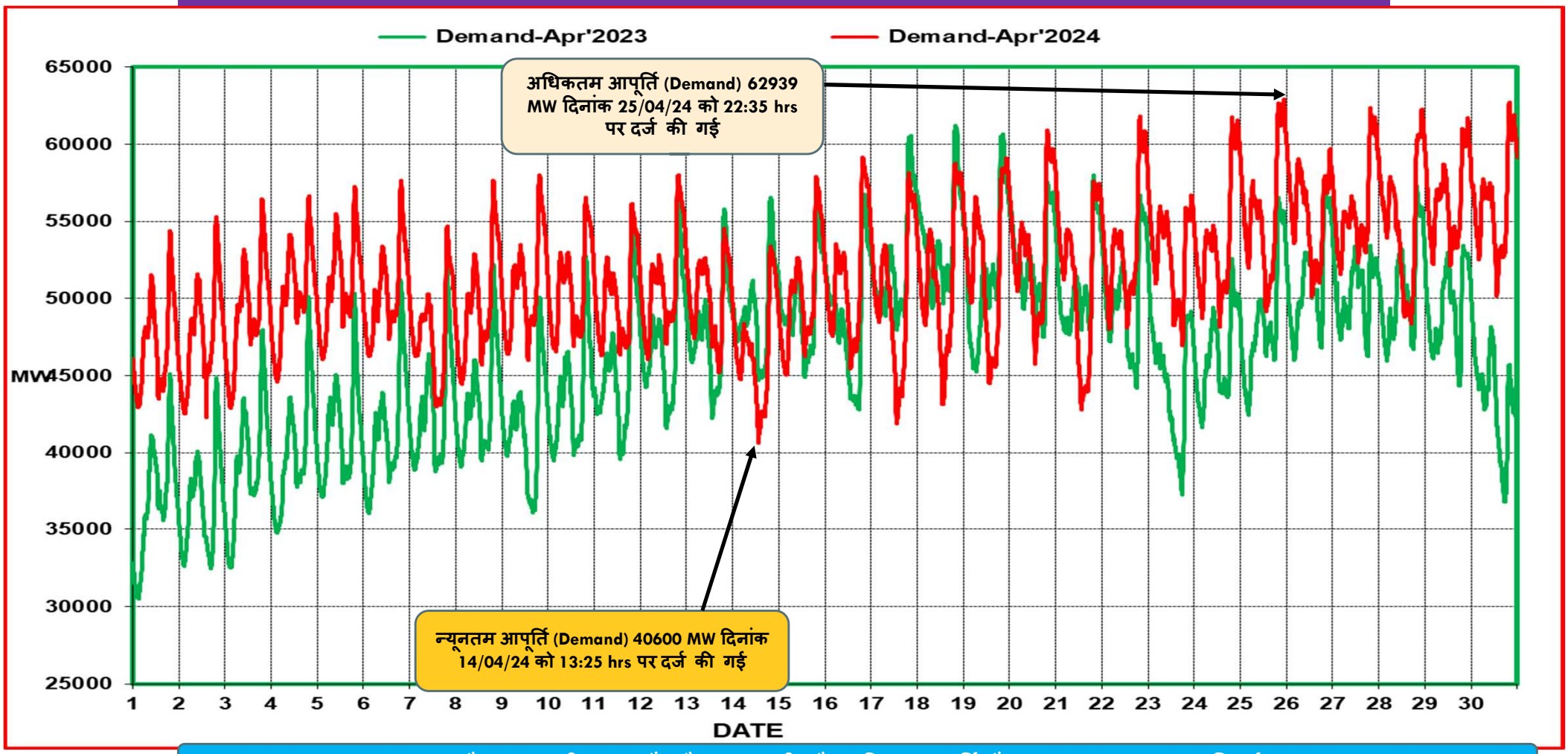
# अप्रैल-2024 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

| राज्य | अधिकतम मांग (MW) (in Apr'24) | दिनांक / समय | रिकॉर्ड अधिकतम मांग (in MW) (upto Mar'24) | दिनांक / समय | अधिकतम ऊर्जा खपत (MU) (in Apr'24) | दिनांक | रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Mar'23) | दिनांक |
|---|---|---|---|---|---|---|---|---|
| पंजाब | 9821 | 26.04.24 at 07:00 | 15293 | 24.06.23 को 11:45 बजे | 170.1 | 26.04.2024 | 344.1 | 24.06.2023 |
| हरियाणा | 9502 | 27.04.24 at 22:45 | 12768 | 28.06.22 को 11:56 बजे | 173.6 | 26.04.2024 | 273.1 | 18.08.2023 |
| राजस्थान | 14283 | 29.04.24 at 10:30 | 17949 | 20.01.24 को 11:00 बजे | 292.0 | 25.04.2024 | 371.6 | 04.09.2023 |
| दिल्ली | 5447 | 26.04.24 at 15:20 | 7695 | 29.06.22 को 15:10 बजे | 108.8 | 26.04.2024 | 153.5 | 28.06.2022 |
| उत्तर प्रदेश | 25462 | 30.04.24 at 22:21 | 28284 | 24.07.23 को 21:43 बजे | 511.4 | 29.04.2024 | 580 | 03.09.2023 |
| उत्तराखंड | 2357 | 26.04.24 at 20:00 | 2594 | 14.06.22 को 21:00 बजे | 48.1 | 26.04.2024 | 56.2 | 17.06.2023 |
| हिमाचल प्रदेश | 1819 | 09.04.24 at 07:00 | 2235 | 20.01.24 को 07:00 बजे | 33.8 | 12.04.2024 | 39.29 | 24.01.2024 |
| जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT) | 2924 | 10.04.24 at 07:00 | 3107 | 12.01.24 को 20:00 बजे | 55.8 | 10.04.2024 | 66.8 | 26.01.2024 |
| चंडीगढ़ | 258 | 26.04.24 at 15:00 | 426 | 08.07.21 को 15:00 बजे | 5.2 | 26.04.2024 | 8.4 | 08.07.2021 |
| उत्तरी क्षेत्र # | 62939 | 25.04.24 at 22:35 | 81048 | 04.09.23 को 14:50 बजे | 1360.3 | 29.04.2024 | 1792.7 | 04.09.2023 |

