

I/32751/2023



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

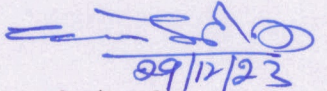
**विषय:** उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 214<sup>वीं</sup> बैठक का कार्यवृत्त

**Subject:** Minutes of the 214<sup>th</sup> OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 214<sup>वीं</sup> बैठक दिनांक 19.12.2023 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट <http://164.100.60.165> पर उपलब्ध है। यदि कार्यवृत्त पर कोई टिप्पणी हो तो कार्यवृत्त जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें।

The 214<sup>th</sup> meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 19.12.2023. 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।

  
09/12/23  
(डी. के. मीना)

अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

**उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 214<sup>वीं</sup> बैठक का कार्यवृत्त**

The 214<sup>th</sup> OCC meeting of NRPC was held on 19.12.2023 through video conferencing.

खण्ड-क:उ.क्षे.वि.स.

**PART-A:NRPC**

### 1. Confirmation of Minutes

Minutes of the 213<sup>th</sup> OCC meeting was issued on 08.12.2023.

With regard to Agenda No. 6, HPSLDC requested OCC forum that Point 6.6 of the minutes para may be revised as under:

*With regard to Shimla-Solan Islanding scheme representative from HPSLDC apprised that as informed by HPSEBL, BHEL has confirmed that the generator of Bhaba HEP is capable of working in the power and opening mode, however, the control system at governor end is of GE make therefore they have taken up the matter with GE. But the response of GE is still awaited. Further, NRPC advised HPSEBL to expediate the matter with GE.*

OCC confirmed the minutes with above modification.

### 2. Review of Grid operations of November 2023

#### **Anticipated vis-à-vis Actual Power Supply Position (Provisional) for November 2023**

Reasons submitted by States for significant deviation of actual demand from anticipated figures during the month of November 2023 are as under:

- **Delhi**

4320 MW peak demand was met on 1st Nov-2023 and thereafter demand of Delhi reduced gradually. 1st week of November 2023 was slightly warmer than November 2022. This led to increase in peak demand and energy consumption.

- **Himachal Pradesh**

The Anticipation in Energy Requirement in respect of Himachal Pradesh for the month of November, 2023 came on the lower side due to dry weather conditions in the state.

- **Punjab**

It is intimated that actual maximum demand and actual energy requirement are less as compared anticipated maximum demand and anticipated energy requirement because of decrease in demand of agriculture consumers as well as other categories of consumers due to rainfall in second and last week of November 2023 in the state of Punjab.



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- **Rajasthan**

The Actual Energy requirement w.r.t. Anticipated Energy requirement for the month November' 2023 decreased by 6.3% which is due to unexpected rain episodes in Rajasthan state and the Actual peak demand w.r.t. Anticipated peak demand for the month November' 2023 decreased by 2.4% which is within permissible limit.

- **Uttarakhand**

The reason for significant negative variation in energy requirement was due to Pre-Diwali maintenance of Substations done by STU and Discoms.

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

The maintenance programme of generating units and transmission lines for the month of January 2024 was deliberated in the meeting on 18.12.2023.

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	110	270	No Revision submitted
	Requirement	150	300	
	Surplus / Shortfall	-40	-30	
	% Surplus / Shortfall	-26.7%	-10.0%	
DELHI	Availability	3292	5650	18-Dec-23
	Requirement	2350	5650	
	Surplus / Shortfall	942	0	
	% Surplus / Shortfall	40.1%	0.0%	
HARYANA	Availability	5999	8064	08-Dec-23
	Requirement	4598	8817	
	Surplus / Shortfall	1401	-753	
	% Surplus / Shortfall	30.5%	-8.5%	
HIMACHAL PRADESH	Availability	1183	2101	08-Dec-23
	Requirement	1180	2110	
	Surplus / Shortfall	3	-9	
	% Surplus /	0.2%	-0.4%	

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State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Shortfall			
J&K LADAKH and	Availability	1180	3920	No revision submitted
	Requirement	1990	3120	
	Surplus / Shortfall	-810	800	
	% Surplus / Shortfall	-40.7%	25.6%	
PUNJAB	Availability	4970	10800	15-Dec-23
	Requirement	4743	9250	
	Surplus / Shortfall	227	1550	
	% Surplus / Shortfall	4.8%	16.8%	
RAJASTHAN	Availability	8650	19030	18-Dec-23
	Requirement	9610	17500	
	Surplus / Shortfall	-960	1530	
	% Surplus / Shortfall	-10.0%	8.7%	
UTTAR PRADESH	Availability	11470	22500	13-Dec-23
	Requirement	11160	22500	
	Surplus / Shortfall	310	0	
	% Surplus / Shortfall	2.8%	0.0%	
UTTARAKHAND	Availability	1333	2500	8-Dec-23
	Requirement	1349	2550	
	Surplus / Shortfall	-16	-50	
	% Surplus / Shortfall	-1.1%	-2.0%	
NORTHERN REGION	Availability	38187	70100	
	Requirement	37129	67300	
	Surplus / Shortfall	1057	2800	
	% Surplus / Shortfall	2.8%	4.2%	

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

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

5.2. In 214<sup>th</sup> OCC, SLDCs were requested again to coordinate with respective Transmission Utilities of states/UTs and submit details about the updated status

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of Down Stream network by State Utilities from ISTS Station (enclosed as **Annexure-A-I.I**) before every OCC meeting.

## 6. NR Islanding scheme

- 6.1.** In the meeting (214<sup>th</sup> OCC), UPSLDC representative apprised forum that UFR have been installed at PGCIL and UPPCL S/s, however, work is pending from NTPC Unchahar end for Lucknow- Unchahar islanding scheme.
- 6.2.** With regard to Agra islanding scheme, UPSLDC representative apprised forum a meeting is scheduled between senior representatives of UPSLDC and M/s Lalitpur on 19.12.2023 regarding M/s LPGCL observation on Agra Islanding scheme report by CPRI and thereafter they would submit the updated status vide mail to NRPC Sectt. after the said meeting.
- 6.3.** Representative from RRVPNL intimated forum that draft DPR for Jodhpur-Barmer Rajwest and Suratgarh Islanding scheme has been prepared and same is under approval from their management and it would be shared shortly with NRPC Secretariat and NRLDC.
- 6.4.** With regard to Patiala-Nabha Power Rajpura islanding scheme representative from Punjab SLDC informed that DPR for PSDF funding is under preparation and is expected to be finalized by 31<sup>st</sup> December 2023.
- 6.5.** With regard to Kullu-Manali Islanding scheme, representative from HPSLDC apprised forum that the UFR scheme submitted by HPSEB for funding from State PSDF has not been approved by Hon'ble HPERC and therefore HPSEB has been asked to explore the alternative mechanism for procurement of UFR.
- 6.6.** With regard to Shimla-Solan Islanding scheme representative from HPSLDC intimated that information from GE related to the control system of Bhaba HEP is awaited.

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

- 7.1.** In the meeting, NRPC representative apprised forum about the coal stock position of generating stations in northern region during current month (till 10<sup>th</sup> December 2023).
- 7.2.** Average coal stock position of generating stations in northern region, having critical stock, during first ten days of December 2023 is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Req'd. (Days)	Actual Stock (Days)
GOINDWAL SAHIB TPP	540	0.51	22	3.7
ROSA TPP Ph-I	1200	0.62	22	4.0
CHHABRA-I PH-1 TPP	500	0.85	22	2.2

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Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Req'd. (Days)	Actual Stock (Days)
CHHABRA-I PH-2 TPP	500	0.76	22	3.3
CHHABRA-II TPP	1320	0.65	22	2.8

7.3. In the meeting, above mentioned generating station was requested to take adequate measures.

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

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

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.

**9. Planned Annual Maintenance Program of Transmission Elements for the financial year 2024-25-reg. (Agenda by NRPC Sectt.)**

9.1. In the meeting, EE(O) NRPC apprised forum that Clause (b) of Section 32(3) of Indian Electricity Grid Code (IEGC) 2023, stipulates for advance preparation of annual outage plan for the transmission elements by the concerned RPC.

9.2. In accordance with above provision, NRPC Sectt. vide letter dated 26.11.2023 requested all State/Central Transmission utilities/ licensees related to Northern Region to submit their annual outage plan of transmission elements in the enclosed format (Copy attached as Annexure-A.IV of the agenda) for the FY 2024-25 via email at [seo-nrpc@nic.in](mailto:seo-nrpc@nic.in)

9.3. MS, NRPC asked NRPC Sectt. to compile and share the consolidated list with NRLDC/NLDC for its observations.

**Decision of the OCC forum**

- Forum asked NRPC Sectt. to share the consolidated list with NRLDC/NLDC for their observations.

**10. Zero Planned outages of Thermal (Coal) based units from March 2024 to June 2024 -reg. (Agenda by NRPC Sectt.)**

10.1. In the meeting, EE(O) NRPC apprised that MoP has directed that all the maintenance work in Thermal plants must be completed by February, 2024

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and no planned maintenance work should be undertaken during the period from March, 2024 to June, 2024.

- 10.2. In this regard, NRPC Sectt. vide letter dated 06.12.2023 have asked generating utilities for review of planned maintenance which was originally scheduled in the month of March 2024 (Copy attached as Annexure-A.VI of the agenda).
- 10.3. Further, MS NRPC vide letter dated 11.12.2023 (Copy attached as Annexure-A.VII of the agenda) and 12.12.2023 (Copy attached as Annexure-A.VIII of the agenda) have asked RRVUN and JSW Barmer Energy Limited respectively to review the planned maintenance program of their generating stations for FY 2024-25 to ensure zero planned maintenance for the period March to June 2024.
- 10.4. MS, NRPC asked respective SLDCs/thermal generating stations of Northern Region that in compliance of MoP's direction all the planned maintenance work in Thermal Plants shall be completed by February 2024 to ensure zero planned maintenance for the period March to June 2024.
- 10.5. Further, in case any utility has critical overhauling due in the aforesaid period the same may be communicated vide letter with detailed reasons and thereafter CEA would be informed about it seeking further necessary directions/guidance.

#### 11. Proposed SPS for 400/200kV ICTs at RVPN's 400kV GSS Hindaun (Agenda by RVPN)

- 11.1. EE(O), NRPC apprised forum that cited matter was also deliberated in 209<sup>th</sup> OCC of NRPC wherein forum asked RVPN to submit the base case for the proposed SPS at RVPN's 400kV GSS Hindaun to NRLDC for its examination.
- 11.2. RVPN representative informed that around 300MW (average load) is to be shed majorly supplying Gangapur and Dholpur area in case of N-1 contingency of 400/220kV ICT at Hindaun and SPS operation. However, as no other option is available, load shedding is the only option.
- 11.3. Further, NRLDC representative stated that comments have already been shared with RVPN and the scheme seems to be in order. RVPN has to make sure that in the load being shed at Gangapur and Dholpur, no important load is shed. In view of recent multiple tripping events at 400/220kV Hindaun, NRLDC requested RVPN to expedite commissioning of SPS.
- 11.4. Forum approved the SPS for 400/200kV ICTs at RVPN's 400kV GSS Hindaun (copy attached as Annexure-A.III)

#### **Decision of the OCC forum**

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- Forum approved the SPS for 400/200kV ICTs at RVPN's 400kV GSS Hindaun.

## 12. Non-fully utilization of Baddi Pinjore D/C Line due to internal transmission issues in Haryana System. (Agenda by HPSLDC)

- 12.1. In the meeting, EE(O) NRPC apprised forum HPSLDC vide letter dated 13.12.2023 (Copy attached as Annexure-A.X of the agenda) has stated that Baddi Pinjore D/C transmission line is connecting from 220 kV Baddi Station, Himachal Pradesh to 220 kV Pinjore Substation, Haryana.
- 12.2. HPSLDC has also mentioned that Haryana SLDC only allows to draw the power range between 100 MW to 150 MW on these circuits due to the internal transmission issues in the Haryana System, which has resulted into non-fully utilization of the transmission Baddi Pinjore D/C Line. The said issue has persisted for more than 3 years, however, no necessary action as of now is taken by Haryana
- 12.3. Haryana SLDC representative informed that when in winter drawl of HP increases power at 220kV Sector 32 Panchkula is drawn through two circuits connected at 200kV Tepla and Raiwali S/S which in turn becomes overloaded.
- 12.4. Further, he also mentioned that due to ROW issues the erection of 220kV D/C lines from 400kV Sub-station (PGCIL) Naggal to 220kV Sub-stations Sector 32 Panchkula and Pinjore is delayed. Tentative timeline as intimated by HVPN for commissioning of one circuit from PGCIL Panchkula to Pinjore is 10<sup>th</sup> January 2024 and other circuit is expected in March 2024. With the commissioning of these circuits situation would significantly ease and issue would be resolved.

## 13. Additional Agenda No.1: Construction Issue of FTC for balance 765kV Bays (701, 702, 703, 705, 706) and Spare Reactor & ICT units w.r.t. M/s PMSTL at 765/400/220KV GIS Meerut substation. (Agenda by Powergrid NR-1)

- 13.1. In the meeting POWERGRID representative stated that 765/400/220kV Meerut GIS has been constructed by POWERGRID Meerut Simbhavali Transmission Limited (PMSTL) & following 765kV elements at 765/400/220kV GIS has been successfully commissioned:
- 3x500 MVA, 765/400/33 kV ICT-1 (Bay 707)
  - 3x500 MVA, 765/400/33 kV ICT-2 (Bay 704)
  - 3x80 MVAR, 765 kV Bus Reactor (Bay 712)
  - 765 kV Meerut-Hapur Line (Bay 710)
  - 765 kV Meerut-Gr. Noida Line (Bay 709)
  - 765 kV Tie Bay 708 & 711
  - 765 kV Bus-I & Bus-II



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13.2. He also mentioned that FTC for following elements have not been issued by SLDC/UPPTCL stating that Standing committee approval for these future elements & associated bays is not in place:

- I. Bay 701 (ICT-3 Future)
- II. Bay 702 (Tie Bay of ICT-3 Future and Future Line-2)
- III. Bay 703 (Future Line-2)
- IV. Bay 705 (Tie Bay of ICT-2 and Future Line-I)
- V. Bay 706 (Future Line-I), spare unit of 765 kV ICT
- VI. Spare unit of 765kV Bus Reactor

13.3. The issue regarding issue of FTCs for balance 765 kV Bays (701, 702, 703, 705, 706) and Spare Reactor & ICT units was discussed in 67<sup>th</sup> NRPC meeting, wherein M/s UPPTCL was advised to take up the matter with Chief Engineer, PSPA Division, CEA for resolution of the issue. The issue still stands unresolved.

13.4. MS, NRPC asked UPPTCL to take up the matter with Chief Engineer, PSPA Division, CEA so that the issue could be resolved at the earliest.

खण्ड-ख: उ.क्षे.भा.प्रे.के.

