I/29470/2023

सत्यमेव जयते

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

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 209वीं बैठक का कार्यवृत।

Subject: Minutes of the 209th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 209वीं बैठक दिनांक 19.07.2023 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

The 209th meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 19.07.2023. 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

Signed by Omkishor
Date: 04-08-2023 15:02:01
Reason: Approved

(ओमकिशोर)
कार्यपालक अभियंता (प्रचालन)

सेवामें,

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

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 209 वीं बैठक का कार्यवृत्त

The 209th meeting of OCC of NRPC was held on 19.07.2023 through video conferencing.

खण्ड-क:उ.क्षे.वि.स. PART-A:NRPC

1. Confirmation of Minutes

Minutes of the 208th OCC meeting was issued on 11.07.2023. OCC confirmed the minutes.

2. Review of Grid operations of June 2023

Anticipated vis-à-vis Actual Power Supply Position (Provisional) for June 2023

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

- **Delhi**

Delhi experienced cloudy weather condition and frequent rainfalls in the month of June 2023. Therefore, peak demand and energy consumption was on lower side than expected.

- **Himachal Pradesh**

The Anticipation in Energy Requirement as well as peak demand in respect of Himachal Pradesh for the month of June, 2023 came on the lower side due to early monsoon rains in the month of June, 2023.

- **Punjab**

It is intimated that actual energy requirement is less as compared anticipated energy requirement because of decrease in the demand of Agriculture supply as well as other categories supply due to rainfall in the state of Punjab during the month of June, 2023.

- **Rajasthan**

The Actual Energy requirement w.r.t. Anticipated Energy requirement for June, 2023 decreased by 9.6% due to early arrival of monsoon and sufficient rains during the month of June, 2023 in Rajasthan state.

- **Haryana**

The Anticipation in Energy Requirement as well as peak demand in respect of Haryana for the month of June, 2023 came on the lower side due to frequent rains in the month of June, 2023.

3. Maintenance Programme of Generating units and Transmission Lines

The maintenance programme of generating units and transmission lines for the month of August 2023 was deliberated in the meeting on 18.07.2023.

4. Anticipated Power Supply Position in Northern Region for August 2023

The updated anticipated Power Supply Position for August 2023 is as below:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	220	350	No Revision submitted
	Requirement	220	420	
	Surplus / Shortfall	0	-70	
	% Surplus / Shortfall	0.0%	-16.7%	
DELHI	Availability	4923	6800	18-Jul-23
	Requirement	3860	6800	
	Surplus / Shortfall	1063	0	
	% Surplus / Shortfall	27.5%	0.0%	
HARYANA	Availability	9435	12132	19-Jul-23
	Requirement	7085	12742	
	Surplus / Shortfall	2350	-610	
	% Surplus / Shortfall	33.2%	-4.8%	
HIMACHAL PRADESH	Availability	1145	1725	11-Jul-23
	Requirement	1102	1744	
	Surplus / Shortfall	43	-19	
	% Surplus / Shortfall	3.9%	-1.1%	
J&K and LADAKH	Availability	2340	3490	No Revision submitted
	Requirement	1690	2920	
	Surplus / Shortfall	650	570	
	% Surplus / Shortfall	38.5%	19.5%	
PUNJAB	Availability	9500	12320	18-Jul-23
	Requirement	6700	15280	
	Surplus / Shortfall	2800	-2960	
	% Surplus / Shortfall	41.8%	-19.4%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Availability	9570	18080	
RAJASTHAN	Requirement	8000	14200	18-Jul-23
	Surplus / Shortfall	1570	3880	
	% Surplus / Shortfall	19.6%	27.3%	
UTTAR PRADESH	Availability	15624	27000	17-Jul-23
	Requirement	14880	27000	
	Surplus / Shortfall	744	0	
	% Surplus / Shortfall	5.0%	0.0%	
UTTARAKHAND	Availability	1440	2830	No Revision submitted
	Requirement	1510	2460	
	Surplus / Shortfall	-70	370	
	% Surplus / Shortfall	-4.6%	15.0%	
NORTHERN REGION	Availability	54197	78500	
	Requirement	45047	77400	
	Surplus / Shortfall	9150	1100	
	% Surplus / Shortfall	20.3%	1.4%	

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 209th OCC, SLDCs were requested again to coordinate with respective Transmission Utilities of states/UTs and submit details about the updated status of Down Stream network by State Utilities from ISTS Station (enclosed as ***Annexure-A-I.I***) before every OCC meeting.