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

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

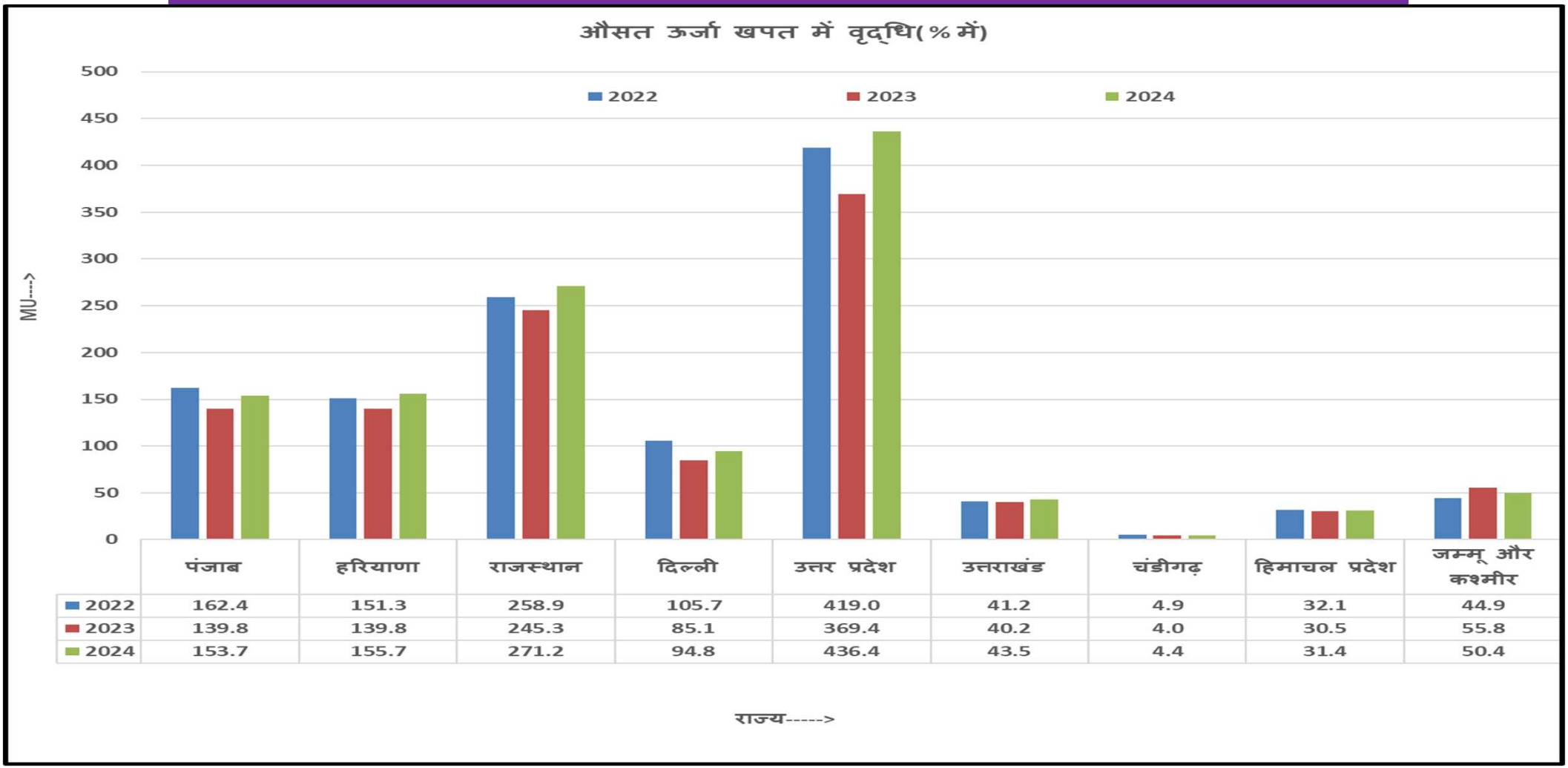



अप्रैल -2023 की तुलना में अप्रैल -2024 की औसत विद्युत आपूर्ति में 12.24% (~5214 MW) वृद्धि हुई