Part-B: NRLDC

#### 14. NR Grid Highlights for November 2023

NRLDC representative presented the major grid highlights of November 2023:

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	208	29.11.23 at 07:00	3.6	10.11.2023	3.4
2	Delhi	4320	01.11.23 at 12:31	81.5	01.11.2023	70.5
3	H.P.	1977	25.11.23 at 07:00	35.0	09.11.2023	32.3
4	Haryana	7685	27.11.23 at 12:45	150.0	01.11.2023	131.7
5	J&K	2588	20.11.23 at 08:00	55.2	27.11.2023	52.3

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6	Punjab	7572	29.11.23 at 09:30	142.8	29.11.2023	130.8
7	Rajasthan	16232	24.11.23 at 09:00	324.0	07.11.2023	292.0
8	Uttarakhand	2141	09.11.23 at 07:00	40.7	10.11.2023	37.1
9	U.P.	19033	08.11.23 at 18:27	348.6	01.11.2023	314.8
10	<b>Northern Region</b>	56126	08.11.23 at 18:00	<b>1165.3</b>	01.11.2023	<b>1064.8</b>

\*As per SCADA

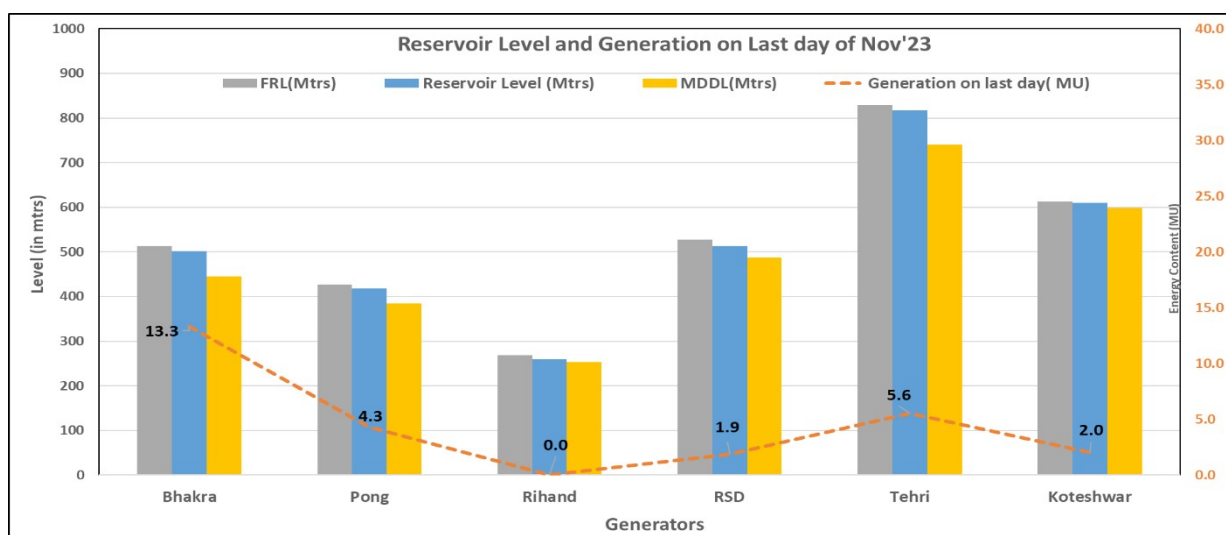
Northern Region all-time high value recorded in November'23:

Nil

Frequency profile

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Nov' 23	50.00	50.39 27.11.23 at 00:02:00 hrs	49.55 25.11.23 at 14:17:10 hrs	6.83	74.36	18.81
Nov' 22	50.01	50.27	49.44	6.70	77.00	16.18

Reservoir Level and Generation on Last Day of Month



**Detailed presentation on grid highlights of Nov'2023 as shared by NRLDC in OCC meeting is attached as Annexure-B.I.**

**15. Winter preparedness 2023-24:****18.1 Status of washing of insulators & replacement of porcelain insulators with polymer insulators**

The issues related to challenge during winter months regarding tripping of EHV lines due to fog has been deliberated in last two OCC meetings. With low temperature across Northern region and sometimes with high humidity in the air, fog starts to appear across Northern region. This problem is generally most severe from 15Dec-15Feb period. During this time additional care need to be taken by system operator as many multiple element tripping events have been reported in the past especially in Punjab and Eastern UP. Such tripping are more severe if the lines are tripping from generation complex such as the Singrauli-Anpara-Rihand complex.

For lines such as 400kV Bara-Meja 1 & 400kV Bara-Meja 2 for which pre-winter maintenance was not carried out last year, tripping on number of occasions was reported during Jan month in 2023 at the time of fog.

OCC forum asked utilities to furnish the utility-wise latest status of washing of insulators & replacement of porcelain insulators with polymer insulators in 212 & 213 OCC meeting.

NRLDC has compiled list of lines that have tripped for 5 or more times during last 4 years on fog. Data for Dec-Jan months of last 4 years from 21:00hrs to 10:00hrs was selected. List is attached as Annexure-B.I of agenda along with status of insulator washing/cleaning and replacement by polymer insulator for such lines.

Few of the lines that have poor record during these winter months are listed below:

S. No.	Line Name	Tripping events
1	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	30
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	21
3	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	19
4	400 KV Aligarh-Sikandrabad (UP) Ckt-1	16
5	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	16
6	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	16
7	220 KV Bairasiul(NH)-Jessore(HP) (PG) Ckt-1	16
8	400 KV Bareilly-Unnao (UP) Ckt-1	14
9	220 KV Agra(PG)-Shamshabad(UP) (UP) Ckt-1	12
10	400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-2	12
11	400 KV Muktsar-Makhu (PS) Ckt-2	12
12	400 KV Hindaun(RS)-Chhabra(RVUN) (RS) Ckt-1	11
13	400 kv suratgarh(rvun)-bikaner(rs) (rs) ckt-1	11
14	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	11

Also, the status of insulator washing & cleaning and replacement of porcelain insulators with polymer insulators for these lines have been prepared as per data

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available with NRLDC. **The most affected utilities are RRVPNL, UPPTCL, POWERGRID and PSTCL.**

In the 214 OCC meeting, following was discussed:

- Special actions required by RVPN, UPPTCL and PSTCL.
- RVPN needs to proactively take actions for avoiding tripping of lines from RAPS as nuclear generation evacuation is effected.
- RVPN representative stated that 220kV Raps-Sakatpura lines & 220kV Raps-Debari have been taken under shutdown and necessary maintenance has been done by RVPN team.
- To accord priority to insulator washing & cleaning of these lines at the earliest, if not already done.
- For the lines in the list for which polymer replacement is pending, the replacement of the insulators may be expedited.
- In the lines for which insulator washing & cleaning has been done, it was also requested to mention the portion/length of line for which such exercise has been completed, including any vulnerable pockets left, if any.

***All concerned utilities agreed to prioritize washing and cleaning for these lines as highlighted by NRLDC.***

## **18.2 Other followup actions related to Winter preparedness**

Following actions were discussed:

- All SLDCs where high voltages are observed are requested to confirm that capacitor banks at low voltage level have been switched off
- RSD may be used as synchronous condenser by Punjab SLDC as per grid requirement. Punjab SLDC representative informed that one unit at RSD is running as synchronous condenser from 21:00hrs to 06:00hrs during night time and absorbing nearly 60MVAR.
- All generators to maximize the MVAR absorption as per capability curve to avoid high voltage in grid.
- SLDCs to carry out tap change exercise for 220/132kV and below voltage level transformers.
- Rajasthan has committed to running all the 03 units of Dhaulpur gas plant in the high-demand winter season in 70 NRPC meeting. SLDC Rajasthan representative stated that they have taken up the matter with power procurement cell.

***All concerned utilities were requested to ensure that follow up actions as mentioned above are complied.***

## **16. Signing of connectivity agreement by licensees**

As per Clause 9 of IEGC 2023,



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- (1) *In case of users seeking connectivity to the ISTS under GNA Regulations, Connectivity Agreement shall be signed between such users and CTU. In case of multiple transmission licensees connected at same station, the Site Responsibility Schedule including the responsibility for operation & protection coordination and data sharing among the licensees, shall be specified in the Connectivity Agreement.*
- (2) *In case of an inter-State transmission licensee, Connectivity Agreement shall be signed between such licensee and CTU after the award of the project and before physical connection to ISTS.*
- (3) *In case of intra-State transmission system getting connected to inter-State transmission system, Connectivity Agreement shall be signed between intra-State transmission licensee, CTU and the inter-State transmission licensee after the award of the project and before physical connection to ISTS.*

Recently, two applications have been received at NRLDC end regarding first time charging of 220kV Chamba-Majra line and 220/33kV 31.5MVA transformer at AD Hydro HEP from HPPTCL side.

In 214 OCC meeting, following was discussed:

NRLDC has requested HPPTCL for connectivity agreement between, HPPTCL, CTU and NHPC/ADHydro as per clause 9(3) of IEGC 2023 before first time charging.

Other interstate as well as intrastate transmission licenses having upcoming transmission elements for FTC were requested to complete formalities related to signing of connectivity agreement timely so as to avoid any kind of issues at the time of first time charging.

HPPTCL requested NRLDC to allow first time charging of these transmission elements. Request was also made to CTUIL to sign the connectivity agreement at the earliest.

CTUIL representative stated that Con TD-IV of 220/33kV 31.5MVA transformer at AD Hydro HEP has been issued, while application for 220kV Chamba-Majra line was received recently and is under process. CTUIL representative stated that in lieu of Con TD-IV issued by CTUIL, NRLDC may go ahead with first time charging of these elements.

NRLDC representative stated that connectivity agreement is requirement as per IEGC-2023 and requested HPPTCL/CTUIL for signing of connectivity agreement.

***OCC forum asked all interstate as well as intrastate transmission licenses having upcoming transmission elements for FTC to complete formalities related to signing of connectivity agreement timely so as to avoid any kind of issues at the time of first time charging.***

## 17. Sharing of ATC/TTC assessment and basecase with NRLDC

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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.

<b>Purpose</b>	<b>Sl No</b>	<b>Action of Stakeholder</b>	<b>Res ponsi bility</b>	<b>Submi ssion to</b>	<b>Data/ Inform ation Submissio n Time line</b>
<b>1. Revision 0 TTC/ATC Declaration for Month ‘M’</b>	1(a)	<i>Submission of node wise Load and generation data along with envisaged</i>	SLDC	RLDC	<i>10<sup>th</sup> Day of ‘M-12’ month</i>
		<i>scenarios for assessment of transfer capability</i>			
	<i>Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models</i>	<i>26<sup>th</sup> Day of ‘M-12’ month</i>			
<b>2. Interconnection Studies for elements to be integrated in the month ‘M’</b>	2(a)	<i>Submission of node-wise load and generation data &amp; sharing of network simulation models for intra-state elements coming in the next six months</i>	SLDC	RLDC	<i>8<sup>th</sup> Day of ‘M- 6’ month</i>
	2(b)	<i>Sharing of inter-connection study results</i>			<i>21<sup>st</sup> Day of ‘M-6’ month</i>
<b>3. Month Ahead TTC/ATC</b>	3(a)	<i>Submission of node wise Load and generation data along with envisaged scenarios for</i>	SLDC	RLDC	<i>8<sup>th</sup> Day of ‘M- 1’ month</i>

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<b>Declaration &amp; Base case for Operational Studies for Month 'M'</b>		<i>assessment of transfer capability</i>			
		<i>Assessment of TTC/ATC of the intra- state system and sharing of updated network simulation models</i>			
	3(b)	<i>Declaration of TTC/ATC of the intra- state system in consultation with RLDC</i>	SLDC	RLDC	22 <sup>nd</sup> Day of 'M-1' month

## 20.1 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 were requested to send the PSSE cases for four scenarios for December'24 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	18:30 Hrs
4	Solar Peak	12:00 Hrs

Same was also requested vide NRLDC email dated 06.12.2023. It was 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 Haryana whereas ATC/TTC assessment was only received from J&K for M-11 scenarios in November 2023.

***In 214 OCC meeting, all states were requested to share basecase as well as ATC/TTC assessments for M-11 scenarios on monthly basis with NRLDC as per CERC approved procedure.***

## 20..2 Sharing of Data and study results for interconnection studies

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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 **June 2024, before 8.12.2023. Above was also requested vide mails dated 28.11.2023 by NRLDC. This needs to be practised as monthly exercise on regular basis.**

Data regarding M-6 scenarios are pending from the utilities.

***In 214 OCC meeting, all states were requested to share list of elements/LGB data/interconnection study results etc as per the approved procedure on monthly basis.***

### **20.3 ATC/TTC of states for winter 2023-24 (M-1)**

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

***In 214 OCC meeting, it was discussed that***

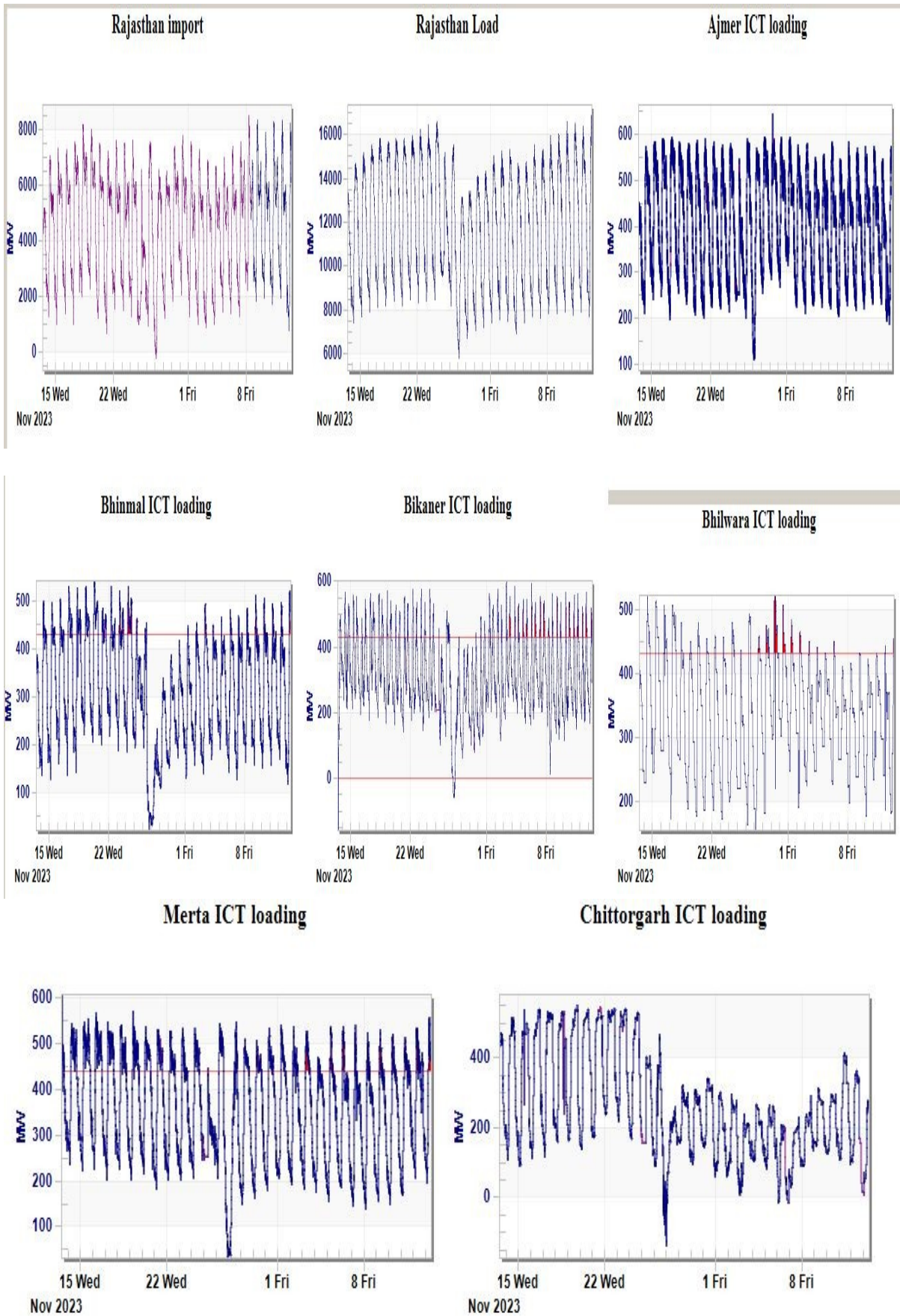
- ATC/TTC assessment for winter 2023-24 has only been received from Rajasthan, Haryana, J&K and Uttarakhand as of now.
- ATC/TTC as received from Haryana, J&K and Uttarakhand have been approved by NRLDC whereas for Rajasthan, it is being checked at NRLDC end.
- All other states were also requested to submit the ATC/TTC for winter 2023-23 at the earliest.
- OCC forum approved the ATC/TTC limits of states for Jan 2024 which were attached as Annexure B.II of agenda.

### **20..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. Some of the such stations are shown below along with loading of 400/220kV ICTs for last 30 days:



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**In 214 OCC meeting,**

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- **NRLDC representative highlighted the high loading of number of 400/220kV RVPN ICTs as shown above. It was mentioned that loadings in RVPN control area are critically high at 400/220kV Ajmer, Bhinmal, Bikaner, Hindaun & Merta.**
- **MS NRPC asked RVPN to expedite bidding and commissioning of new ICTs which have already been approved at constrained substations.**

## 20.5 Publishing of ATC/TTC on SLDC website

As discussed in last several OCC meetings, all SLDCs need to furnish ATC/TTC details of their control area at respective SLDC websites. Now, it is being observed that most of the SLDCs except J&K are uploading ATC/TTC limits on their websites.