6. NR Islanding scheme

6.1. In the meeting (209th OCC), AEE(SS) apprised forum that a meeting was conducted on 14.07.2023 with Delhi SLDC and DTL to deliberate on steady state analysis of PSSE basecase of Delhi islanding scheme.

6.2. DTL representative informed forum that in the meeting held on 14.07.2023 there were some observation with respect to generators in case of excess generation during island formation. The revised Delhi Island is expected to survive only when the available generation is 300MW and in case of excess generation, generating units at Pragati and CCGT Bawana will act as per droop characteristics of governor. After the formation of Island, the restoration of the Delhi system will be done as per the Standard Operating Procedure. The SoP

for restoration of the Delhi system will be shared with NRLDC by 31st July 2023 for finalization.

6.3. DTL representative further informed that the load of Railways, Metro, Delhi International Airport Limited (DIAL) and Defense /MES establishment have not been included in the present islanding proposal due to limited generation of only 300MW, involvement of higher no. of elements to be tripped and high reactive power generation due to presence of large no of 220kV Underground Cables Ckts which will decrease the probability of formation of Island.

6.4. OCC Forum in principle approved the revised Delhi islanding scheme and asked DTL to bring the scheme in upcoming NRPC meeting for final approval from the NRPC board.

6.5. AEE(SS) apprised forum that draft report submitted by CPRI for Agra-Lalitpur Islanding scheme was deliberated in 206th OCC meeting and UPSLDC was asked to take up the issues discussed in the meeting with CPRI. In the meeting UPPTCL representative intimated forum that comments from CPRI has just been received. UPSLDC requested to have physical meeting with the concerned stakeholders for finalization of draft report submitted by CPRI for Agra-Lalitpur Islanding scheme.

6.6. Representative from UPPTCL apprised forum that with regard to Lucknow-Unchahar islanding scheme, the tender for procurement of UFR's for the aforesaid islanding scheme has been finalized and delivery of UFR has started. Further, he intimated that UFR installation will be completed in two months. MS, NRPC desired to have a physical meeting with the concerned officials to finalize the implementation timeline of Lucknow- Unchahar islanding scheme.

6.7. With regard to Shimla-Solan islanding scheme representative from HPSLDC apprised forum that they have done correspondence with BHEL regarding switching of Bhaba HEP to automatic mode during the situation of islanding formation but no response has been received from BHEL till date. MS NRPC asked NRPC Sectt.. to also take up the matter with BHEL at their end.

6.8. AEE(SS) Representative from Rajasthan STU intimated forum that preparation of DPR is under finalization and would be shared shortly with NRPC Sectt. and NRLDC for Jodhpur-Barmer Rajwest and Suratgarh islanding scheme. Furher, he intimated that tentative timeline for implementation of cited islanding scheme is October 2023.

Decision of the OCC forum

- *OCC Forum in principle approved the revised Delhi islanding scheme and asked DTL to bring the scheme in upcoming NRPC meeting for final approval from the NRPC board.*

7. Coal Supply Position of Thermal Plants in Northern Region

7.1. In the meeting, NRPC representative apprised the forum about the coal stock position of generating stations in northern region during current month (till 10th July 2023).

7.2. Average coal stock position of generating stations in northern region, having critical stock, during first ten days of July 2023 is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
TALWANDI SABO TPP	1980	70.80	25	3.7

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

8. Declaration of high demand season and low demand season (Agenda by NRPC Sect..)

8.1. In the meeting, NRPC representative apprised the forum that CERC has notified regulatory framework of differential tariff, applicable to thermal generating station, during peak and off-peak hours, during high demand season of three months and low demand season of remaining nine months in Tariff Regulations, 2019. The concerned RLDC has to declare high demand season and low demand season in region after consultation with stakeholders six months before any financial year.

8.2. Forum was informed that based on the deliberations in 176th OCC meeting, it was decided that peak season be decided after considering average NR consumption data of all months for previous five years.

Year	April	May	June	July	August	September
2019	30147	37338	41624	41377	39153	38422
2020	22290	30905	37782	41309	39527	40958
2021	30391	32109	39393	45180	44175	36878
2022	38566	43463	46083	47240	46450	46040
2023	33583	39086	44429	46650*	48630*	45220*
Average	**30995**	**36580**	**41862**	**44351**	**43587**	**41504**

** Demand data as per CEA's LGBR report for FY 2023-24.*

8.3. Forum decided that June-July-August shall be considered as high demand season for NR for FY 2024-25.

Decision of the OCC forum

- *Forum decided that June-July-August shall be considered as high demand season for NR for FY 2024-25.*

9. Electricity generation Program for the year FY 2024-25 (Agenda by NRPC Sect.)

9.1. In the meeting, NRPC representative apprised the forum that Central Electricity Authority vide its letter dated 11.07.2023 (copy attached as Annexure-A.III of agenda) has sought certain (details enclosed in the cited letter) information from generating utilities of the country for the preparation of electricity generation program for the year 2024-25.