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

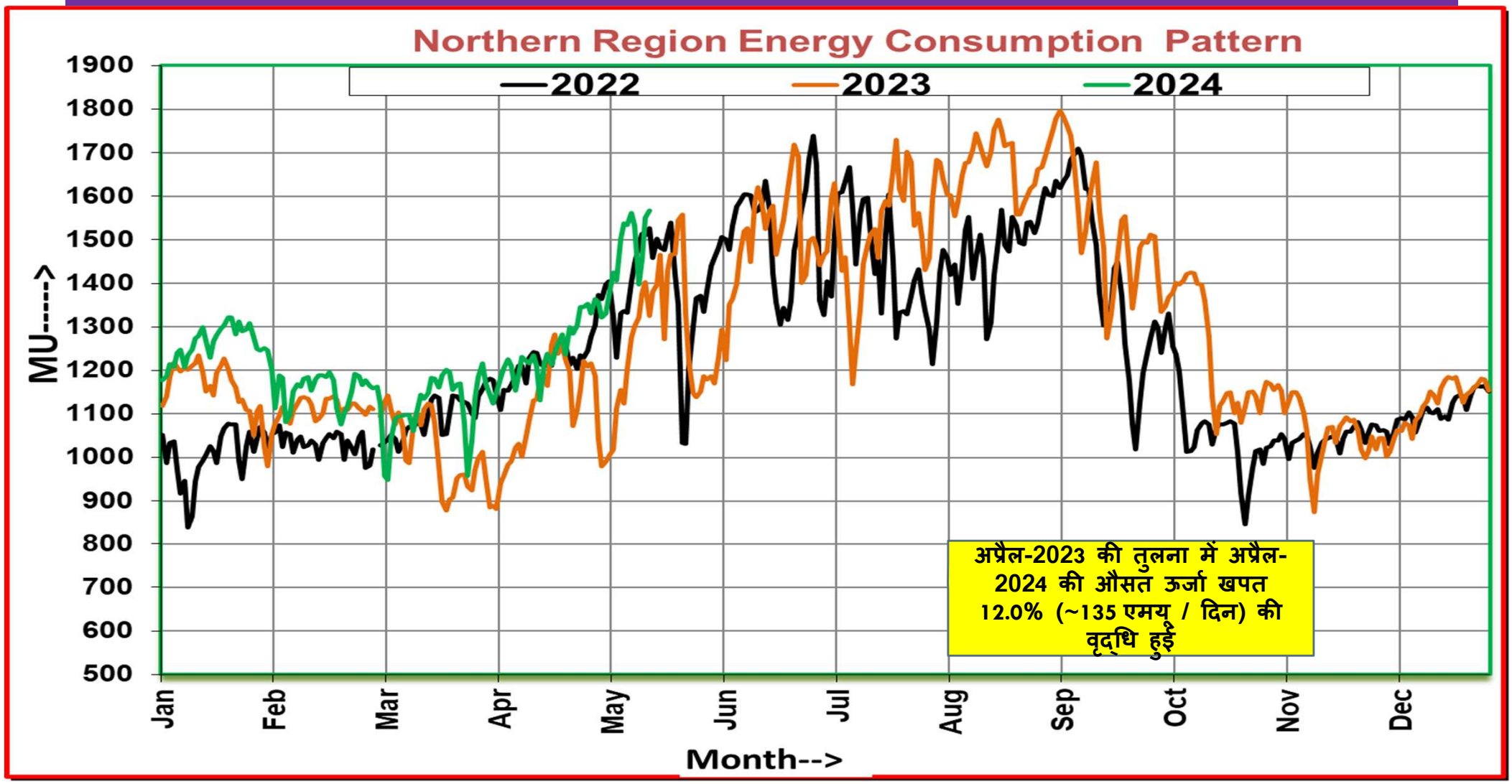
| राज्य | अप्रैल -2022 | अप्रैल -2023 | अप्रैल -2024 | % वृद्धि (अप्रैल -2023 vs अप्रैल -2022 ) | % वृद्धि (अप्रैल -2024 vs अप्रैल -2023 ) |
|---|---|---|---|---|---|
| पंजाब | 162.4 | 139.8 | 153.7 | -13.9% | 9.9% |
| हरियाणा | 151.3 | 139.8 | 155.7 | -7.6% | 11.4% |
| राजस्थान | 258.9 | 245.3 | 271.2 | -5.3% | 10.6% |
| दिल्ली | 105.7 | 85.1 | 94.8 | -19.5% | 11.4% |
| उत्तर प्रदेश | 419.0 | 369.4 | 436.4 | -11.8% | 18.1% |
| उत्तराखंड | 41.2 | 40.2 | 43.5 | -2.4% | 8.1% |
| चंडीगढ़ | 4.9 | 4.0 | 4.4 | -17.3% | 7.8% |
| हिमाचल प्रदेश | 32.1 | 30.5 | 31.4 | -5.2% | 3.0% |
| जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT) | 44.9 | 55.8 | 50.4 | 24.4% | -9.8% |
| उत्तरी क्षेत्र | 1220.5 | 1110.0 | 1245.4 | -9.1% | 12.2% |