SLDC	Link for ATC on website
UP	<a href="https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde">https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde</a>
Punjab	<a href="https://www.punjabslcdc.org/downloads/ATC-TTC0321.pdf">https://www.punjabslcdc.org/downloads/ATC-TTC0321.pdf</a>
Haryana	<a href="https://hvpn.org.in/#/atcttc">https://hvpn.org.in/#/atcttc</a>
Delhi	<a href="https://www.delhisldc.org/resources/atcttcreport.pdf">https://www.delhisldc.org/resources/atcttcreport.pdf</a>
Rajasthan	<a href="https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads">https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads</a>
HP	<a href="https://hpsldc.com/mrm_category/ttc-atc-report/">https://hpsldc.com/mrm_category/ttc-atc-report/</a>
Uttarakhand	<a href="https://uksldc.in/ttc-atc">https://uksldc.in/ttc-atc</a>
J&K and Ladakh U/T	NA

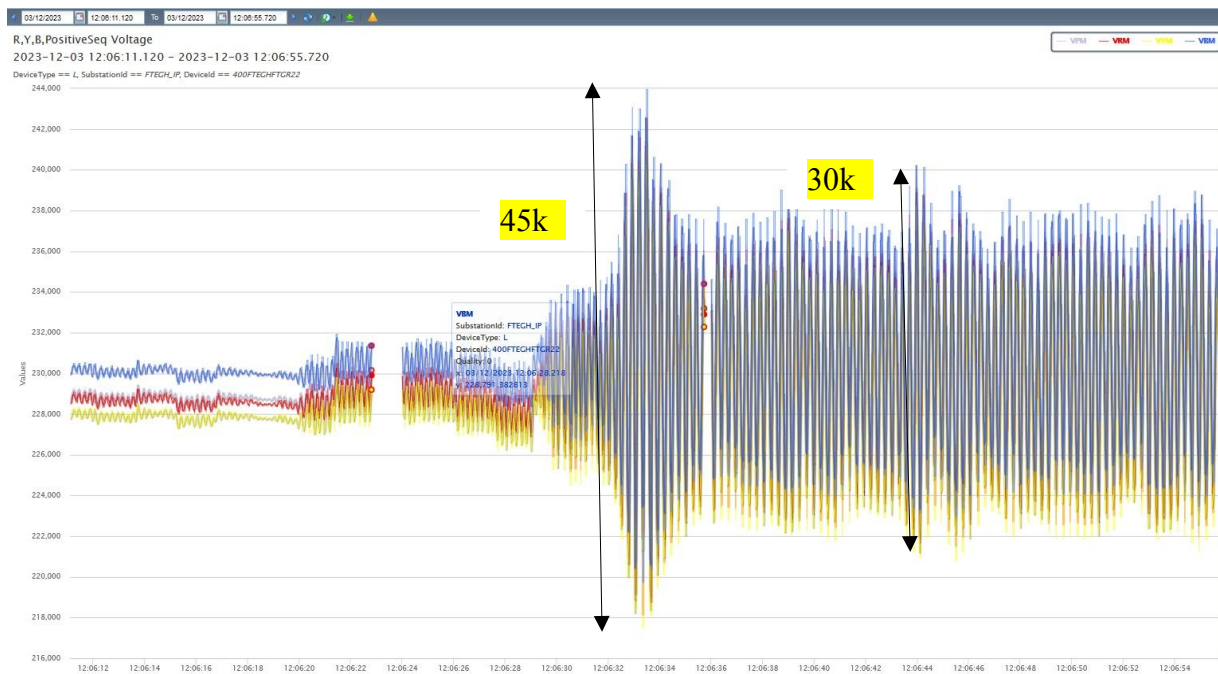
In 214 OCC meeting it was further discussed and agreed that,

- 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.
- It was requested that Delhi, Punjab & UP SLDCs assess and share ATC/TTC assessment for Winter 2023-24 at the earliest.
- The forum had also asked 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.
- Study sub-committee of NRPC would be meeting online next month to discuss on the challenges faced by SLDCs in submission of data, studies and basecases as per M-6/M-11 timelines.

## 18. Observance of oscillations in NR ISTS RE complex in Western Rajasthan

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On 4<sup>th</sup> Dec 2023, around 1215 hrs, NRLDC control room reported oscillations of around 4 Hz frequency with magnitude as high as 10-15 kV. One day prior to this event, STATCOM stations in Rajasthan, particularly 765 kV Fatehgarh-2(POWERGRID) reported oscillations as high as 60-70 kV. These oscillations are similar to previously observed cases. Plot of 400kV Fatehgarh I bus voltage for 03.12.2023 @12:06 hrs is shown below:



Prior to this event, 9 out of 41 RE plants in Rajasthan ISTS system were operating in constant Q mode of voltage control. STATCOM at 765 kV Fatehgarh-2 were operating in Q-V control with 380-420 kV voltage range and 100 MVAR X 2, constant reactive injection mode. NR Solar generation reached maximum of 16050 MW against AvC of 19458 MW on the same day.

Following actions have already been taken by NRLDC in this regard:

- The mode of reactive power control for RE plants amplifying oscillations was changed from voltage control to fixed Power Factor and fixed Q
- Few plants with large fluctuations in reactive power were identified and accordingly few parameters of their PPC - Proportional gain (Kp), integral time constant (Ti) were tuned.
- The voltage dead band (Vdb) of most of the RE Plants connected at Fatehgarh-II (PG) and Fatehgarh I was changed from 1% to 2%.

After the actions taken by NRLDC control room operators, the phenomenon of oscillations in the RE complex have subsided as of now, however, the possible issues related to oscillations owing to the communication delays between PQ-meter sampling, PPC response time and inverter polling rate continue to be observed.

Apart from this, the SCR at Fatehgarh-II continues to be on the lower side (slightly less than 4). Moreover, traditional SCR does not account sufficiently for the presence of nearby inverter-based resources or power electronic-based equipment. The SCR

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computation shall factor the presence of controller based fast responding elements in vicinity.

Such issues along with analysis of Events Involving Transmission Grid Connected Wind & Solar Power Plants have been carried out by Grid-India in detail and published in form of report available @

<https://posoco.in/wp-content/uploads/2023/12/Report-on-Events-Involving-Transmission-Grid-Connected-Wind-Solar-Plants.pdf>.

In the OCC meeting, it was mentioned that considering the issues related to oscillations, NRLDC is generally taking measures to control the oscillations in the grid including changing modes of solar plants, STATCOM, modifying settings of droop & dead band etc.

RE plants were also requested to ensure that they are complying with all CEA regulations in real-time at all grid conditions including but not limited to:

- Supplying dynamically varying reactive power support so as to maintain power factor (p.f.) within the limits of 0.95 lagging to 0.95 leading
- Capable of operating in the frequency range 47.5 to 52 Hz and be able to deliver rated output in the frequency range of 49.5 Hz to 50.5 Hz
- LVRT, HVRT clauses etc.

The design of equipments & controls and protection settings of elements in collector system viz. transformers, cables etc. shall be such that it allows RE plants to ensure the compliance of CEA standards at POI. Rajasthan SLDC was also asked to take up the matter for compliance of all relevant CEA regulations with intrastate RE plants.

However, in case still oscillations threatening to safety and security of the grid are observed, then for such conditions NRLDC as last resort may curtail generation of plants which are aggravating the oscillations in the grid such that the oscillations are controlled. It is expected that support from respective power plants may be extended in this regard as per requirement.

Moreover, for overcoming the issues related to weak-grid and low short circuit strength it is recommended that the associated transmission system is also commissioned on or before the commissioning of RE plants so as to avoid any case of limitation of transmission system.

***OCC forum asked all RE plants to ensure compliance of CEA regulations in real-time. It was agreed that as last resort in case of oscillations, NRLDC may curtail generation of RE plants which are aggravating the oscillations. It was agreed that the issues could also be discussed in special meeting proposed with RE developers in Jaipur on 22.12.2023.***

***OCC also agreed that finalisation of CEA construction standards for RE plants would also help to avoid issues related due to communication delay etc.***

## 19. Registration of RE plants without final connectivity agreement



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As per section 10.9 of GNA regulation 2022, “Connectivity grantee need to submit a copy of the signed Connectivity Agreement to the RLDC, in whose control area it is located”.

Before GNA regime, it used to be two (2) different agreement (i) Connectivity agreement/LTA agreement (Mainly for commercial point of view, submission of BG etc.) (ii) Connection agreement (i.e. CON-5 & CON-6 etc.).

After GNA regulation 2022, both (i) LTA agreement & (ii) Connection agreement are merged to single agreement (i.e. Connectivity agreement for both Technical and commercial aspect).

As the connectivity agreement format is yet to be finalised, therefore to facilitate RE integration during the intervening period, based on understanding between CTUIL & RLDC, upon intimation for Con-IVA & an affidavit which is an undertaking (endorsed by CTUIL), the connectivity grantee is being facilitated for further physical connection to the grid.

Till date, based on Connectivity (CON-IVA) and Affidavit (in lieu of final connectivity agreement) endorsed by CTUIL, NRLDC has facilitated registration & commissioning processing for the following RE plants.

- i. Renew Surya Vihaan Private Limited (295MW) (Registered at NRLDC)
- ii. Grian Energy Pvt. Ltd. (100MW). (Registered at NRLDC)
- iii. Amplus ages Pvt. Ltd. (100MW). (Registered at NRLDC)
- iv. AMP Energy Green Six Pvt. Ltd. (100MW). (Registered at NRLDC)
- v. Altra Xergi Pvt. Ltd. (380MW) (Registered at NRLDC).

***OCC forum noted the same. CTUIL was also asked to expedite the signing of connectivity agreement for these plants after approval of format by Hon’ble Commission.***

## 20. Reactive power performance of generators

During winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings, it is seen that MVAR data telemetry is poor/ inaccurate from most of the generating stations. For some of the generators it is seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 30 days (10 Nov 2023 – 10 Dec 2023) is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity	MVAR performance	Voltage absorptio
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					as per capability curve (on LV side)	e (-) Absorption (+) Generation (HV side data)	n above (in KV)
1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-150 to 100	410
		2	490		-147 to 294	-180 to 100	408
2	Singrauli NTPC	1	200	UP	-60 to 120	-20 to 10	404
		2	200		-60 to 120	-20 to 10	404
		3	200		-60 to 120	-20 to 5	402
		4	200		-60 to 120	-30 to 0	402
		5	200		-60 to 120	-30 to 10	402
		6	500		-150 to 300	-80 to 0	400
		7	500		-150 to 300	-80 to 10	402
3	Rihand NTPC	1	500	UP	-150 to 300	-110 to 0	398
		2	500		-150 to 300	-90 to 10	400
		3	500		-150 to 300	-120 to -20	400
		4	500		-150 to 300	-110 to 0	400
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-120 to 100	-
		2	600		-180 to 360	-100 to 50	-
5	Anpara C UP	1	600	UP	-180 to 360	-70 to 20	765
		2	600		-180 to 360	-90 to 40	765
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-210 to 0	410
		2	660		-198 to 396	-200 to 0	410
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-100 to 50	405
		2	660		-198 to 396	-100 to 70	405
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300		
		2	500		-150 to 300	-100 to 80	415

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		3	500		-150 to 300	-130 to 50	415
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-220 to 0	408
		2	700		-210 to 420	-230 to 0	405
10	MGTPS	1	660	Haryana	-198 to 396	-150 to 50	410
		2	660		-198 to 396	-150 to 80	410
11	Bawana	1	216	Delhi-NCR	-65 to 130	-60 to 40	418
		2	216		-65 to 130	-	-
		3	216		-65 to 130	-50 to 20	415
		4	216		-65 to 130	-	-
		5	253		-65 to 130	-50 to 60	415
		6	253		-65 to 130	-30 to 50	420
12	Bara PPGCL	1	660	UP	-198 to 396	-30 to 100	780
		2	660		-198 to 396	-40 to 80	775
		3	660		-198 to 396	-50 to 100	780
13	Lalitpur TPS	1	660	UP	-198 to 396	0 to 100	760
		2	660		-198 to 396	-70 to 100	765
		3	660		-198 to 396	-140 to 140	760
14	Anpara D UP	1	500	UP	-150 to 300	-110 to 0	755
		2	500		-150 to 300	-120 to 20	755, 765
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-60 to 0	400
		2	250		-75 to 150	-80 to 20	405
		3	250		-75 to 150	-40 to 20	405
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-60 to 100	410
		6	660		-198 to 396	-70 to 100	410

In 214 OCC meeting, it was discussed that:

For some of the generating stations it is seen that even after the machines are on bar, there is high voltage at these stations such as IGSTPP Jhajjar (425kV), CCGT Bawana (430kV), Bara (785kV).

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

As per the reactive energy charges account issued by NRPC for Week 20th to 26th November, 2023 (Week No. 35) & 13th to 19th November, 2023 (WEEK No. 34), following nodes/plants were payable for reactive power injection during high voltage in both weeks:

- ADANI HYBRID FOUR
- BUDHIL HEP
- N.F.L.
- NAPP
- RIHAND STPS
- SAINJ HEP
- SALAL HEP
- SORANG HEP

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

Some of the generating units such IGSTPP Jhajjar, Bawana need to explore possibility of further MVAR absorption. Generators may also set their Vs<sub>sch</sub> (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement.

IGSTPP representative stated that tap of one GT has been changed whereas during shutdown of other units, the tap positions will be changed and accordingly it is expected that the generating units may absorb slightly more MVAR.

Delhi SLDC was asked to take up the matter with Bawana regarding improving their reactive power absorption performance. Delhi SLDC stated that they have taken up the matter with Bawana and Bawana representative was asked to join the meeting. They will further take up the matter with CCGT-Bawana in Delhi state OCC meeting.

NRLDC asked Delhi SLDC to strongly take up the matter with CCGT-Bawana and if required and online meeting may be convened by Delhi SLDC. NRLDC is ready to jointly discuss the matter with DTL, Delhi SLDC and Bawana.

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

## **21. Frequent forced outages of transmission elements in the month of November'23:**



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The following transmission elements were frequently under forced outages during the month of **November'23**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Bhiwadi(PG)-HSIIDC Bawal(HV) (HVPNL) Ckt-1	4	PG/HR
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	6	Rajasthan/ RAPS
3	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	3	Rajasthan/ RAPS
4	400 KV Bareilly-Unnao (UP) Ckt-1	4	UP
5	400 KV Bareilly-Unnao (UP) Ckt-2	3	UP
6	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1	4	Rajasthan

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

#### Discussion during the meeting:

- **220 KV Bhiwadi(PG)-HSIIDC Bawal(HV) (HVPNL) Ckt-1:** *NRLDC representative raised concerned on frequent fault in line, non-submission of DR from haryana end and non-operation of A/R from Bhiwadi(PG) end. Haryana representative informed that follow-up has been taken up with the STU to take remedial actions to minimise the faults in line. It was agreed that DR of the tripping events would be shared at the earliest. POWERGRID representative stated that they will review the A/R operation at their end.*
- **400 KV Bareilly-Unnao (UP) Ckt-1&2:** *NRLDC representative raised concerned on frequent tripping of 400kV Bareilly-Unnao D/C due to protection related issues at Bareilly(UP) end. Issues has been highlighted in previous OCC meetings also, however no remedial actions has been taken yet. UP was requested to take follow-up and corrective actions on priority.*
- **400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1:** *NRLDC representative raised concerned on frequent tripping of line due to over voltage protection operation. It was highlighted that there are possibility of CVT error which further leading to tripping of line on over voltage protection. Rajasthan representative stated that they are taking follow-up actions with Suratgarh S/s however, no details received yet. Rajasthan agreed to share the root cause analysis detail w.r.t. line tripping on over voltage.*

**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**

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*into tripping of the transmission element thus reducing the reliability of the grid. All the utilities shall endeavor to keep auto re-closer in service and healthy condition of 220 kV and above voltage level transmission line. Issue of time syncing of DR/EL at many of the stations was highlighted, constituents were requested to ensure the time syncing of DR/EL. In addition, necessary actions also need to be taken to ensure the Right of Way and other operation & maintenance issues to minimize the frequent faults in the line. All utilities agreed for the same.*

*Healthiness of CVT also need to be ensured to avoid any unwanted tripping on over voltage due to CVT error.*

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

## **22. Multiple element tripping events in Northern region in the month of November'23:**

A total of 07 grid events occurred in the month of Nov'23 of which **01** are of GD-1 category, **04** are of GI-2 Category & **02** is of GI-1 category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at Annexure-B.IV of Agenda.