9.2. Further he also apprised that GM Division, CEA vide their letter dated 18.07.2023 has also sought information about month-wise data of energy requirement and peak demand for FY 2024-25.

9.3. Forum asked all NR generating units that they may kindly submit the requisite information in the prescribed format by email to **seo-nrpc@nic.in by 20th August 2023.**

10. Proposed SPS for 400/220 kV ICTs at RVPN's 400kV GSS Bhilwara and 400kV GSS Hindaun (Agenda by RVPN)

10.1. RVPN representative presented to the forum the proposed SPS for 1X315 MVA + 1X500MVA, 400/220 kV ICTs at 400kV GSS Bhilwara and 2X315MVA, 400/220 kV ICTs at 400kV GSS Hindaun.

10.2. On the cited matter, NRLDC asked RVPN to submit with them the base case for the proposed SPS at RVPN's 400kV GSS Bhilwara and 400kV GSS Hindaun and upon examination of same they would communicate its observation to RVPN.

Decision of the OCC forum

- *Forum asked RVPN to submit the base case for the proposed SPS at RVPN's 400kV GSS Bhilwara and 400kV GSS Hindaun with NRLDC for its examination and thereafter the matter can be further deliberated in the next OCC meeting.*

11. Shutdown on 400kV Bhinmal Zerda & 400kV Bhinmal Kankroli Line for making bypass arrangement at LILO point of 400 KV Kankroli-Bhinmal-Zerda TL Agenda by Powergrid NR-1)

11.1 In the meeting, NRPC representative informed forum that the matter has already been deliberated in the outage meeting of 209th OCC held on 18.07.2023.

11.2 He further informed that in the outage meeting, the shutdown of 400kV Bhinmal Zerda & 400kV Bhinmal Kankroli Line for said work has been conditionally approved subject to revival of 400kV Bhadla(RS)- Bikaner (RS) D/C lines.

11.3 Rajasthan SLDC highlighted that in the previous OCC meeting (i.e. 208th OCC) forum asked Powergrid that reconductoring work of 400kV Kankroli Jodhpur S/C Transmission Line may be planned after the month of September when wind generation is minimum.

11.4 NRLDC mentioned that after making bypass arrangement at LILO point of 400 KV Kankroli-Bhinmal-Zerda Transmission Line and revival of all 400kV lines from Bhadla end, peak loading on 400kV Kankroli Jodhpur S/C Transmission Line will be 717 MW with ISGS full RE generation and full Rajasthan solar and 2000 MW wind generation and in case of tripping of 400kV Kankani-Merta S/C transmission line, to keep system n-1 compliant peak loading on 400kV Kankroli Jodhpur S/C Transmission Line will be around 820 MW.

11.5 In both the cases, CTU replied that still loading will be below the thermal rating of the line.

Decision of the OCC forum

- *Forum agreed to the shutdown of 400kV Bhinmal Zerda & 400kV Bhinmal Kankroli Line subject to revival of all 400kV lines from Bhadla end which are presently out.*

Table Agenda No.1: Full Revised SPS Scheme for Anpara Complex (Agenda by UPSLDC)

12.1. In the meeting, UPSLDC representative informed forum that as per the deliberations held in the 208th OCC meeting on the cited matter, comments have been received from NRLDC and SPS is found to be in order. Further following are the observation of NRLDC on the cited SPS scheme.

In case of Tripping of 765kV Anpara C-Unnao line OR 765 kV Obra C- Unnao line OR 765 kV Anpara D-Obra C line, no backing down by SPS is required. However, to keep the system further n-1 compliant in case of tripping of any of the above lines, UP SLDC has to restrict loading of remaining 765kV lines at Unnao below 1280 MW by suitable generation backdown at Anpara/Obra complex

12.2. Revised SPS scheme for Anpara Complex is attached at **Annexure-A.II**.

12.3. OCC forum approved the revised SPS scheme Anpara Complex.

Decision of the OCC forum

- *Forum approved the revised SPS scheme for Anpara complex.*

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

12. NR Grid Highlights for June 2023

NRLDC representative highlighted the major grid highlights of June 2023:

- Maximum energy consumption of **Northern Region** was **1714 MUs** on 23rd June'23
- Average energy consumption per day of **Northern Region** was **1477 MUs**
- Maximum Demand met of **Northern Region** was **77898 MW** on 23rd June'23 @22:00 hours (*based on data submitted by Constituents)*.