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

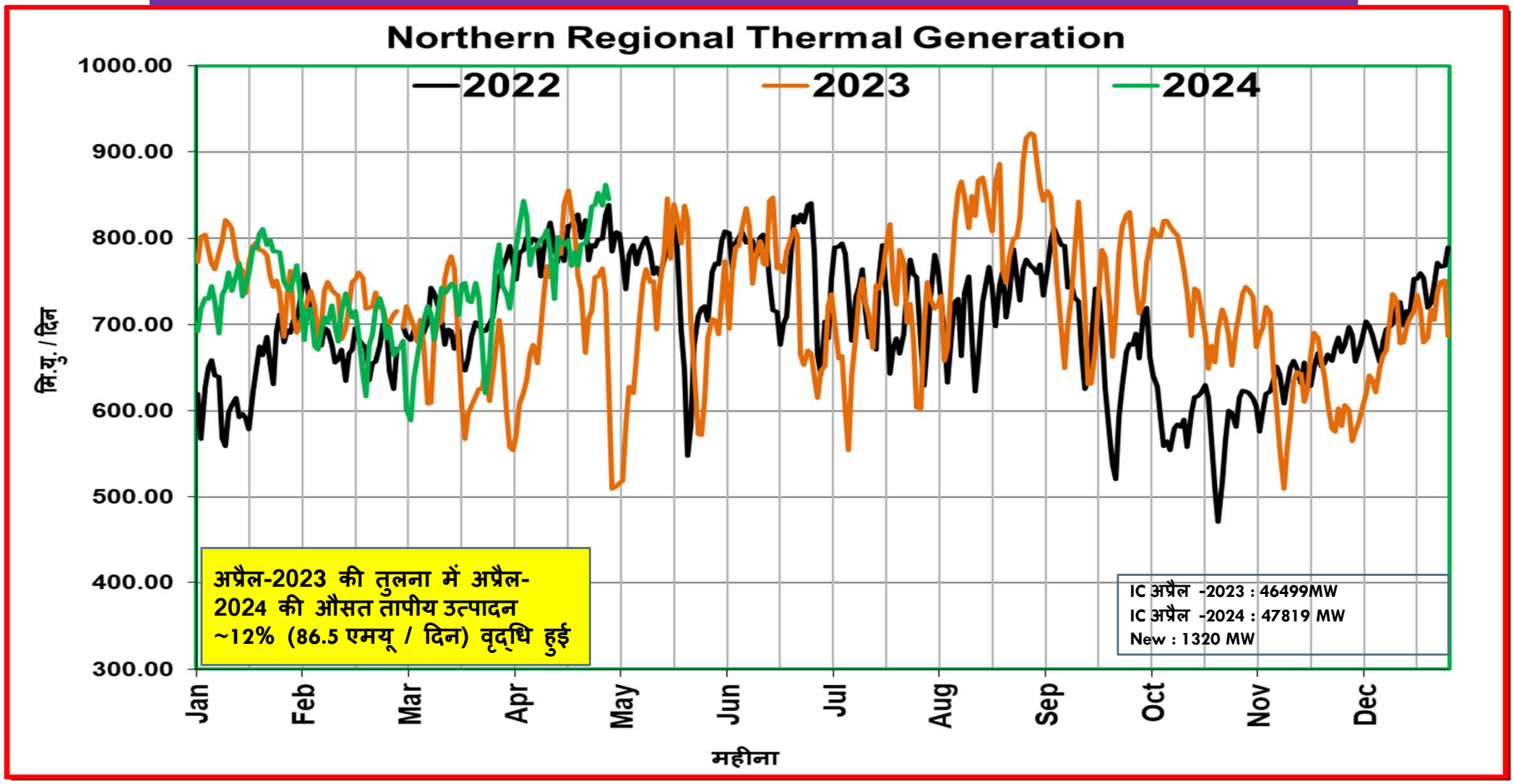



| | पंजाब | हरियाणा | राजस्थान | दिल्ली | उत्तर प्रदेश | उत्तराखंड | चंडीगढ़ | हिमाचल प्रदेश | जम्मू और कश्मीर |
|---|---|---|---|---|---|---|---|---|---|
| 2022 | 162.4 | 151.3 | 258.9 | 105.7 | 419.0 | 41.2 | 4.9 | 32.1 | 44.9 |
| 2023 | 139.8 | 139.8 | 245.3 | 85.1 | 369.4 | 40.2 | 4.0 | 30.5 | 55.8 |
| 2024 | 153.7 | 155.7 | 271.2 | 94.8 | 436.4 | 43.5 | 4.4 | 31.4 | 50.4 |