Maximum delayed clearance of fault observed was 440msec during event of multiple elements tripping at 220kV Ropar GGSTP (Punjab) on 30<sup>th</sup> November, 2023.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **02** events out of **07** grid events occurred in the month.

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

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

However, DR/EL of the following grid events not received for events at Ropar GGSTPP on 30<sup>th</sup> Nov'23, Dehar(BBMB) on 10<sup>th</sup> Nov'23 and Hinduan(Raj) on 03<sup>rd</sup> Nov'23. Detailed report received only for Grid event occurred at Tehri HEP on 30<sup>th</sup> Nov'23.

*Punjab representative informed that tripping report is yet to be received from STU, DR/EL have been submitted.*

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*BBMB representative informed that relays at their end are of HPSEBL and facility to extract the same is not available with BBMB. HPPTCL representative stated that they are taking follow-up with HPSEBL regarding the same. Details yet to be received from HPSEBL.*

*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.***

**23. Details of tripping of Inter-Regional lines from Northern Region for November' 23:**

A total of 04 inter-regional lines tripping occurred in the month of November'23. 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.

*Regarding HVDC Kurukshetra tripping POWERGRID representative informed that there was issue in differential CT, same has been rectified.*

*Regarding 400kV Bhinmal-Zerda ckt-1 tripping on over voltage, POWERGRID representative informed that over voltage protection operated at Zerda end and DT received at their end. He further informed that CVT has been changed at Zerda end as per information received from remote end S/s.*

***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.***

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***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.***

**24. Status of submission of DR/EL and tripping report of utilities for the month of November'23.**

The status of receipt of DR/EL and tripping report of utilities for the month of November'2023 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. Also, it is observed that reporting status has improved however, reporting status from Punjab, Delhi, Haryana, Rajasthan & J&K need further improvement.

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

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

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

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

**25. Mock black start exercises in NR:**

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As per Indian Electricity Grid Code (IEGC) clause 34.3

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

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

**The summary of last conducted mock black start exercise of ISGS hydro & gas stations is tabulated below:**

**Hydro Power Stations:**

Name of stations	Last conducted exercise date	Remark
Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	20 <sup>th</sup> Dec 2016	
Dhauliganga	28 <sup>th</sup> Dec 2021	Exercise carried out successfully
Bairasiul	30 <sup>th</sup> Nov 2022	
Sewa-2	29 <sup>th</sup> May 2022	
N. Jhakri and Rampur	09 <sup>th</sup> Dec 2022	
Karcham and Baspa	29 <sup>th</sup> Dec 2021	Exercise was partially successful
Budhil	—	
Parbati-3 and Sainj	22 <sup>nd</sup> Dec 2020	Black start of only Parbati-3 was carried out successfully. Sainj to explore blackstart capability.
Salal	02 <sup>nd</sup> Dec 2018	
Chamera-3	04 <sup>th</sup> Dec 2017	
Kishenganga	-	
Koteshwar	07 <sup>th</sup> Dec 2022	Exercise carried out successfully
Chamera-1 and Chamera-2	02 <sup>nd</sup> Dec 2022	
Malana-2, AD Hydro and Phozal	27 <sup>th</sup> Jan 2023	

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Tehri	14 <sup>th</sup> Dec 2022	
Koldam	11 <sup>th</sup> Nov 2022	Conducted successfully

**Gas Power Stations:**

Name of stations	Last conducted exercise date	Remark
Anta GPS	03 <sup>rd</sup> Mar 2023	(unsuccessful, Anta Unit couldn't able to charge the dead bus)
Auraiya GPS	-	
Dadri GPS	28 <sup>th</sup> Jan 2022 (without load)	Exercise carried out successfully

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

**Hydro Power Stations:**

Name of stations	Tentative Date for Mock Black start exercise (proposed by power plants)
Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	Jan'24
Dhauliganga	Jan'24
Bairasiul	Feb'24
Sewa-2	Feb'24
N. Jhakri and Rampur	Jan'24
Karcham and Baspa	
Budhil	
Parbati-3 and Sainj	Mar'24
Salal	Mar'24
Chamera-3	
Kishenganga	Jan'24
Koteshwar	Jan'24
Chamera-1 and Chamera-2	Jan'24
Malana-2, AD Hydro and Phozal	29 <sup>th</sup> Jan'24



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<b>Tehri</b>	Conducted successfully on 07 <sup>th</sup> Nov'23
<b>Koldam</b>	Jan'24

**Gas Power Stations:**

<b>Name of stations</b>	<b>Tentative Date for Mock Black start exercise (proposed by power plants)</b>
Anta GPS	12 <sup>th</sup> Feb'24
Auraiya GPS	11 <sup>th</sup> Mar'24
Dadri GPS	Feb'24

SLDC's may also carryout mock black-start of station in their respective control area & inform the tentative dates to the OCC as well as outcome of these exercises. The proposed Hydro Power Stations to undergo the exercise are as follows:

<b>S. NO.</b>	<b>Utility</b>	<b>Hydro Power Station</b>	<b>Installed Capacity(MW)</b>
1	J&K	Baglihar	3x150
2		Baglihar stage-2	3x150
3		Lower Jhelum	3x35
4		Upper Sindh	2x11+3x35
5	HP	Larji	3x42
6		Bhabha	3x40
7		Malana -I	2x43
8		Baspa	3x100
9	Punjab	Ranjit Sagar	4x150
11	Rajasthan	Mahi-I&II	2x25+2x45
12		Rana Pratap Sagar	4x43
13		Jawahar Sagar	3x33
14		Gandhi Sagar	5x23
15		Dholpur GPS	3x110
16		Ramgarh GPS	1x35.5+2x37.5+1x110

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17	UP	Rihand	6x50
18		Obra	3x33
19		Vishnuprayag	4x100
20		Srinagar (Alaknanda)	4x82.5
21	Uttarakhand	Gamma Infra	2x76+1x73
22		Shravanti	6x75
23		Ramganga	3x66
24		Chibro	4x60
25		Khodri	4x30
26		Chilla	4x36
27		Maneri Bhali-I&II	3x30+4x76
28	Delhi	IP Extn GTs	6x30+3x30
29		Pragati GPS	2x104.6+1x121.2
30		Rithala	3x36
31	Haryana	Faridabad GPS	2x137.75+1x156.07

*Details received from States:*

- *Rajasthan: Mock black start exercise of RPS HEP on 20<sup>th</sup> Dec'23.*
- *HP: Malana-I HEP black start exercise during last week of Dec'23*

*States were requested to share the schedule of Mock black start exercise of hydro/gas stations in their control area and also share the reports of exercises if any conducted.*

***Central sector Hydro/Gas generating stations were requested to share the tentative schedule for mock black start exercise of units of their respective control area.***

***SLDCs shall also conduct the mock black start of hydro/gas generating stations in their control area and submit the reports of black start exercise. SLDCs may also identify further generating stations/unit for black start exercise.***

***Rajasthan representative informed that mock black start exercise of RPS HEP has been postponed to February 2024 due to high demand season.***

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***HP representative informed that Malana-I HEP has gone under annual maintenance. Tentative schedule for mock black start exercise is last week of January 2024.***

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

**26. Revision of document for Reactive Power Management of Northern Region:**

NRLDC has been issuing 'Reactive Power document of Northern Region' on annual basis. Reactive Power Management document for Northern region was last revised on 31<sup>st</sup> Dec 2022 & updated document link is as below:

<https://nrlDC.in/download/nr-reactive-power-management-2023/?wpdmdl=11903>

Document is password protected and password was already informed to all the NR constituents through letter dated 30<sup>th</sup> Dec 2022.

In view of new addition/modification of transmission & generation element in NR grid since Dec'22, the document is being review for update..

***Details received from HP, Uttarakhand, Punjab and Delhi. Constituents were requested to share the details at the earliest on priority. Constituents agreed for the same.***

***OCC forum requested constituents to provide the feedback, suggestion and updated information at the earliest.***

**27. Commissioning of station event logger at 220kV & above stations:**

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. Therefore, availability of disturbance recorder with standardisation and correct nomenclature and station event logger details are verified and ensured during FTC of generation and transmission elements. However, it is observed that, many of the old stations don't have facility of station event logger. Following stations have submitted the undertaking during FTC to install the station event logger in near future:

- a) 400/220kV Jodhpur(Rajasthan)
- b) 400/220kV Muzaffarnagar(UP)
- c) 400/220kV Chittorgarh(Rajasthan)

***Rajasthan representative informed that issue has been taken up with protection wing. Timeline for the installation of station event logger not received yet.***

***OCC forum requested constituents to review the availability of station event logger at their respective stations and taken necessary follow-up actions for expeditious installation of station event logger.***

**Follow up issues from previous OCC meetings**

Annexure-A. I

1	Down Stream network by State utilities from ISTS Station	Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.	List of downstream networks is enclosed in <b>Annexure-A. I. I.</b>																																								
2	Progress of installing new capacitors and repair of defective capacitors	Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.	<p>Data upto following months, received from various states / UTs:</p> <table border="1" data-bbox="951 801 1548 1070"> <tr><td>⊙ CHANDIGARH</td><td>Sep-2019</td></tr> <tr><td>⊙ DELHI</td><td>Sep-2023</td></tr> <tr><td>⊙ HARYANA</td><td>Sep-2023</td></tr> <tr><td>⊙ HP</td><td>Oct-2023</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Not Available</td></tr> <tr><td>⊙ PUNJAB</td><td>Sep-2023</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Nov-2023</td></tr> <tr><td>⊙ UP</td><td>Nov-2023</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Nov-2023</td></tr> </table> <p>All States/UTs are requested to update status on monthly basis.</p>	⊙ CHANDIGARH	Sep-2019	⊙ DELHI	Sep-2023	⊙ HARYANA	Sep-2023	⊙ HP	Oct-2023	⊙ J&K and LADAKH	Not Available	⊙ PUNJAB	Sep-2023	⊙ RAJASTHAN	Nov-2023	⊙ UP	Nov-2023	⊙ UTTARAKHAND	Nov-2023																						
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3	Healthiness of defence mechanism: Self-certification	<p>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”.</p> <p>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</p>	<p>Data upto following months, received from various states / UTs:</p> <table border="1" data-bbox="951 1261 1548 1563"> <tr><td>⊙ CHANDIGARH</td><td>Not Available</td></tr> <tr><td>⊙ DELHI</td><td>Sep-2023</td></tr> <tr><td>⊙ HARYANA</td><td>Sep-2023</td></tr> <tr><td>⊙ HP</td><td>Oct-2023</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Not Available</td></tr> <tr><td>⊙ PUNJAB</td><td>Sep-2023</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Sep-2023</td></tr> <tr><td>⊙ UP</td><td>Sep-2023</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Sep-2023</td></tr> <tr><td>⊙ BBMB</td><td>Sep-2023</td></tr> </table> <p>All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quarterly basis for the rest .</p> <p>Status:</p> <table border="1" data-bbox="951 1776 1548 2078"> <tr><td>⊙ CHANDIGARH</td><td>Not Available</td></tr> <tr><td>⊙ DELHI</td><td>Increased</td></tr> <tr><td>⊙ HARYANA</td><td>Increased</td></tr> <tr><td>⊙ HP</td><td>Increased</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Increased</td></tr> <tr><td>⊙ PUNJAB</td><td>Increased</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Increased</td></tr> <tr><td>⊙ UP</td><td>Increased</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Increased</td></tr> <tr><td>⊙ BBMB</td><td>Increased</td></tr> </table> <p>J&amp;K and LADAKH were requested to update status for increasing settings of UFRs.</p>	⊙ CHANDIGARH	Not Available	⊙ DELHI	Sep-2023	⊙ HARYANA	Sep-2023	⊙ HP	Oct-2023	⊙ J&K and LADAKH	Not Available	⊙ PUNJAB	Sep-2023	⊙ RAJASTHAN	Sep-2023	⊙ UP	Sep-2023	⊙ UTTARAKHAND	Sep-2023	⊙ BBMB	Sep-2023	⊙ CHANDIGARH	Not Available	⊙ DELHI	Increased	⊙ HARYANA	Increased	⊙ HP	Increased	⊙ J&K and LADAKH	Increased	⊙ PUNJAB	Increased	⊙ RAJASTHAN	Increased	⊙ UP	Increased	⊙ UTTARAKHAND	Increased	⊙ BBMB	Increased
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4	<p>Status of FGD installation vis-à-vis installation plan at identified TPS</p>	<p>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.</p> <p>Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.</p>	<p>Status of the information submission (month) from states / utilities is as under:</p> <table border="1" data-bbox="951 342 1549 501"> <tr><td>⊙ HARYANA</td><td>Sep-2023</td></tr> <tr><td>⊙ PUNJAB</td><td>Oct-2023</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Jul-2023</td></tr> <tr><td>⊙ UP</td><td>Oct-2023</td></tr> <tr><td>⊙ NTPC</td><td>Feb-2023</td></tr> </table> <p>FGD status details are enclosed as <b>Annexure-A. I. II.</b></p> <p>All States/utilities are requested to update status of FGD installation progress on monthly basis.</p>	⊙ HARYANA	Sep-2023	⊙ PUNJAB	Oct-2023	⊙ RAJASTHAN	Jul-2023	⊙ UP	Oct-2023	⊙ NTPC	Feb-2023																								
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5	<p>Submission of breakup of Energy Consumption by the states</p>	<p>All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:</p> <table border="1" data-bbox="389 869 935 1037"> <thead> <tr> <th>Category→</th> <th>Consumption by Domestic Loads</th> <th>Consumption by Commercial Loads</th> <th>Consumption by Agricultural Loads</th> <th>Consumption by Industrial Loads</th> <th>Traction supply load</th> <th>Miscellaneous / Others</th> </tr> </thead> <tbody> <tr> <td>&lt;Month&gt;</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Category→	Consumption by Domestic Loads	Consumption by Commercial Loads	Consumption by Agricultural Loads	Consumption by Industrial Loads	Traction supply load	Miscellaneous / Others	<Month>							<p>Status of the information submission (month) from states / utilities is as under:</p> <table border="1" data-bbox="951 837 1549 1160"> <thead> <tr> <th>State / UT</th> <th>Upto</th> </tr> </thead> <tbody> <tr><td>⊙ CHANDIGARH</td><td>Not Submitted</td></tr> <tr><td>⊙ DELHI</td><td>Sep-23</td></tr> <tr><td>⊙ HARYANA</td><td>Sep-23</td></tr> <tr><td>⊙ HP</td><td>Sep-23</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Not Submitted</td></tr> <tr><td>⊙ PUNJAB</td><td>Sep-23</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Oct-23</td></tr> <tr><td>⊙ UP</td><td>Jul-23</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Sep-23</td></tr> </tbody> </table> <p>J&amp;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</p>	State / UT	Upto	⊙ CHANDIGARH	Not Submitted	⊙ DELHI	Sep-23	⊙ HARYANA	Sep-23	⊙ HP	Sep-23	⊙ J&K and LADAKH	Not Submitted	⊙ PUNJAB	Sep-23	⊙ RAJASTHAN	Oct-23	⊙ UP	Jul-23	⊙ UTTARAKHAND	Sep-23
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6	<p>Information about variable charges of all generating units in the Region</p>	<p>The variable charges detail for different generating units are available on the MERIT Order Portal.</p>	<p>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</p>																																		
7	<p>Status of Automatic Demand Management System in NR states/UT's</p>	<p>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:</p>	<p>Status:</p> <table border="1" data-bbox="951 1518 1549 1966"> <tr><td>⊙ DELHI</td><td>Scheme Implemented but operated in manual mode.</td></tr> <tr><td>⊙ HARYANA</td><td>Scheme not implemented</td></tr> <tr><td>⊙ HP</td><td>Scheme not implemented</td></tr> <tr><td>⊙ PUNJAB</td><td>Scheme not implemented</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Under implementation. Likely completion schedule is 31.12.2023.</td></tr> <tr><td>⊙ UP</td><td>Scheme implemented by NPCIL only</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Scheme not implemented</td></tr> </table>	⊙ DELHI	Scheme Implemented but operated in manual mode.	⊙ HARYANA	Scheme not implemented	⊙ HP	Scheme not implemented	⊙ PUNJAB	Scheme not implemented	⊙ RAJASTHAN	Under implementation. Likely completion schedule is 31.12.2023.	⊙ UP	Scheme implemented by NPCIL only	⊙ UTTARAKHAND	Scheme not implemented																				
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8	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVar TCR	500 MVar TCR at Kurukshetra has been commissioned on dated 15th December 2023
ii	DTL	Peeragarhi	1x50 MVar at 220 kV	1x50 MVar Reactor at Peeragarhi has been commissioned on dated 18.09.2023
iii	DTL	Harsh Vihar	2x50 MVar at 220 kV	2x50 MVAR Reactor at Harsh Vihar has been commissioned on dated 31th March 2023.
iv	DTL	Mundka	1x125 MVar at 400 kV & 1x25 MVar at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVar at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVar at 220 kV	Bay work completed on 07.11.2023. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVar at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVar at 400 kV & 1x25 MVar at 220 kV	400kV Reactors - 1x125 MVAR Reactor at Dhuri has been commissioned on dated 30th March 2023. 220kV Reactors - 1x25 MVAR Reactor at Dhuri has been commissioned on dated 27th January 2023.
ix	PUNJAB	Nakodar	1x25 MVar at 220 kV	1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February 2023.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	SLDC informed that PTCUL has intimated that tender has been scrapped. Retendering will
xi	RAJASTHAN	Akal	1x25 MVar	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVar	1x25 MVAR Reactor at Bikaner has been commissioned on dated 24th June 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVar	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVar	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanochar Electricals Ltd. Schedule time is 18 months. Likely to be commissioned by 31.01.2024.
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 Kanochar Electricals Ltd. Schedule time is 18 months. Likely to be commissioned by 31.01.2024.