All-time high value recorded in June'23:

States	Max. Demand Met during the day (MW)		As per SCADA instantaneous data	Energy Consumption (MU)	
	As per hourly data Submitted by States (MW)/Format 28	As on date		As per PSP (Mus)	As on date
Punjab	15256	24-06-2023 11:00 hrs	15267 11:13 hrs	343.54	24.06.23
Uttar Pradesh	27292	13-06-2023 23:00 hrs	27565 23:45 hrs	568.49	17.06.23
Rajasthan	-	- -	- -	332.15	13.06.23
Uttarakhand	-	- -	- -	55.84	17.06.23

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	393	21.06.23 at 14:00	8	22.06.2023	6
2	Delhi	7226	14.06.23 at 15:24	144	13.06.2023	122
3	H.P.	1753	30.06.23 at	36	30.06.2023	31

			10.15			
4	Haryana	11634	23.06.23 at 23.45	251	24.06.2023	205
5	J&K	2847	12.06.23 at 16:00	59	12.06.2023	52
6	Punjab	15293	24.06.23 at 11.45	344	24.06.2023	236
7	Rajasthan	15840	13.06.23 at 12:30	332	13.06.2023	271
8	Uttarakhand	2436	17.06.23 at 21:00	56	17.06.2023	50
9	U.P.	27611	13.06.23 at 23:33	568	17.06.2023	504
10	**Northern Region**	**77898**	**23.06.23 at 22:00**	**1714**	**23.06.2023**	**1477**

Frequency Data

Month	**Avg. Freq. (Hz)**	**Max. Freq. (Hz)**	**Min. Freq. (Hz)**	**<49.90 (% time)**	**49.90 – 50.05 (% time)**	**>50.05 (% time)**
June' 23	50.01	50.41 on 14.06.23 at 08:00:10 hrs	49.51 on 14.06.23 at 22:33:50 hrs	6.5	67.8	25.7
June' 22	49.99	50.36 on 19.06.22 at 13:07:00 hrs	49.48 on 13.06.22 at 16:45:50 hrs	12.5	73.4	14.2

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

13. Update of Operating Procedure document of Northern region

NRLDC representative apprised the forum that the Operating procedure document for the Northern Region in the year 2023-24 has been updated and will soon be

made available on the NRLDC website. The representative then proceeded to highlight the major updates included in the operating procedure:

1. **FTC Approval Document List:** For instances where an element experiences an outage lasting more than 6 months, a specific document list will be required for FTC approval. This aims to streamline the process for such cases.
2. **Special Events Instruction Chapter:** A new chapter has been added, focusing on providing special events instruction for NRLDC constituents. This addition will likely help in effectively managing unique or critical situations that may affect power operations.
3. **Renewable Energy Integration Chapter:** Acknowledging the significance of renewable energy sources, a new chapter has been incorporated, covering guidelines and procedures for the seamless integration of renewable energy into the power grid.
4. **Cyber Security Chapter:** In response to the increasing importance of cyber security, a dedicated chapter has been included, outlining measures and protocols to safeguard critical power infrastructure from potential cyber threats.

To ensure that all members are aware of these updates, the NRLDC representative urged them to keep themselves acquainted with the changes in the operating procedure after it is published on the NRLDC website by 20.07.2023. Furthermore, the representative encouraged members to provide feedback and comments on the documents. If any corrections or updates are necessary, constituents were advised to forward their comments to NRLDC.

In response to a query from MS NRPC regarding the timeline for submitting comments, the NRLDC representative agreed that comments would be entertained until the 31st of July.

EE NRPC raised a query regarding whether the operating procedure document addressed the provision of increasing the validity of the code, which is currently set at 30 minutes. SE NRPC pointed out that many constituents faced challenges in completing the switching instruction within this limited timeframe.

In response to the query, the NRLDC representative informed the forum that the validity of the code, which previously allowed a 30-minute window, has been updated in the upcoming IEGC to be extended to 60 minutes.

The NRLDC representative further clarified that once the updated IEGC with the extended validity of the code is notified, it will also be updated in the operating procedure document.

14. Tower collapse in lines in RVPN control area

NRLDC representative provided an update on the current status of 400kV lines that are presently out in the Rajasthan control area due to tower collapses. The affected lines are as follows:

1. 400kV Bhadla(RVPN)-Bikaner(RVPN) ckt 1 (out since 15.05.2023)
2. 400kV Bhadla(RVPN)-Bikaner(RVPN) ckt 2 (out since 15.05.2023)
3. 400kV Bhadla(RVPN)-Jodhpur (out since 25.05.2023)
4. 400kV Bhadla(RVPN)-Merta (out since 08.07.2023)

Due to these outages, Rajasthan's state RE generation has been impacted, leading to the curtailment of 600-1000 MW during periods of high solar and wind generation. The NRLDC representative expressed the need for Rajasthan to expedite the revival of the above lines and keep the forum updated on the progress.