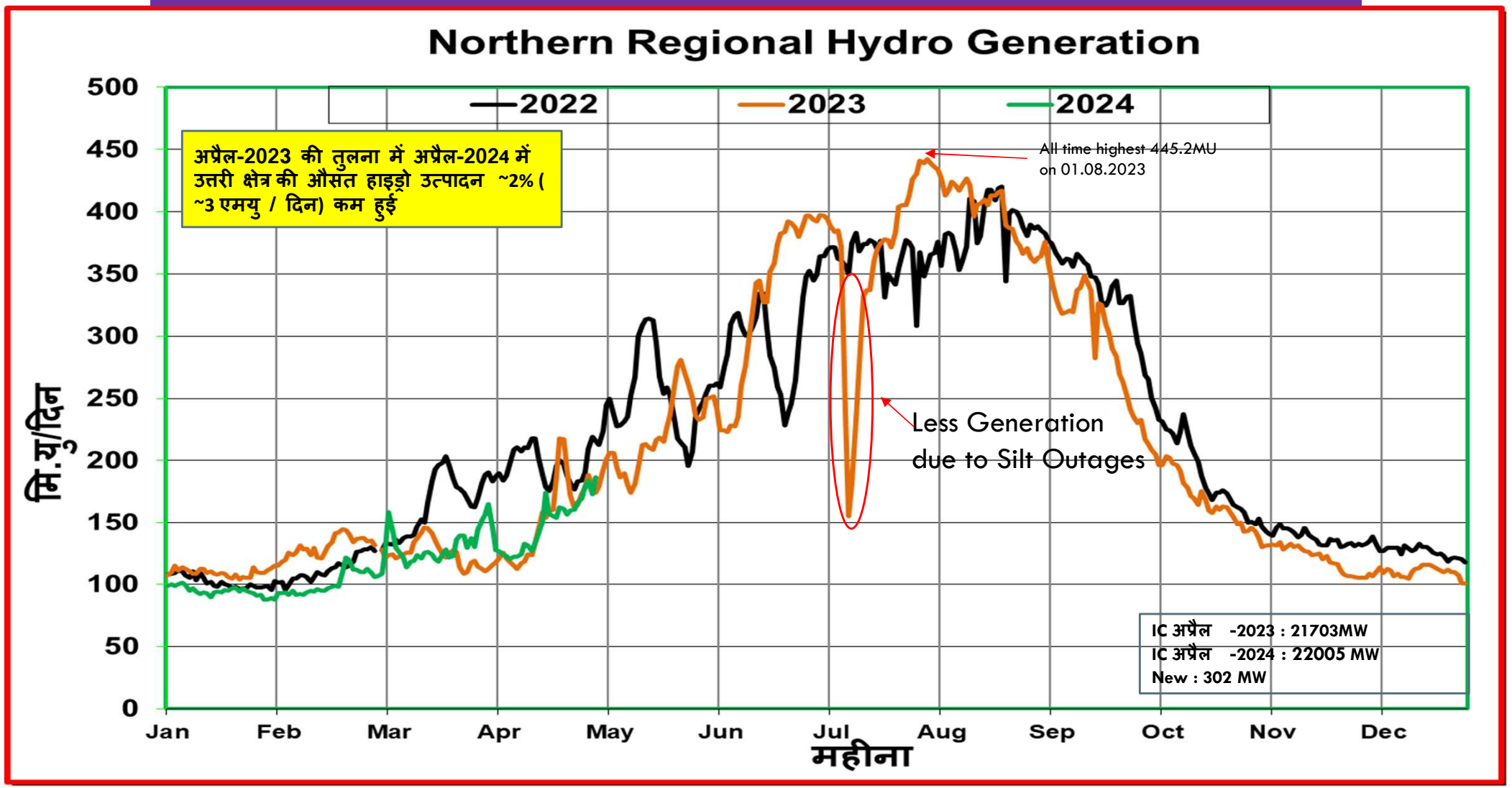
# उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



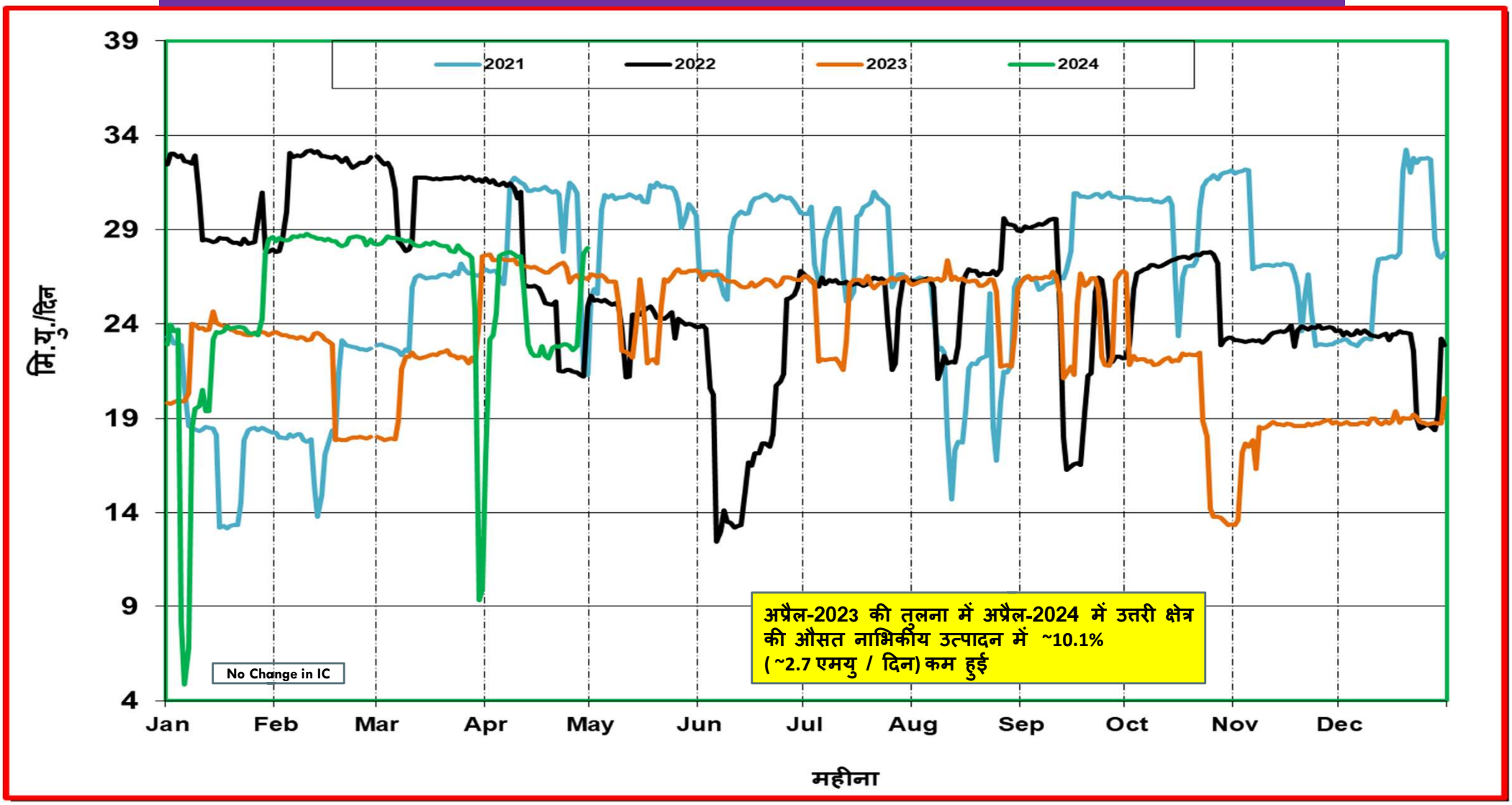
# उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(MUs/Day)