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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	-	02 No. of bays shall be utilized for LILO-II of 220kV Jatwal-Bishnah Transmission Line, the work of which is delayed due to severe ROW problem at Location No. 1 near Grid Substation Jatwal where the Land owner is not allowing erection of Tower. The Deputy Commissioner Samba has been approached for intervention and facilitating the erection of Tower. He is persuading the Land owner to get the work completed. Updated in 210th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	End of 2023	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. The work is in progress and expected to be commissioned by the end of 2023. Updated in 204th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Jul'24	Updated in 205th OCC by HVPNL
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 7	• 220 kV D/C Shahjahanpur (PG) - Gola line	Commissioned	Energization date: 26.10.2023 updated by UPPTCL in 215th OCC
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• 220 kV Hamirpur-Dehan D/c line	Commissioned	HPPTCL has commissioned the Planned 220kV Dehan-Hamirpur TL utilizing 2 No. 220kV Bays. Commissioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Dec'23	Issue related to ROW as intimated in 208th OCC by HVPNL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.
				• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 2 Under Implementation:2	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Jan'24	Updated in 214th OCC by HPPTCL
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	HPPTCL to update the status.
				• Network to be planned for 2 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Dec'23	Forest approval is pending for 220 KV Pali - Sector 56 D/C line. Updated in 205th OCC by HVPNL
				• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	Dec'23	Updated in 205th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of both circuits of 220kV D/c Sohna-Rangla Rajpur at Roj Ka Meo line at 400kV Sohna Road	Jan'24	Updated in 208th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. <b>Status:-</b> Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Approved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commissioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
16	400/220kV Sonapat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonapat	31.12.2023	Updated in 205th OCC by HVPNL. <b>Status:</b> Work was held up due to ROW at T.L. No. 7,8,11,12 & 13 by the farmers of Jajji villagers during July'23 and now the matter has been resolve and work under progress from 01.08.2023. The erection work of T.no. 1 is pending due to non availability of shut down at 220KV Mohana-Smk line and 220KV Jajji-Mohana line. • PLCC protection coupler and Forest approval is also pending.
				• Sonapat - HSIISC Rai 220kV D/c line	Mar'24	Updated in 212th OCC by HVPNL. <b>Status:</b> Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely. Now, the matter is under approval from competent authority of Nigam.,
				• Sonapat - Kharkhoda Pocket A 220kV D/c line	31.07.2024	Updated in 212th OCC by HVPNL. <b>Status:</b> Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. The Survey work has been completed.
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work order is finalized as updated in 201st OCC by RVPNL. 5 months from layout finalization.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jalandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL.  • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years).  • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Dec'23	SCDA System & PLCC work pending at 220 KV S/stn. Rajokheri Updated in 209th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Dec'23	Updated in 211th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Feb'24	Updated in 211th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Jul'24	Updated in 205th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Under Implementation:2	• Amritsar – Patti 220kV S/c line	Jan'24	Work is near completion expected to be completed by January 2024. Updated in 214th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	Jan'24	Work is near completion expected to be completed by January 2024. Updated in 214th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahadurgarh S/s	Commissioned: 4 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL	31.03.2024	Updated in 205th OCC by HVPNL. <b>Status:</b> Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	31.03.2024	Updated in 205th OCC by HVPNL. <b>Status:</b> Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	31.07.2024	Updated in 212th OCC by HVPNL. <b>Status:</b> Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. The Survey work has been completed.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Dec'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed only jumpering remains to be done.Updated in 214th OCC by PSTCL.
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Transmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is ready for commissioning. Case for Initial Charging is in process at NRLDC..Updated in 214th OCC by HPPTCL
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

# 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)**

GGSSSTP, 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)

<b>Adani Power Ltd.</b>	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
<b>APCPL</b>	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)
<b>GVK Power Ltd.</b>	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
<b>HGPCL</b>	PANIPAT TPS U#6 (Target: 31-12-2022), PANIPAT TPS U#7 (Target: 31-12-2022), PANIPAT TPS U#8 (Target: 31-12-2022), RAJIV GANDHI TPS U#1 (Target: 31-12-2024), RAJIV GANDHI TPS U#2 (Target: 31-12-2024), YAMUNA NAGAR TPS U#1 (Target: 31-12-2024), YAMUNA NAGAR TPS U#2 (Target: 31-12-2024)

**NTPC**

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

<b>L&amp;T Power Development Ltd (Nabha)</b>	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
<b>Lalitpur Power Gen. Company Ltd.</b>	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
<b>Lanco Anpara Power Ltd.</b>	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
<b>Prayagraj Power Generation Company Ltd.</b>	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
<b>PSPCL</b>	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)

<b>Rosa Power Supply Company</b>	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)
<b>RRVUNL</b>	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)
<b>Talwandi Sabo Power Ltd.</b>	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)
<b>UPRVUNL</b>	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		
14	JKPTCL						

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

\*The transmissi

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## Proposed SPS for 2x315 MVA, 400/220 KV ICTs at 400 KV GSS Hindaun

### 1. Details of Installed ICTs at 400kV Hindaun and Transmission Lines

- Percentage impedance of 315 MVA, 400/220/33 KV (Telk –Make) ICT-Ist is 11.86%.
- Percentage impedance of 315 MVA, 400/220/33 KV, (CGL –Make) ICT-IIInd is 13.04%.
- Load sharing of ICT-I is more in respect of ICT-II about 20-30MVA due to different percentage impedance.
- During Overloading condition, 315 MVA, 400/220/33 KV (Telk –Make) ICT-Ist will trip first. Auxiliary supply of 400 KV GSS Hindaun is fed from 400/220/33 KV ICT-Ist. Hence, when ICT-Ist trips then auxiliary supply of GSSs also fail which is restored using DG set.
- Power map of transmission system associated with 400 kV GSS Hindaun is shown in Fig. 1

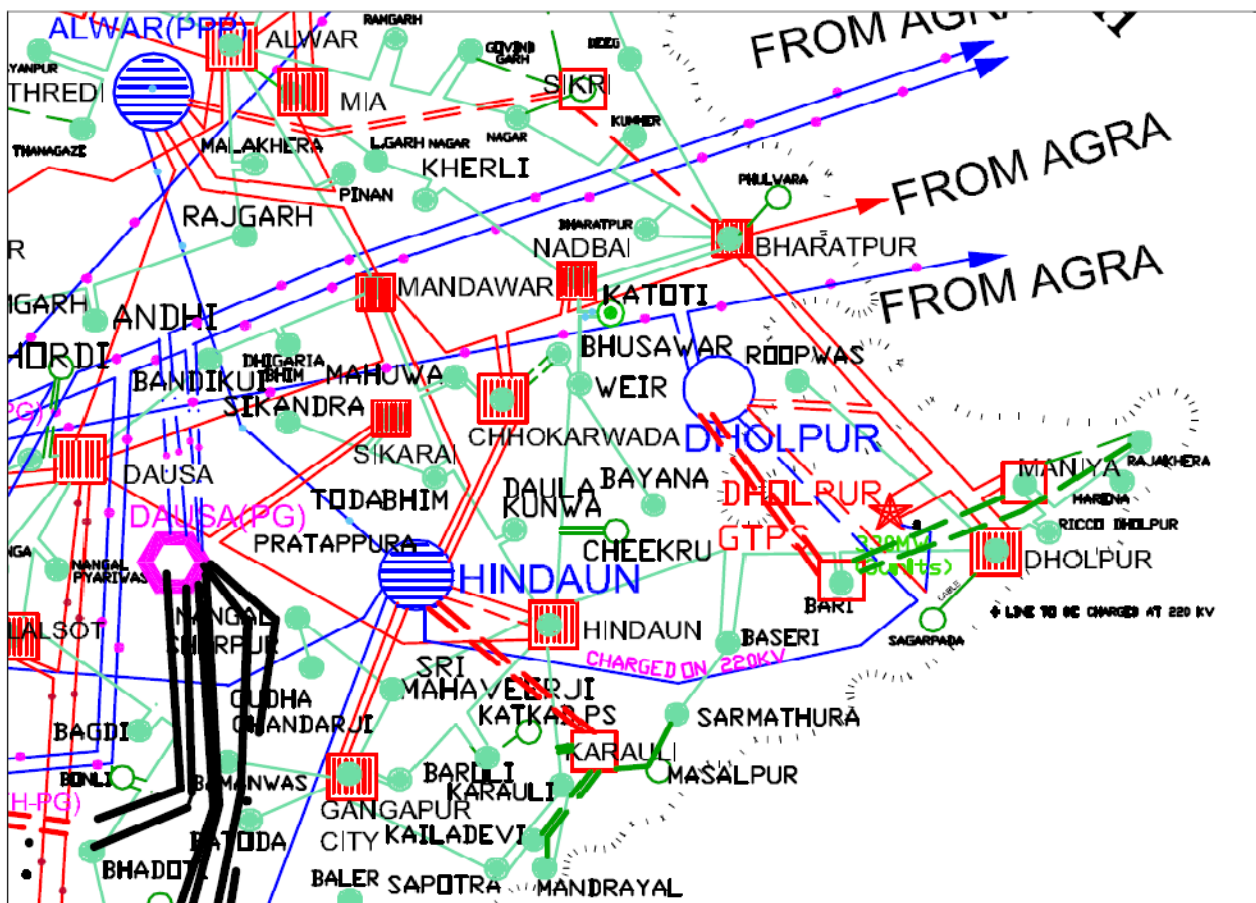


Figure 1: Power map of transmission system associated with 400 kV GSS Hindaun

**2. Load Details of Installed ICTs and Transmission lines Associated with 400kV GSS Hindaun and Transmission Lines**

- Peak loads recorded on 400/220 kV ICTs and 400kV and 220 kV lines associated with 400 KV GSS, RVPNL, Hindaun are detailed below in Table 1.
- Proposed groups of 220 kV lines to be tripped for SPS are also shown in Table 1.

**Table 1: Load Details of ICTs and Transmission Lines Associated with 400 kV GSS Hindaun**

S. No.	Name of Lines/ICTs	Peak Load (MVA)	Average Load (MVA)	Remark
1	315 MVA, 400/220/33 kV ICT-I	308	269	Load sharing of ICT-I is more in respect of ICT-II about 20-30MVA due to different percentage impedance.
2	315 MVA, 400/220/33 kV ICT-II	276	243	
3	400 kV S/C Hindaun-DCCP line charged on 220 kV voltage	208	188	Proposed for SPS
4	220 kV Hindaun-Gangapur Line CKT-I	93	69	Proposed for SPS
5	220 kV Hindaun-Gangapur Line CKT-II	79	68	Proposed for SPS
6	220 kV Hindaun-Mandawar Line	82	55	Not included in SPS
7	220 kV Hindaun-Chhonkarwada Line CKT-I	49	32	Not included in SPS
8	220 kV Hindaun-Chhonkarwada Line CKT-II	51	30	Not included in SPS
9	220 kV S/C Hindaun (400 kV GSS)-Hindaun (220 kV GSS) line (Interconnector-I)	252	205	Tripping of this line will result in overloading of 220 kV D/C Bassi-Dausa line. Hence, this line is not considered for SPS. Not included in SPS

**3. Proposed SPS for ICTs at 400 kV GSS Hindaun**

- After detailed analysis of above loading conditions and grid power flow pattern, following lines are considered for tripping for SPS of ICTs:-
  - 400 kV S/C Hindaun-DCCP line charged on 220 kV voltage
  - 220 kV Hindaun-Gangapur Line CKT-I
  - 220 kV Hindaun-Gangapur Line CKT-II
- Tripping command for 220 kV lines are to be taken from overload relay/over current back up relay on 400 kV and/or 220 kV side of ICTs considering 100% loading of 315 MVA, 400/220/33 KV (Telk –Make) ICT-I and 90% loading of 315 MVA, 400/220/33 KV (CGL –Make) ICT-II with appropriate time delay (3 to 5 second) to avoid tripping

during the through faults. Further, time grading of the back-up elements may also be correlated for time delay of overloading.