In response, the Rajasthan representative informed the forum that both circuits of 400kV Bhadla(RVPN)-Bikaner(RVPN) would be revived by 05.08.2023, while the 400kV Bhadla(RVPN)-Jodhpur and 400kV Bhadla(RVPN)-Merta lines would be restored by the 1st week of August.

The NRLDC representative then inquired about any further actions being taken by Rajasthan to address such situations for faster revival of lines.

In response, the Rajasthan representative mentioned that currently, they have only one ERS System stationed at Jaipur. However, they have proposed the addition of one more ERS system to be stationed at Jodhpur. This measure aims to enhance their capability to respond to adverse situations like tower collapses effectively.

Regarding tower strengthening measures, the Rajasthan representative explained that the current situation arose due to heavy storms during the season. They are actively planning and considering strengthening the towers and implementing other related measures to better handle such emergencies in the future.

The NRLDC representative also informed the forum about a similar tower collapse incident in the 765kV Phagi-Bhiwani-1 line, which was relatively quickly restored by Powergrid. He suggested that Rajasthan might learn from the experiences and practices of Powergrid in restoring lines swiftly after tower collapse incidents. Rajasthan responded positively to this suggestion.

15. SPS in Western Rajasthan ISTS RE complex

NRLDC representative shared concerning information about the significant number of grid events (over 30 incidents) involving RE generation loss that occurred between January 2022 and May 2023. The most severe event resulted in a maximum RE generation loss of 7120 MW, which took place on 15th May 2023. Such substantial losses in RE generation pose a serious threat to grid security, as

they have the potential to trigger cascade tripping and lead to electricity supply disruptions over wide areas.

The NRLDC representative also provided an update on the current status of RE generation in the Northern region. The region presently consists of approximately 12.4 GW of ISGS RE and about 8.5 GW of RE in Rajasthan state.

To evacuate the mentioned ~12.4 GW of ISGS RE generation, the Northern region relies on 16 number of 765kV lines. These transmission lines play a critical role in transferring the renewable energy from the generating sources to the consumption centers. Ensuring the reliability and proper functioning of these lines is of utmost importance to maintain grid stability and meet the increasing demand for renewable energy in the region.

NRLDC representative addressed the recent outage of 400kV and above transmission lines due to tower collapses and proposed several measures to enhance the reliability and resilience of the grid, especially in the context of the Rajasthan RE complex. The proposed suggestions are as follows:

1. **Review of Wind Zones:** The NRLDC representative suggested conducting a review of the wind zones in the Rajasthan RE complex. This would help in adopting suitable measures for strengthening transmission infrastructure in vulnerable areas.
2. **Single Circuit Lines in Critical Corridors:** In critical or high-loading corridors, the NRLDC representative suggested considering the planning and implementation of single circuit lines instead of double circuit lines. By opting for single circuit lines, the potential impact of tower collapse incidents on the grid can be reduced. In case of a failure in one circuit, the other can continue to operate, minimizing the risk of widespread disruptions.
3. **n-2 Reliability Criteria for Prone Areas:** The NRLDC representative suggested considering the applicability of n-2 reliability criteria on a case-by-case basis in natural disaster or inclement weather-prone areas. The n-2 reliability criterion ensures that the grid can withstand the simultaneous outage of two most critical elements.

However, while these long-term suggestions are being implemented on the field, the NRLDC representative proposed a SPS Scheme logic for the ISTS RE complex to ensure n-1-1/n-2 compliance during events like tower collapse. NRLDC representative also briefed the forum about the basecase assumptions considered while doing the study for SPS requirement.

Assessment of Generation backdown of n-2 SPS requirement for 765kV lines of Rajasthan RE pocket

Basecase assumption

400kV Bhadla(RS)-Bikaner(RS) D/C	in service
400kV Bikaner(PG)-Bikaner_2(PG) D/C	in service
STATCOM -1 and 2 @ Bhadla_2	in service
STATCOM-1 @ Bikaner_2	in service
All 400kV lines presently out in Rajasthan	in service
Rajasthan demand	15500 MW
Raj Solar	3400 MW
Raj Wind	1500 MW

Result :