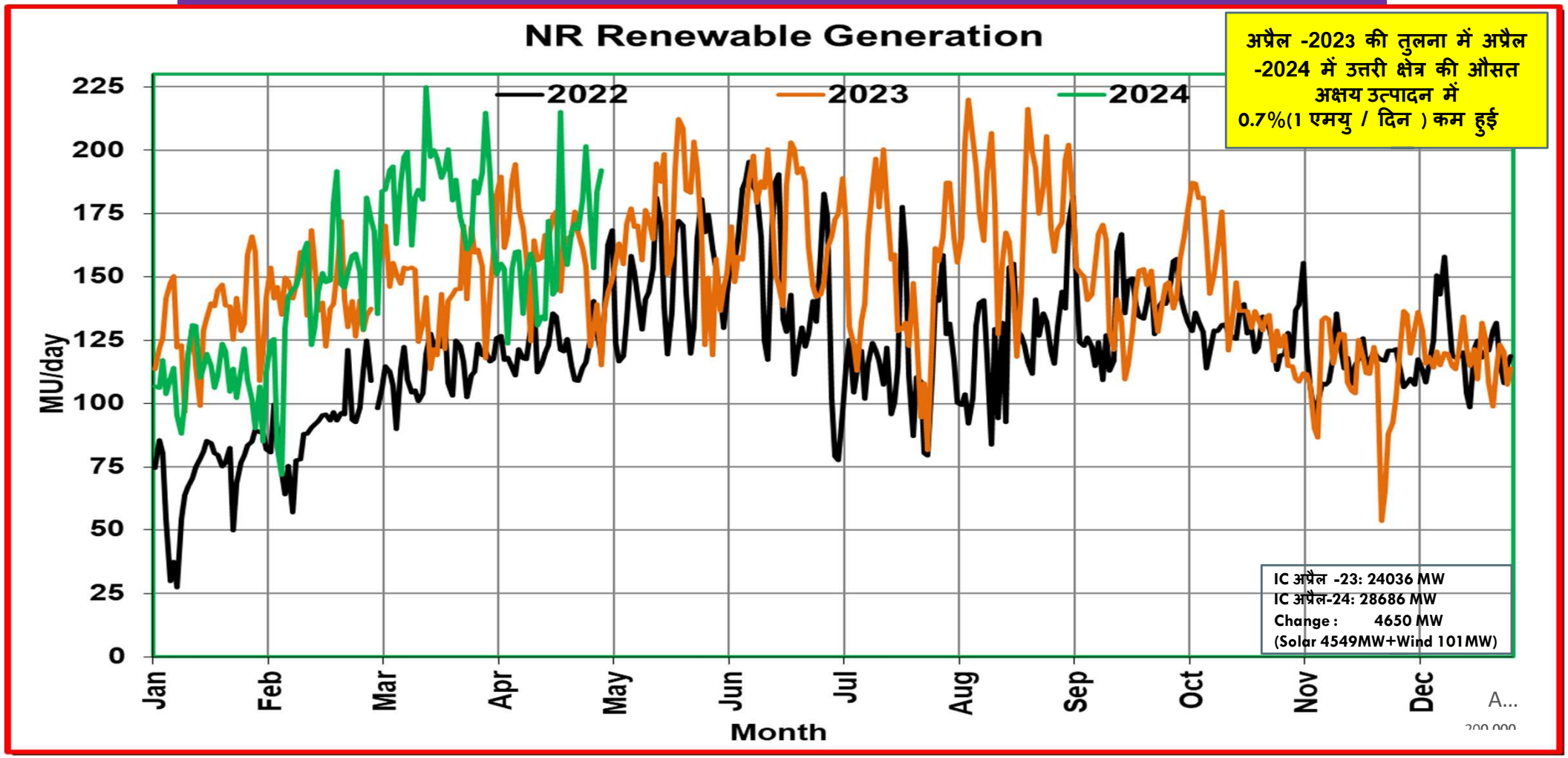
# उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(MUs/Day)