- Schematic diagram for tripping of 220 kV lines included in SPS for 2x315 MVA, 400/220kV ICTs at 400 kV GSS Hindaun is shown below:-

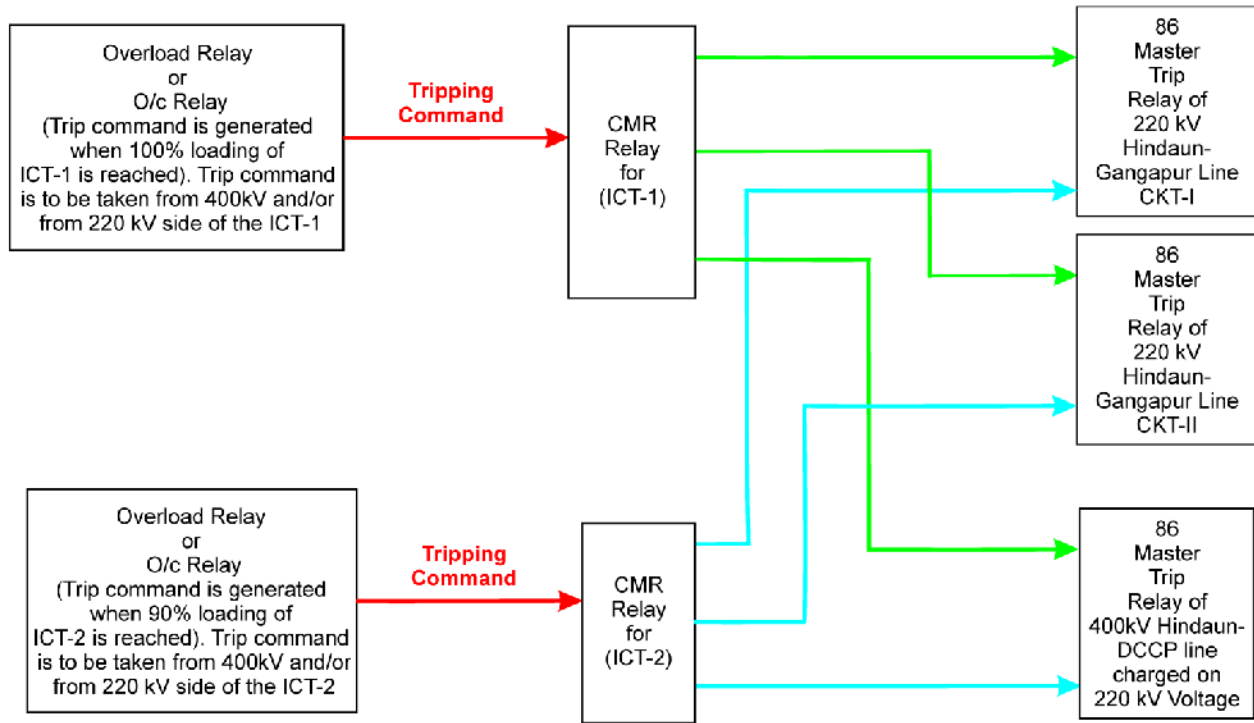


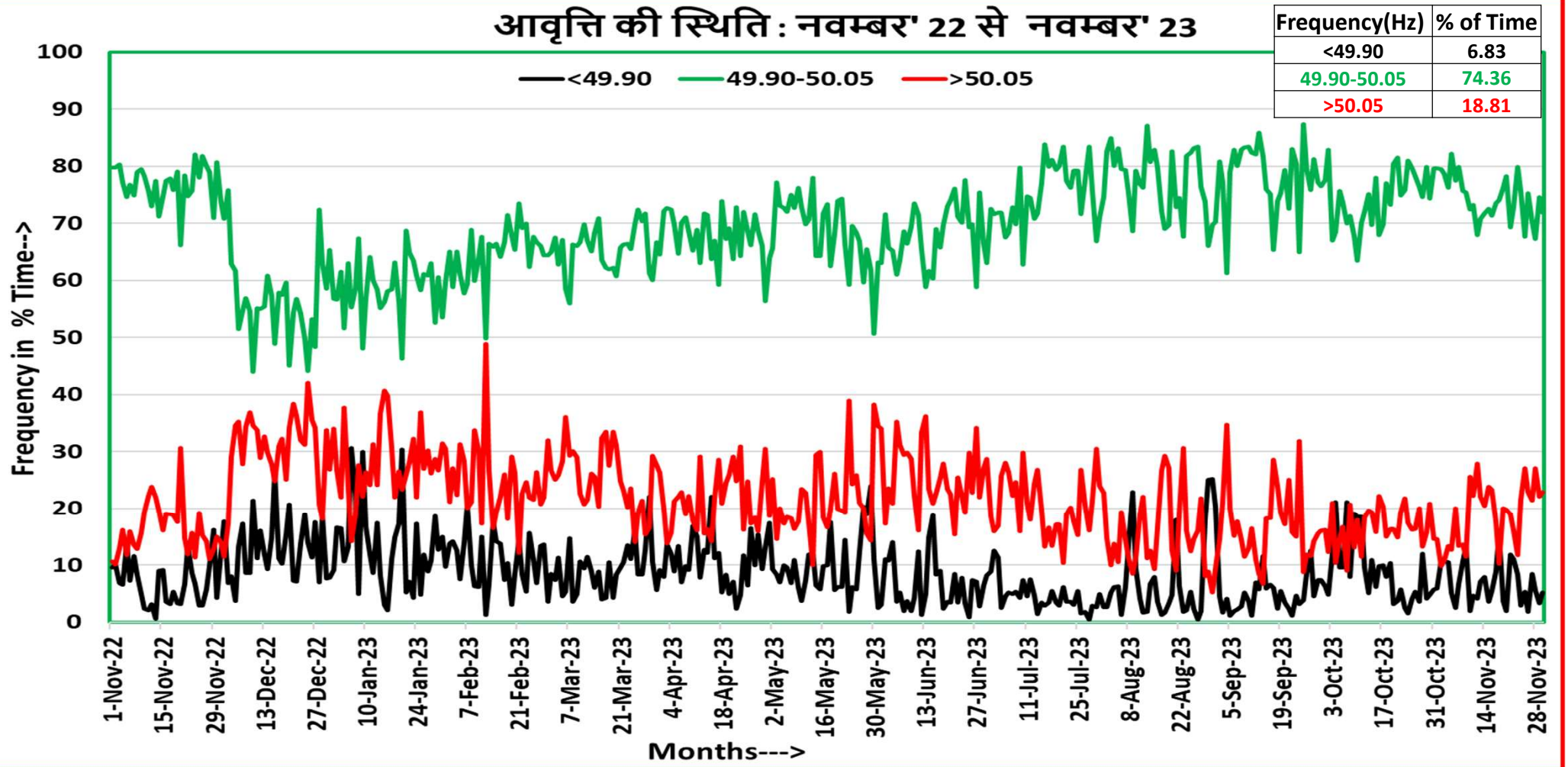
Figure 2: Schematic diagram of proposed logics for SPS of 2x315MVA, 400/220 kV ICTs at 400 kV GSS Hindaun



**प्रचालन समन्वय उपसमिति की बैठक  
नवम्बर- 2023**

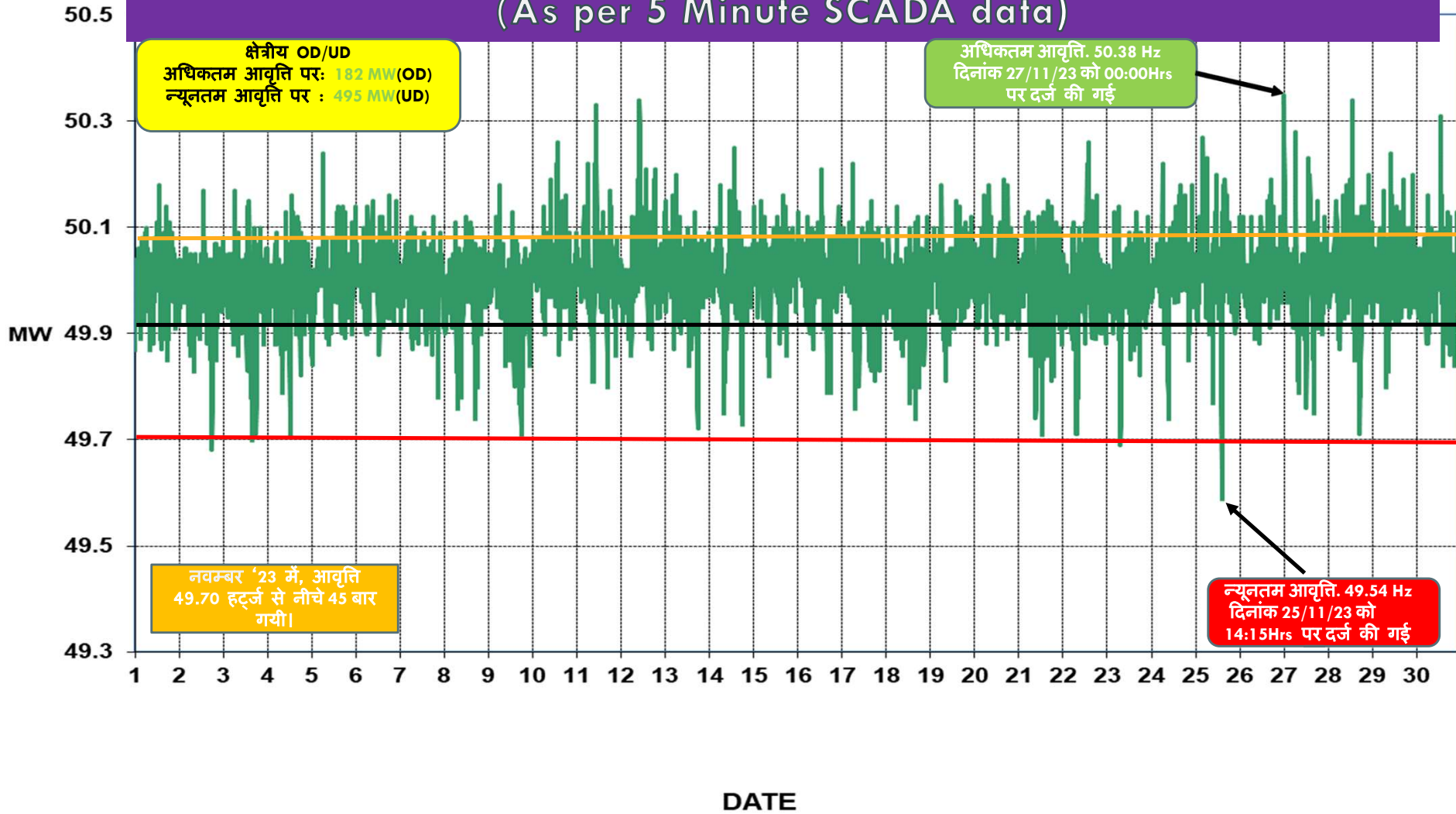
# आवृत्ति की स्थिति: नवम्बर -2022 से 2023

## आवृत्ति की स्थिति : नवम्बर' 22 से नवम्बर' 23





# नवम्बर -2023 के दौरान आवृत्ति की स्थिति (As per 5 Minute SCADA data)



# पिछले एक साल में आवृत्ति की स्थिति

आवृत्ति बैंड	नवम्बर 2022	दिसंबर 2022	जनवरी 2023	फ़रवरी 2023	मार्च 2023	अप्रैल 2023	मई 2023	जून 2023	जुलाई 2023	अगस्त 2022	सितम्बर 2023	अक्टूबर 2023	नवम्बर 2023
< 49.7 Hz(%)	0.13	1.11	1.25	0.32	0.16	0.24	0.24	0.22	0.09	0.47	0.11	0.53	0.10
<49.8 Hz(%)	0.76	3.96	3.60	1.95	1.26	1.68	1.48	0.86	0.66	1.63	0.57	1.99	0.96
<49.9 Hz(%)	6.70	12.78	13.30	10.75	9.03	10.54	9.83	8.42	4.60	7.11	5.21	8.87	6.83
<b>49.90-50.05 Hz(%)</b>	<b>77.00</b>	<b>57.39</b>	<b>58.70</b>	<b>64.68</b>	<b>63.84</b>	<b>67.90</b>	<b>68.48</b>	<b>67.83</b>	<b>74.96</b>	<b>77.25</b>	<b>77.86</b>	<b>74.42</b>	<b>74.36</b>
50.05-50.10 Hz(%)	13.88	11.99	15.26	14.59	17.86	12.54	13.25	15.59	15.64	13.28	13.32	13.53	13.74
>50.10 Hz(%)	2.30	17.84	12.34	8.49	7.99	6.46	8.44	8.15	4.79	2.35	3.61	3.18	5.06
>50.20 Hz(%)	0.12	4.07	1.83	1.49	1.28	0.88	0.77	1.09	0.80	0.23	0.32	0.14	0.66
<b>औसत आवृत्ति</b>	50.00	50.00	50.00	50.00	50.00	49.99	49.99	50.01	50.01	50.00	50.00	49.99	50.000

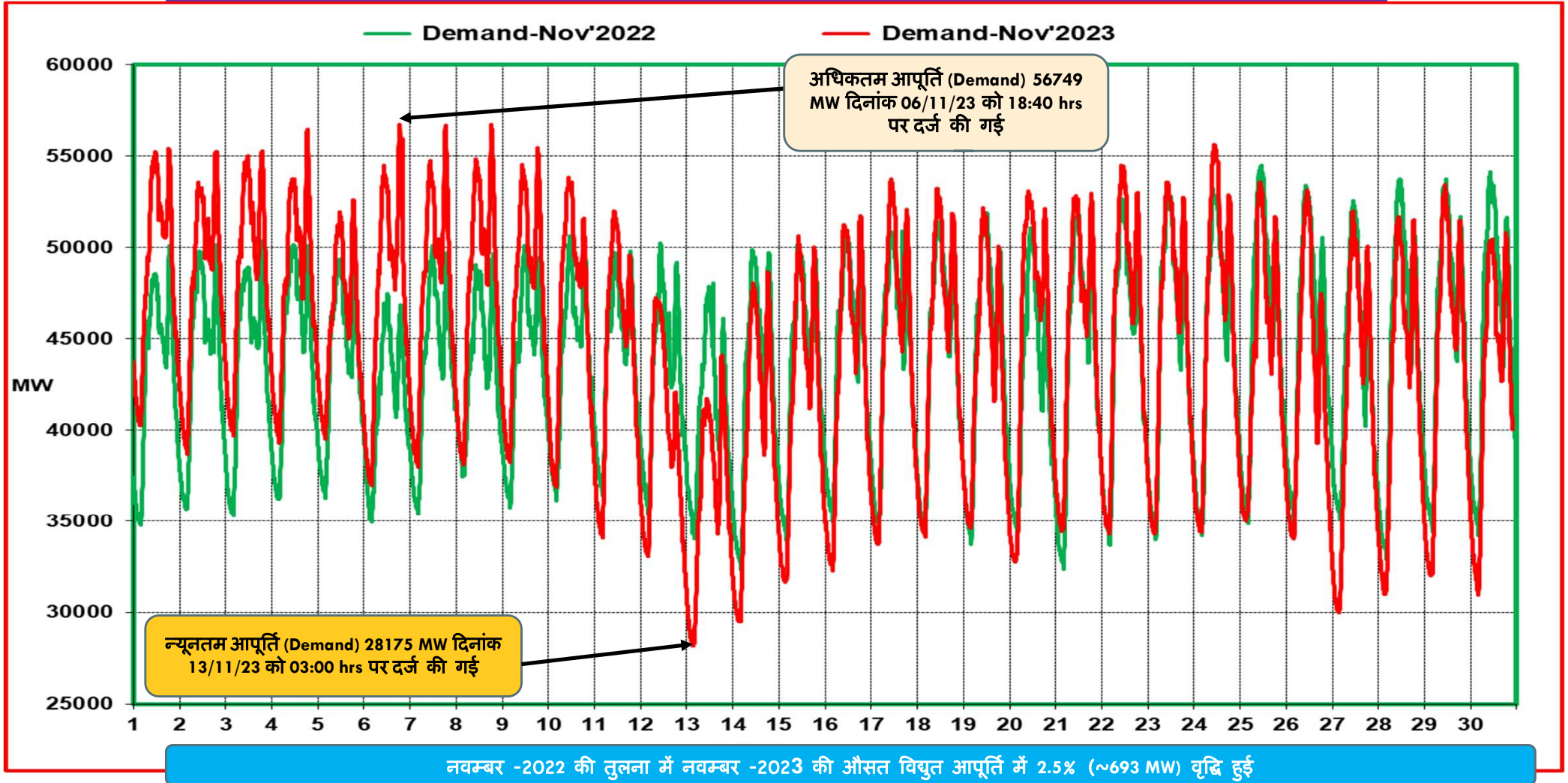
नवम्बर-2023 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)



राज्य	अधिकतम मांग (MW) (in Nov'23)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Oct'23)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Nov'23)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Oct'23)	दिनांक
पंजाब	7572	29.11.23 at 09:30	15293	24.06.23 को 11:45 बजे	142.8	29.11.2023	344.1	24.06.2023
हरियाणा	7685	27.11.23 at 12:45	12768	28.06.22 को 11:56 बजे	150.0	01.11.2023	273.1	18.08.2023
राजस्थान	16409	24.11.23 at 10:00	17840	02.09.23 को 14:45 बजे	324.0	07.11.2023	371.6	04.09.2023
दिल्ली	4320	01.11.23 at 12:31	7695	29.06.22 को 15:10 बजे	81.5	01.11.2023	153.5	28.06.2022
उत्तर प्रदेश	19033	08.11.23 at 18:27	28284	24.07.23 को 21:43 बजे	348.6	01.11.2023	580	03.09.2023
उत्तराखंड	2141	09.11.23 at 07:00	2594	14.06.22 को 21:00 बजे	40.7	10.11.2023	56.2	17.06.2023
हिमाचल प्रदेश	1977	25.11.23 at 08:00	2071	06.01.23 को 09:45 बजे	35.0	09.11.2023	37.1	14.09.2023
जम्मू और कश्मीर (UT) तथा लद्दाख (UT)	2710	20.11.23 at 08:00	3044	02.02.23 को 20:00 बजे	55.2	27.11.2023	64.6	20.01.2023
चंडीगढ़	205	19.11.23 at 07:45	426	08.07.21 को 15:00 बजे	3.6	10.11.2023	8.4	08.07.2021
उत्तरी क्षेत्र #	56749	06.11.23 at 18:40	81048	04.09.23 को 14:50 बजे	1165.3	01.11.2023	1792.7	04.09.2023