Contingency / ISGS RE generation	ISGS RE generation < 10000MW	ISGS RE generation >10000 MW and < 11000 MW	ISGS RE generation > 11000 MW and < 12000MW	Full ISGS RE generation of 12389 MW
765kV Fatehgarh2-Bhadla D/C	no SPS required	no SPS required	200 MW generation backdown at Fatehgarh-1/2	500 MW backing at Fatehgarh-1/2
765kV Fatehgarh2-Bhadla2 D/C	no SPS required	100 MW backing at Fatehgarh_1	500 MW backing at Fatehgarh-1/2	800 MW backing at Fatehgarh-1/2
765kV Bhadla-Bikaner D/C	no SPS required	no SPS required	no SPS required	no SPS required
765kV Bhadla2-Bikaner D/C	no SPS required	no SPS required	no SPS required	no SPS required
765kV Bhadla2-Ajmer D/C	no SPS required	no SPS required	400 MW backing at Bhadla_2 (due to overloading of Jodhpur-Kankroli/ Bhadla-Jodhpur)	500 MW backing at Bhadla_2 (due to overloading of Jodhpur-Kankroli/ Bhadla-Jodhpur)
765kV Bikaner- Moga D/C	no SPS required	no SPS required	no SPS required	no SPS required
765kV Bikaner- Khetri D/C	no SPS required	no SPS required	no SPS required	no SPS required

CTU representative responded to the suggestion of implementing single circuit lines in the Rajasthan RE complex. The CTU representative informed the forum that during the 14th NCT meeting, it was decided that single circuit lines are not feasible in the region due to various challenges, including ROW and GIB issues. These technical, administrative, and other considerations make the implementation of single circuit lines impractical.

CTU representative acknowledged the importance of addressing incidents of tower collapse and proposed forming a subgroup within the NRPC forum, as previously decided in NRPC meetings. The purpose of this subgroup would be to analyze such incidents and recommend suggestions to mitigate them effectively.

Furthermore, the CTU representative requested NRLDC to share the basecase used for conducting the SPS study. CTU wanted to re-verify the study and provide their inputs to ensure its accuracy and effectiveness. NRLDC agreed to share the basecase for review and incorporation of additional insights.

In response to the future commissioning of RE plants like Bikaner-3 and Bhadla-3, the NRLDC representative urged the CTU to assess the SPS requirement considering these developments. The NRLDC representative also suggested exploring the idea of a centralized scalable SPS that can be re-programmed periodically, possibly on a monthly basis, to accommodate the increasing number of RE generation sources and adapt to changing flow patterns in the transmission lines.

CTU recommended that designing the SPS logic may be done based on the loading of lines rather than the combined RE generation quantum.

In the context of forming the subgroup on tower collapse, the CTU requested NRPC to expedite the process.

MS NRPC informed the forum that the CEA has already constituted a committee to investigate tower collapse incidents, with NRPC as one of the members. SE NRPC assured that they will consider the formation of the subgroup based on the

developments with the committee formed by CEA and provide an update accordingly.

16. Overdrawl by HP State Control Area

NRLDC representative raised concerns about the excessive overdrawal of power from the grid by Himachal Pradesh (HP), surpassing their drawl schedule. Additionally, it was brought to light that HP was simultaneously selling power through Short-Term Open Access (STOA) while overdrawing beyond their schedule.

Date	Overdrawal(MUs)	Sale of power through STOA(MUs)
08-07-2023	0.47	41.93
09-07-2023	3.45	22.24
10-07-2023	2.45	21.54
11-07-2023	3.76	18.33
12-07-2023	6.19	21.42

NRLDC representative emphasized that this continuous overdrawal is causing low frequency issues and highlighted the need for improvement in demand/generation forecasting and portfolio management by HP. The overdrawal becomes more severe during the outage of large hydro stations in the Northern Region due to high silt conditions.

NRLDC representative requested HP to take corrective measures, including effective portfolio management, to avoid overdrawal during normal conditions and hydro generation outages.

HP representative stated that they have taken steps to manage their portfolio in advance and explained that the current overdrawal situation was a result of Force Majeure. The excessive rainfall and flooding this season caused nearly 90% of both central and state sector hydro stations to be out of operation.

When asked about the selling of power in STOA during such events, the HP representative explained that their DISCOMs had made banking arrangements in advance for the lean season, leading to the selling of power by the state.

NRLDC representative then suggested incorporating a clause in the banking contracts that allows the flexibility of power selling by HP in instances like the outage of large hydro stations due to silt. The HP representative informed that they already have a clause of 10% curtailment in their existing contracts.

Furthermore, the NRLDC representative recommended that HP explore options such as purchasing power through RTM, DAM, HP-DAM and other power

purchasing tools. It was also proposed for considering the revival of gas-based generating stations if they are not currently operational to meet the state's demand.