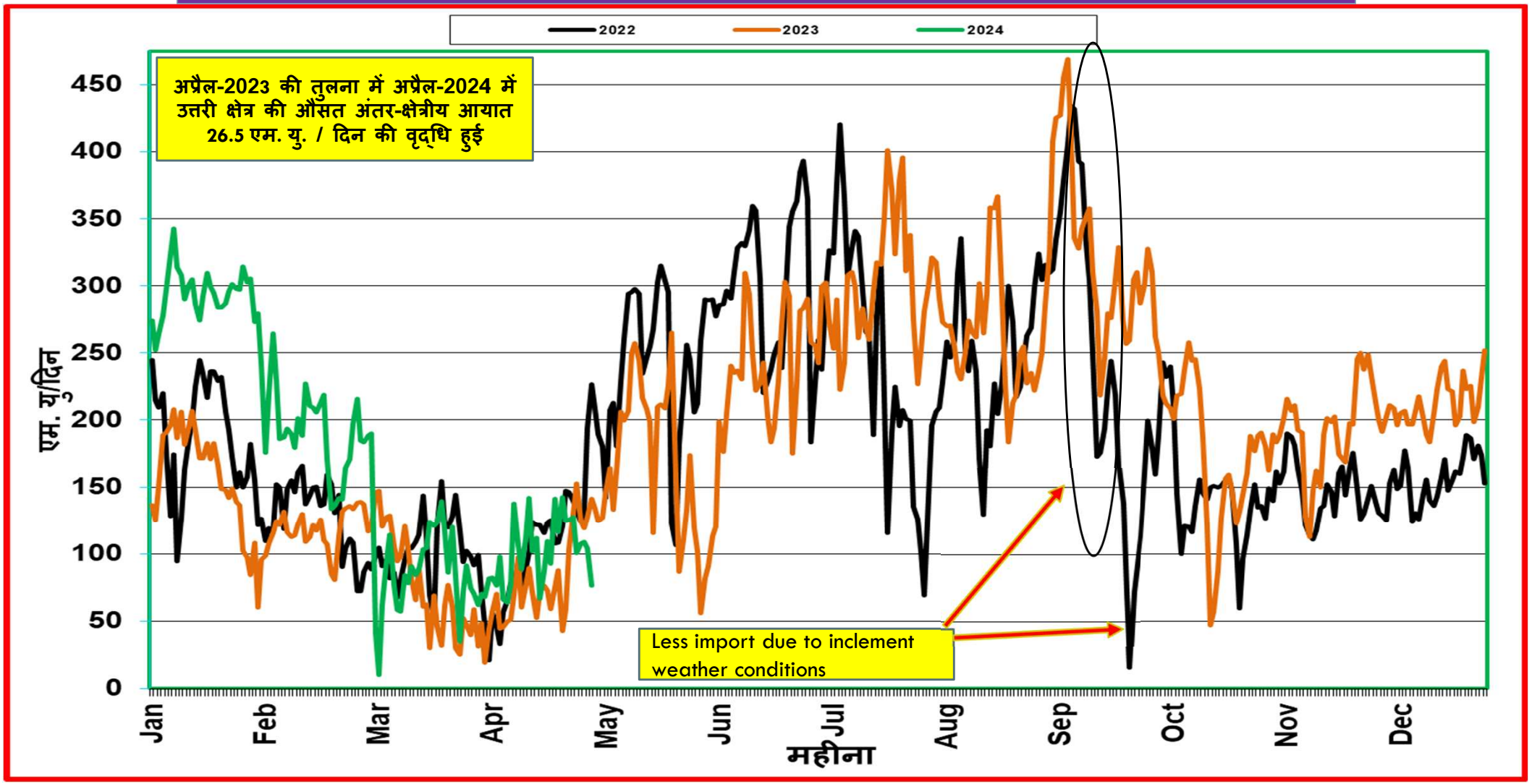
# उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (MUs/Day)



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



# अंतर-क्षेत्रीय आयात(MUs/Day) की स्थिति



## वास्तविक सारांश - अप्रैल-2023 बनाम अप्रैल-2024

| | अप्रैल-2023 (मि.यु. /दिन) | अप्रैल-2024 (मि.यु. /दिन) | अप्रैल माह में वृद्धि (मि.यु./दिन) |
|---|---|---|---|
| तापीय (Thermal) उत्पादन | 713.04 | 799.63 | 86.58 |
| जलीय (Hydro) उत्पादन | 151.47 | 148.35 | -3.12 |
| नाभिकीय (Nuclear) उत्पादन | 27.03 | 24.29 | -2.74 |
| अंतर-क्षेत्रीय (Inter-Regional) कुल आयात | 74.99 | 101.47 | 26.48 |
| अक्षय (Renewable) उत्पादन | 161.07 | 160.00 | -1.07 |