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

# क्षेत्रीय विद्युत आपूर्ति (Demand) नवम्बर 2022 बनाम नवम्बर 2023 (As per 5 Minute SCADA data)



## उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि( % में) नवम्बर-2023/ नवम्बर-2022 / नवम्बर-2021

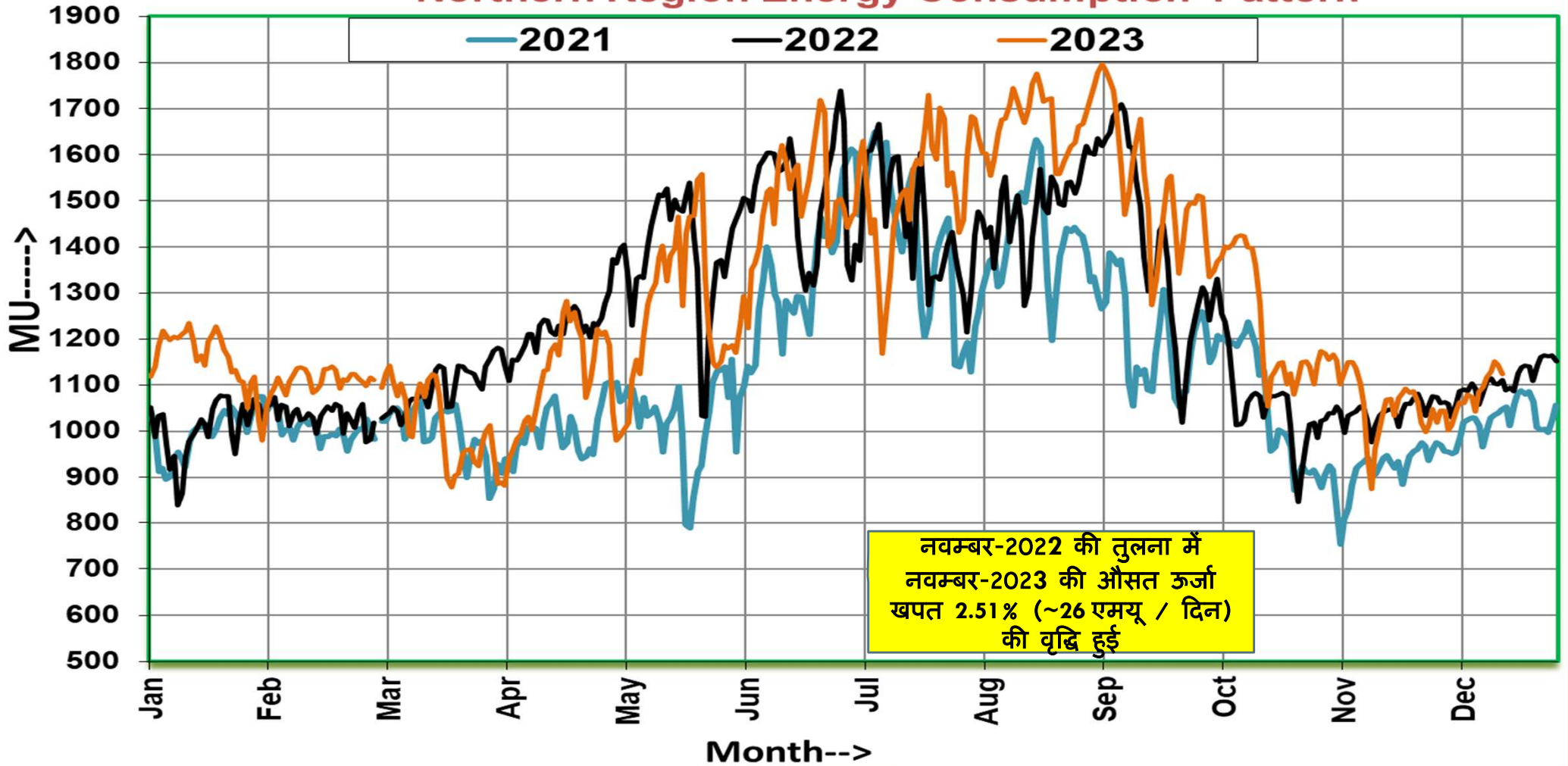
औसत ऊर्जा खपत में वृद्धि(% में)



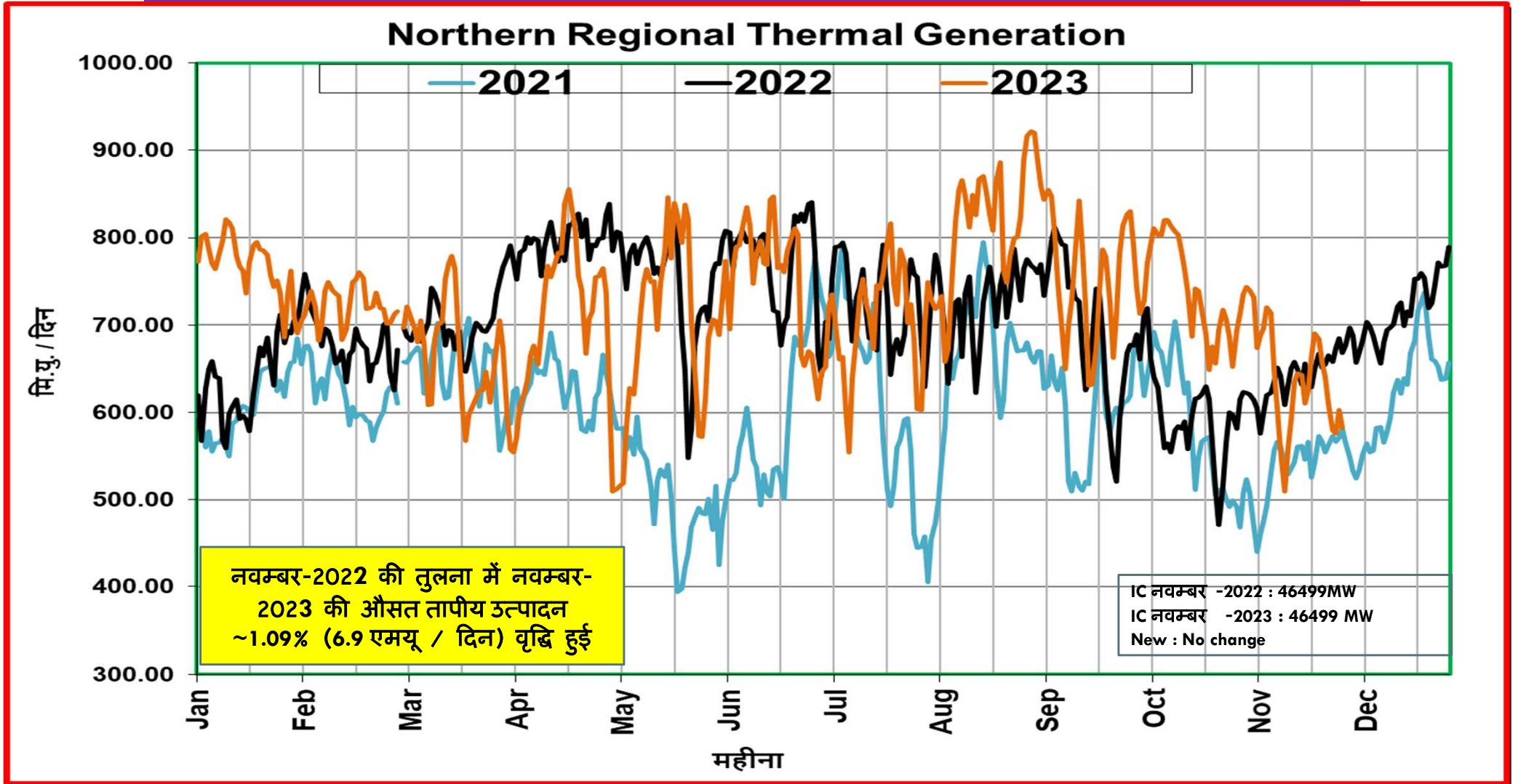


# उत्तरी क्षेत्र की ऊर्जा खपत(MUs)

## Northern Region Energy Consumption Pattern

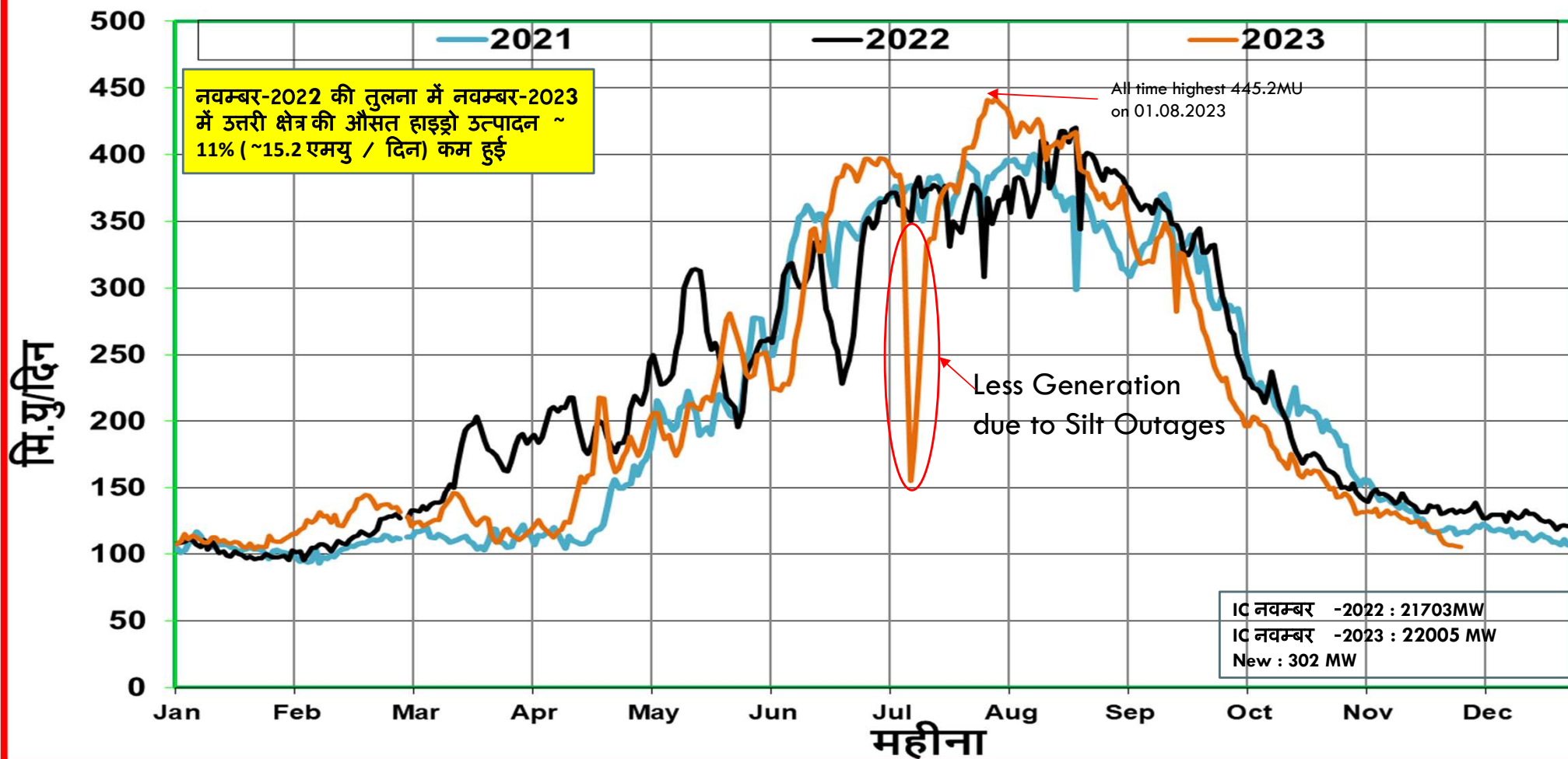


## उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति (Mus/Day)



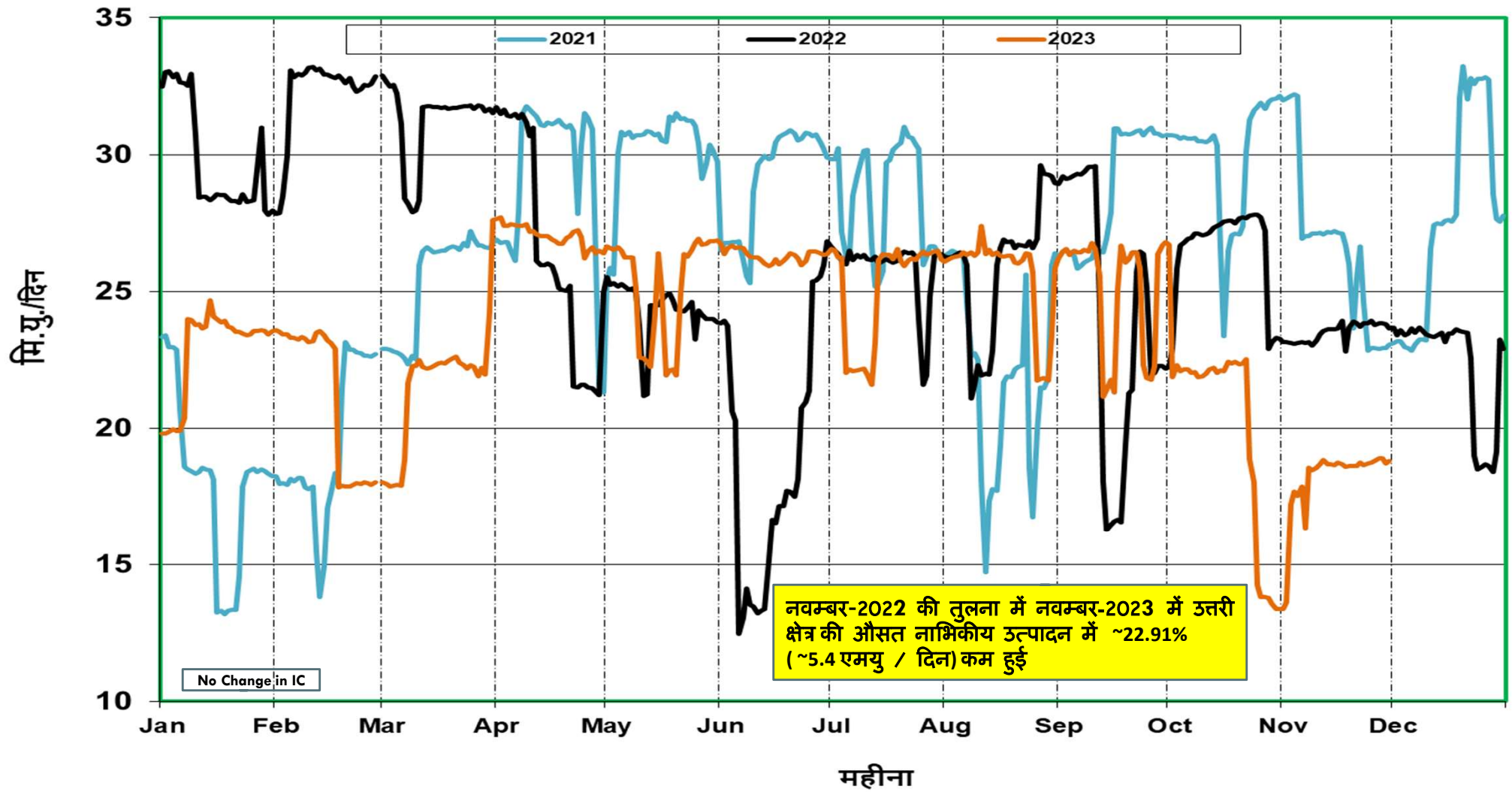
# उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति (Mus/Day)