In response to the suggestions, the HP representative agreed to work on a comprehensive plan for handling such exigencies and incorporate the above recommendations to improve the state's grid management during challenging situations.

17. Transmission Related issued observed during high demand season

As discussed in previous OCC meetings, most of the NR states except J&K, Ladakh and 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.

Latest state wise issues are listed below:

Haryana:

TTC: 9100MW

ATC: 8800MW

In 208 OCC meeting, Haryana representative stated that following works are expected by Jul'23:

- New 500MVA ICT at Kurukshetra(PG)
- Connection of one circuit of 220 KV Jhajji - Rai D/C line and 220 kV Rai - RGEC D/C line on terminal towers outside 220 KV GIS S/Stn. HSIIDC, Rai (U/C) to give relief at 400 KV S/Stn Deepalpur
- 220kV Sec 32 Panchkula and 220kV lines to Panchkula (PG) (expected by July 2023 end)
- 220kV lines from Panchkula(PG) to Pinjore (expected by July 2023 end)
- Matter regarding new ICT at Deepalpur is under discussion with Indigrid.

NRLDC representative requested HVPN to expedite commissioning of new elements which would help to meet higher demand with minimal transmission related issues.

HVPN representative stated that 500 MVA ICT at Kurushetra is expected by August 2023.

To this Powergrid representative confirmed the timeline of 500 MVA ICT as August 2023 subject to approval of Buses Shutdown at Kurukshetra as conditionally approved in NRPC OCC Outage meeting.

HVPN representative informed the forum that work on 220kV Jajji –Rai D/C line is almost complete. Some relay work is pending at Powergrid end and the work will be completed within 2 weeks.

HVPN representative informed the forum that the revised timeline for the commissioning of the 220kV Sec 32 Panchkula and 220kV lines to Panchkula (PG) is now set for September 2023 due to ROW issues.

HVPN representative didn't gave any definite timeline for Deepalpur ICT.

The execution of the above ICT projects will be handled by HVPN, as stated by the INDIGRID representative.

Punjab:

TTC: 9500MW
ATC: 9000MW

In 208 OCC meeting, Punjab representative stated that following works are expected shortly:

- 400/220kV Dhanansu S/s (August 2023)

NRLDC representative requested Punjab to expedite commissioning of Dhanansu S/S which would help to meet higher demand with minimal transmission related issues.

Delhi:

TTC: 7100MW
ATC: 6800MW

In 208 OCC meeting, DTL representative stated that Bawana SPS will be implemented at the earliest.

NRLDC representative informed that they are awaiting a reply from Delhi regarding their TTC/ATC calculation, which was sent in a previous mail dated 22nd June 2023. The NRLDC representative requested Delhi to provide an update on the status of the calculation.

NRLDC representative requested Delhi to update on its status.

DTL representative stated that mock testing of SPS at Bawana will be done and report will be submitted before next week.

Additionally, the DTL representative requested the NRLDC to perform a TTC/ATC review of Delhi based on the basecase that has already been shared, taking into account the implementation of the SPS at Bawana.

CTU representative highlighted a concern regarding the potential impact on Delhi's ATC/TTC in the future due to the delayed commissioning of the Gopalpur Substation, which was part of Phase-II of the Rajasthan scheme. The commissioning of the Gopalpur Substation directly affects the load relief of Maharanibagh ICTs. To avoid

future issues in the ATC/TTC of Delhi, the CTU requested Delhi to expedite the commissioning of the Gopalpur Substation and urged them to provide an update on the progress.

In response, the Delhi representative stated that the Gopalpur Substation will be retendered again, and agreed to share the timeline of the substation at a later stage

Rajasthan:

TTC: 7600MW
ATC: 7000MW

Raj SLDC was requested to share ATC/TTC limits for summer/ monsoon 2023 at the earliest. NRLDC has shared comments on limits and basecase submitted by RVPN

In 208 OCC meeting, RVPN representative informed that:

- Reply submitted to queries of PSDF for new capacitor installation, meeting is scheduled on 20.05.2023 with NRPC, NRLDC and PSDF, CEA regarding proposal for capacitor bank installation.
- Third party compliance check is pending. Certificate expected by 22 June 2023 after which PMU data sharing would be completed.

NRLDC representative requested RVPN to update on its status.