# RE Penetration

| | Maximum Daily MU Penetration | | | |
|---|---|---|---|---|
| | Apr '2024 | | Record upto Mar '2024 | |
| | Max % Penetration | Date | Max % Penetration | Date |
| Punjab | 5.99 | 02-04-2024 | 12.28 | 01-04-2020 |
| Rajasthan | 29.85 | 19-04-2024 | 36.47 | 22-10-2021 |
| UP | 3.95 | 01-04-2024 | 5.50 | 05-03-2024 |
| NR | 17.06 | 19-04-2024 | 20.69 | 02-04-2023 |

## 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)) | |
| Jan-24 | 711 | 827 | 401 | 426 | 63.9% | 36.1% | 1538 |
| Feb-24 | 946 | 728 | 361 | 367 | 72.4% | 27.6% | 1674 |
| Mar-24 | 927 | 788 | 380 | 408 | 70.9% | 29.1% | 1715 |
| **Apr-24** | **838** | **724** | **366** | **358** | **69.6%** | **30.4%** | **1562** |

| Outage Summary For Apr 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 | 324 | 259 | 162 | 97 | 66.7% | 33.3% | 62.5% | 37.5% | 583 |
| UPPTCL | 146 | 168 | 58 | 110 | 71.6% | 28.4% | 34.5% | 65.5% | 314 |
| RRVPNL | 112 | 100 | 48 | 52 | 70.0% | 30.0% | 48.0% | 52.0% | 212 |
| PSTCL | 59 | 28 | 13 | 15 | 81.9% | 18.1% | 46.4% | 53.6% | 87 |
| BBMB | 47 | 30 | 11 | 19 | 81.0% | 19.0% | 36.7% | 63.3% | 77 |
| HVPNL | 53 | 24 | 9 | 15 | 85.5% | 14.5% | 37.5% | 62.5% | 77 |
| DTL | 21 | 21 | 11 | 10 | 65.6% | 34.4% | 52.4% | 47.6% | 42 |
| PTCUL | 10 | 15 | 4 | 11 | 71.4% | 28.6% | 26.7% | 73.3% | 25 |
| NTPC | 13 | 11 | 9 | 2 | 59.1% | 40.9% | 81.8% | 18.2% | 24 |
| NRSS36 | 1 | 13 | 13 | 0 | 7.1% | 92.9% | 100.0% | 0.0% | 14 |
| HPPTCL | 2 | 11 | 5 | 6 | 28.6% | 71.4% | 45.5% | 54.5% | 13 |
| Adani | 8 | 3 | 0 | 3 | 100.0% | 0.0% | 0.0% | 100.0% | 11 |
| ESUCRL | 11 | 0 | 0 | 0 | 100.0% | 0.0% | NA | NA | 11 |
| PDD JK | 1 | 10 | 4 | 6 | 20.0% | 80.0% | 40.0% | 60.0% | 11 |
| ATIL | 1 | 6 | 4 | 2 | 20.0% | 80.0% | 66.7% | 33.3% | 7 |
| NHPC | 1 | 6 | 4 | 2 | 20.0% | 80.0% | 66.7% | 33.3% | 7 |
| PKTSL | 5 | 2 | 2 | 0 | 71.4% | 28.6% | 100.0% | 0.0% | 7 |
| THDC | 0 | 7 | 4 | 3 | 0.0% | 100.0% | 57.1% | 42.9% | 7 |
| GPTL | 3 | 3 | 1 | 2 | 75.0% | 25.0% | 33.3% | 66.7% | 6 |
| Azure | 3 | 2 | 2 | 0 | 60.0% | 40.0% | 100.0% | 0.0% | 5 |
| RENEW SUN BRIGHT (RSBPL) | 5 | 0 | 0 | 0 | 100.0% | 0.0% | NA | NA | 5 |
| RENEW SURYARAVI (RSRPL) | 5 | 0 | 0 | 0 | 100.0% | 0.0% | NA | NA | 5 |
| AMP Energy Green Private L | 2 | 2 | 0 | 2 | 100.0% | 0.0% | 0.0% | 100.0% | 4 |
| MAHINDRA | 3 | 1 | 0 | 1 | 100.0% | 0.0% | 0.0% | 100.0% | 4 |
| NPCIL | 2 | 2 | 2 | 0 | 50.0% | 50.0% | 100.0% | 0.0% | 4 |
| Total | 838 | 724 | 366 | 358 | 69.6% | 30.4% | 50.6% | 49.4% | 1562 |

# New Elements First Time Charged During April 2024

| S. No. | Type of transmission element | Total No |
|---|---|---|
| 1 | Transmission Lines | 02 |
| 3 | ICTs/GTs/Transformers | 05 |
| 4 | SOLAR ICR/BLOCK | 06 |
| 5 | LILO Line Charging | 02 |
| 6 | BUS REACTOR | 01 |
| Total New Elements charged | | 16 |


धन्यवाद