## Northern Regional Hydro Generation

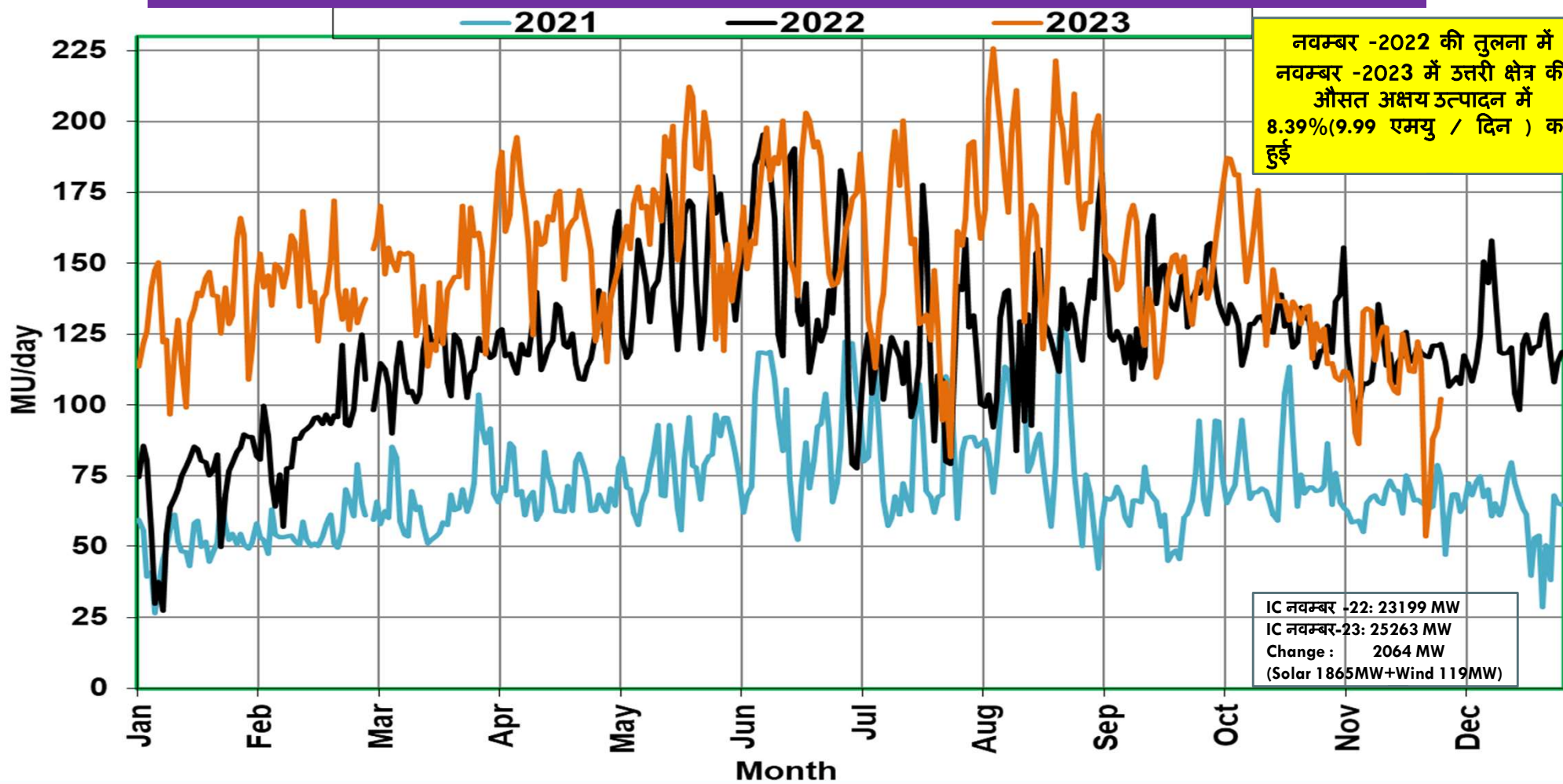




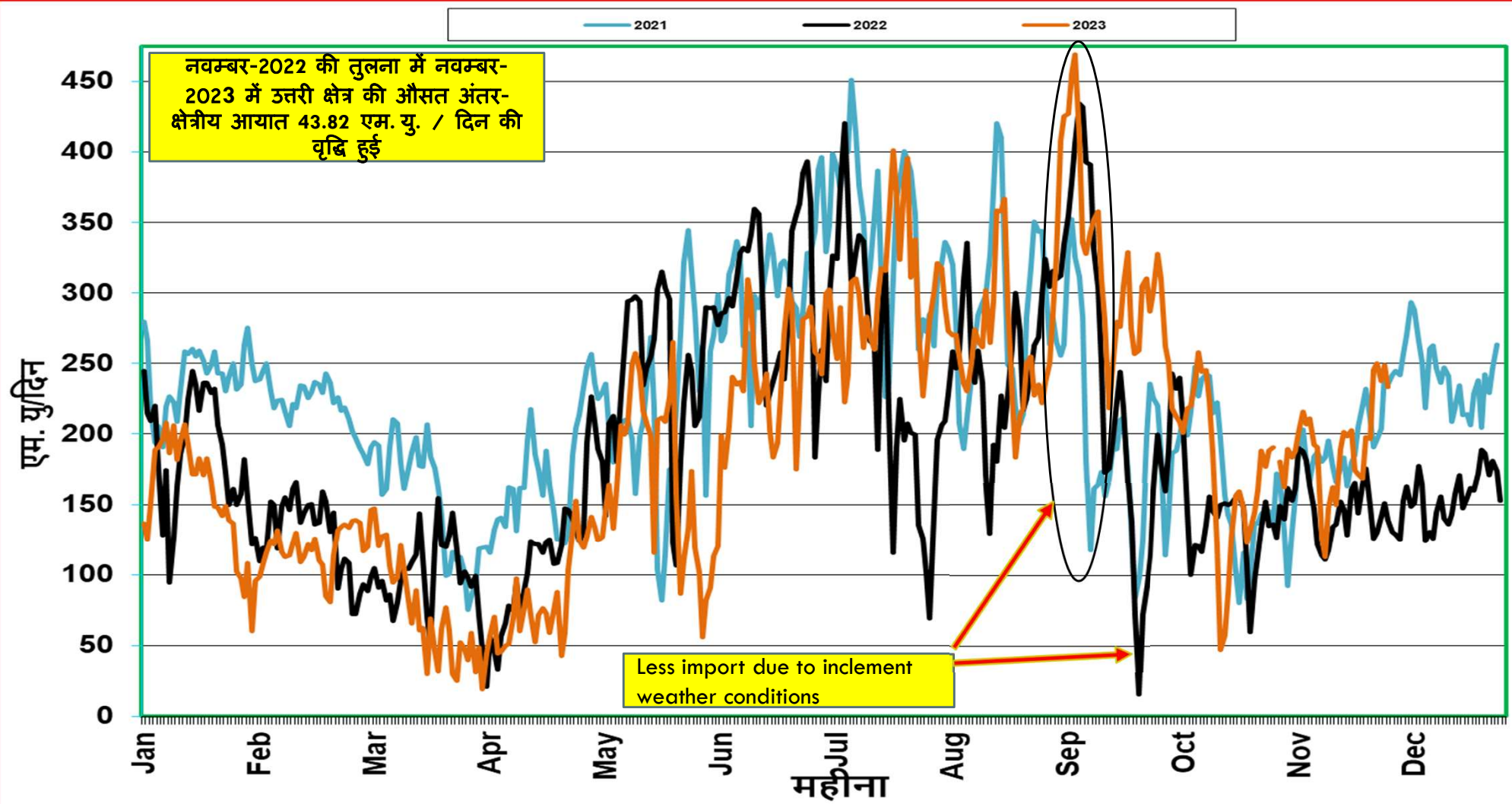
## उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



(Mus/Day)



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



वास्तविक सारांश -  
नवम्बर-2022 बनाम नवम्बर-2023

	नवम्बर-2022 (मि.यु./दिन)	नवम्बर-2023 (मि.यु./दिन)	नवम्बर माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	638.17	645.16	6.99
जलीय (Hydro) उत्पादन	138.99	123.76	-15.23
नाभिकीय (Nuclear) उत्पादन	23.50	18.11	-5.38
अंतर-क्षेत्रीय (Inter- Regional) कुल आयात	147.51	191.33	43.82
अक्षय (Renewable) उत्पादन	119.067	109.081	-9.99
कुल	1067.237	1087.441	20.21

# RE Penetration

	Maximum Daily MU Penetration			
	Nov '2023		Record upto Oct '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	6.48	13-11-2023	12.28	01-04-2020
Rajasthan	12.29	20-11-2023	36.47	22-10-2021
UP	3.15	13-11-2023	4.72	22-03-2023
NR	14.01	12-11-2023	20.69	02-04-2023

	Maximum Instantaneous Penetration in MW			
	Nov '2023		Record upto Oct '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	11.38	12-11-2023 13:10	26.87	22-04-2020
Rajasthan	25.55	13-11-2023 12:05	68.38	31-03-2020
UP	10.24	15-11-2023 13:00	17.78	13-02-2023
NR	41.76	13-11-2023 12:10	53.72	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))	
Aug-23	561	848	385	463	59.3%	40.7%	1409
Sep-23	701	797	349	448	66.8%	33.2%	1498
Oct-23	966	707	331	376	74.5%	25.5%	1673
<b>Nov-23</b>	<b>935</b>	<b>631</b>	<b>347</b>	284	<b>72.9%</b>	<b>27.1%</b>	<b>1566</b>



## New Elements First Time Charged During Nov 2023

S. No.	Type of transmission element	Total No
1	Transmission Lines	06
2	GENERATING UNIT	01
3	ICTs/GTs/Transformers	03
4	Transmission Lines Shifting	01
5	BUS	04
6	LILO Line Charging	04
7	LINE REACTOR	01
8	Antitheft Line Charging	02
Total New Elements charged		22

## Transmission Lines

S.No	Name of element	Owner	Voltage Level (in kV)	Circuit No	Line Length	Conductor Type	State	Actual date of charging
1	765kV Agra Fatehabad(UP)-Ghatampur_TPS(UP)-1	GTL,NUPPL	765kV		1 228.63 KM	Quad Bersimis	UTTAR PRADESH to UTTAR PRADESH	01-Nov-2023
2	400kV Simbholi_PMSTL (UP)-Muradnagar_2(UP)-1	UPPTCL	400kV		1 70.899 KM	Twin Moose	UTTAR PRADESH to UTTAR PRADESH	03-Nov-2023
3	400kV Simbholi_PMSTL (UP)-Muradnagar_2(UP)-2	UPPTCL	400kV		2 70.899 KM	Twin Moose	UTTAR PRADESH to UTTAR PRADESH	03-Nov-2023
4	400kV Babai(RS)-Bhiwani(PG)-2	NRSS36	400kV	2	110.962	Twin Moose	RAJASTHAN to HARYANA	08-Nov-2023
5	400kV Babai(RS)-Bhiwani(PG)-1	NRSS36	400kV	1	110.962	Twin Moose	RAJASTHAN to HARYANA	08-Nov-2023
6	220kV Bhadla_2 (PG)-AEGPL_SL_BHD2_PG-1	AMP Energy Green Private Limited	220kV	1	11.74	AL59 Moose	RAJASTHAN to RAJASTHAN	29-Nov-2023



## ICTs/GTs/Transformers

S.No	Name of element	Owner	Voltage Level (HV/LV/Tertiary)	MVA Capacity	Type of Transformer	State	Actual date of charging
	765/22kV, 3*275 MVA MVA, 3x1-Phase, 1 GE, GT - 1 at Ghatampur_TPS(UP)	NUPPL	765/22KV	3*275 MVA	GT	UTTAR PRADESH	04-Nov-2023
	400/220/52 KV, 500 MVA, 3-Phase, 2 Toshiba, ICT - 4 at Fatehgarh (PG)	PRTL	400/220/52 KV	500	ICT	RAJASTHAN	17-Nov-2023
	400/220/33kV, 500 MVA, 3-Phase, Hitachi, 3 ICT - 3 at Kurukshetra(PG)	POWERGRID	400/220/33kV	500	ICT	HARYANA	20-Nov-2023

## GENERATING UNIT

S.No	Name of element	Owner	Voltage Level	Installed Capacity (MW)	MVA Capacity	Max Continuous Gen Capacity	Make	State	Actual date of charging
1	660 MW, 776.5MVA 22KV Make GE Unit No 1 at 3*660 MW NUPPL(Stage 1)	NUPPL	22kV	660 MW	776.5MVA	660 MW	GE	UTTAR PRADESH	04-Nov-2023

## LILO Line Charging

S.No	Name of element	Voltage Level (in kV)	Name of Line to be LILOed	Line Length of New Line after LILO (In Km)	LILO Portion Line Length (In Km)	Conductor Type	Agency/Owner	Actual date of charging
1	220kV Sikandra(UP)-Saifai (UP)-1(After LILO of 220 KV AURAIYA(400)-SIKANDRA (AGRA) CKT-II at 220 KV SAIFAI)	220kV	220 KV AURAIYA(400)-SIKANDRA (AGRA) CKT-II	137.913 KM	15.108 KM	ZEBRA	UPPTCL	01-Nov-2023
2	220kV Auraiya(NT)-Saifai (UP)-1(After LILO of 220 KV AURAIYA (400)-SIKANDRA(AGRA) CKT-II at 220 KV SAIFAI)	220kV	220 KV AURAIYA (400)-SIKANDRA(AGRA) CKT-II	77.187 KM	15.108 KM	ZEBRA	UPPTCL	02-Nov-2023
3	66kV Chandigarh Sec-47 (PG)-Industrial Area (CHD)-1(After LILO of 66 KV Industrial Area, Phase-1-Industrial Area, Phase-2, Chandigarh. at 220/66kV Chandigarh Sector 47(PG))	66kV	66 KV Industrial Area, Phase-1-Industrial Area, Phase-2, Chandigarh.	1.272	0.485	ZEBRA	Chandigarh SEB	23-Nov-2023
4	66kV Chandigarh Sec-47 (PG)-Industrial Area (CHD)-2(After LILO of 66 KV Industrial Area, Phase-1-Industrial Area, Phase-2, Chandiagrh at 220 KV Chandigarh Sector 47 (PG))	66kV	66 KV Industrial Area, Phase-1-Industrial Area, Phase-2, Chandiagrh	1.145	0.485	ZEBRA	Chandigarh SEB	23-Nov-2023

## Antitheft Line Charging

S.No	Name of element	Voltage Level (in kV)	Line Length (In Km)	Conductor Type	Tower Configuration	Agency/Owner	Location	Actual date of charging
1	Antitheft charging of 400kV Fatehgarh_III(PG)- Fatehgarh_II(PG) CKT-1 from Fatehgarh_III(PG) Upto Fatehgarh-II(PG) Gantry	400kV	44.136 KM	Twin HTLS	Double	PRTL	RAJASTHAN to RAJASTHAN	10-Nov-2023
2	Antitheft charging of 400kV Fatehgarh_III(PG)- Fatehgarh_II(PG) CKT-2 from Fatehgarh_III(PG) Upto Fatehgarh-II(PG) Gantry	400kV	44.136 KM	Twin HTLS	Double	PRTL	RAJASTHAN to RAJASTHAN	10-Nov-2023

# LINE REACTOR

S.No	Name of element	Owner	Voltage Level (in kV)	MVAR Capacity	State	Actual date of charging
	189 MVar Switchable LINE_REACTOR of 765 KV AGRA(FATEHABAD)- GHATAMPUR TPS LINE at 1 Ghatampur_TPS(UP)	GTL,NUPPL	765kV	189 MVar	UTTAR PRADESH	01-Nov-2023



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