The Rajasthan representative stated that during the meeting with NRPC for the capacitor bank installation, NRLDC raised certain observations. Rajasthan was in the process of incorporating those observations, and a revised proposal would be presented to NRPC by the end of the month

Regarding PMU data sharing, the Rajasthan representative mentioned that they needed to comply with the guidelines of the National Critical Information Infrastructure Protection Centre, Government of India. As part of these guidelines, Rajasthan was required to inform about the critical IT infrastructure, including the Smart Transmission Network and Asset Management System (STNAMS) project, which involved PMUs. Once they obtain certification from the CII and receive a subsequent gazette notification, Rajasthan would proceed with the PMU integration, tentatively by the end of August 2023.

The NRLDC representative pointed out that notification of a critical asset and its integration were two separate processes. NRLDC suggested that Rajasthan could integrate the PMUs before obtaining the notification as a critical asset.

In response, Rajasthan insisted that their IT wing had made a firm decision to wait for the notification of the project as a critical asset before proceeding with PMU integration. However, Rajasthan agreed to consider NRLDC's suggestion of integrating PMUs before obtaining the official notification as a critical asset.

NRLDC representative highlighted the importance of PMU in Rajasthan area for analysis of grid events including oscillations and LVRT/HVRT compliances.

Regarding ATC/TTC, Rajasthan representative stated they have made the necessary changes and the revised basecase will be shared shortly with NRLDC.

UP:

TTC: 15100MW
ATC: 14500MW

In 208 OCC meeting, UP SLDC representative informed that:

- Major issue is being observed at Gorakhpur(UP) and Allahabad(PG) during high demand season.
- Load has been shifted to Jhusi to relieve loading of Allahabad(PG) and new ICT is expected at Sohawal(PG)
- They shall share revised ATC/TTC limits at the earliest.

NRLDC representative requested UP SLDC to provide an update on their current status.

In response, the UP representative informed the forum about the following actions taken:

- Load Shifting of Debaria to Rasra: To relieve the loading at Gorakhpur ICTs (Interconnected Transformers), the load that was previously supplied from Gorakhpur has been shifted to Rasra.
- Load Shifting Downstream to Jhusi: In an effort to relieve the loading of the 220kV Allahabad-Jhusi line, UP SLDC has shifted some load downstream of Jhusi.
- Orai S/S ICT Operation: At the Orai Substation, UP SLDC currently has only one 400/220kV ICT in operation. Simulation studies have been conducted, and it was found that nearby elements are non-critically loaded and n-1 compliant if this ICT is taken out of service.
- Azamgarh and Sarnath Issues: At Azamgarh, the n-1 non-compliance issue for the 400/220kV ICT has been relieved after the connectivity of Gorakhpur. Similarly, at Sarnath, the n-1 non-compliance for the 400/220kV ICT has been resolved after the commissioning of Jaunpur Substation.
- Approval of Revised Basecase: UP SLDC requested NRLDC to approve the revised basecase shared by UP yesterday for the ATC/TTC assessment.

Uttrakhand:

TTC: 1700MW
ATC: 1600MW

Uttrakhand SLDC vide email dated 28.04.2023 submitted their ATC/TTC assessment for summer 2023. NRLDC vide email dated 02.05.2023 have shared their comments to the ATC/TTC assessment done by Uttrakhand.

During the 208 OCC meeting, it was mentioned that Uttrakhand SLDC agreed to provide the mock testing report of the Kashipur SPS.

The NRLDC representative requested Uttrakhand to provide an update on their current status.

Uttrakhand representative informed the forum that they are still awaiting the mock testing report of the Kashipur SPS from the Kashipur O&M team. However, they assured that the report will be shared within a week.

Regarding the ATC/TTC assessment, Uttrakhand agreed to share the revised calculation within a week.

NRLDC had taken online training sessions for J&K representative (two in Feb 2023, two in March 2023 and two in Apr 2023). J&K and Ladakh U/Ts are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC.
Punjab, Haryana, HP, Uttarakhand, Rajasthan, Delhi & UP are communicating with NRLDC regularly regarding ATC/TTC assessment for summer/monsoon 2023. However, J&K are yet to provide their ATC/TTC assessments for summer/monsoon 2023.

At number of substations, loading of major 400/220kV ICTs were observed to be beyond their N-1 contingencies. Plots attached as Annexure-B.I of agenda.

It is again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC. NRLDC is continuously sending emails in real-time for ensuring N-1 compliances as well as restricting schedule till ATC limit and maximizing internal generation. SLDCs need to ensure this during real-time operation.

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	https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Punjab	https://www.punjabsldc.org/downloads/ATC-TTC0321.pdf
Haryana	https://hvpn.org.in/#/atcttc
Delhi	https://www.delhisldc.org/resources/atcttcreport.pdf
Rajasthan	https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
HP	https://hpsldc.com/mrm_category/ttc-atc-report/

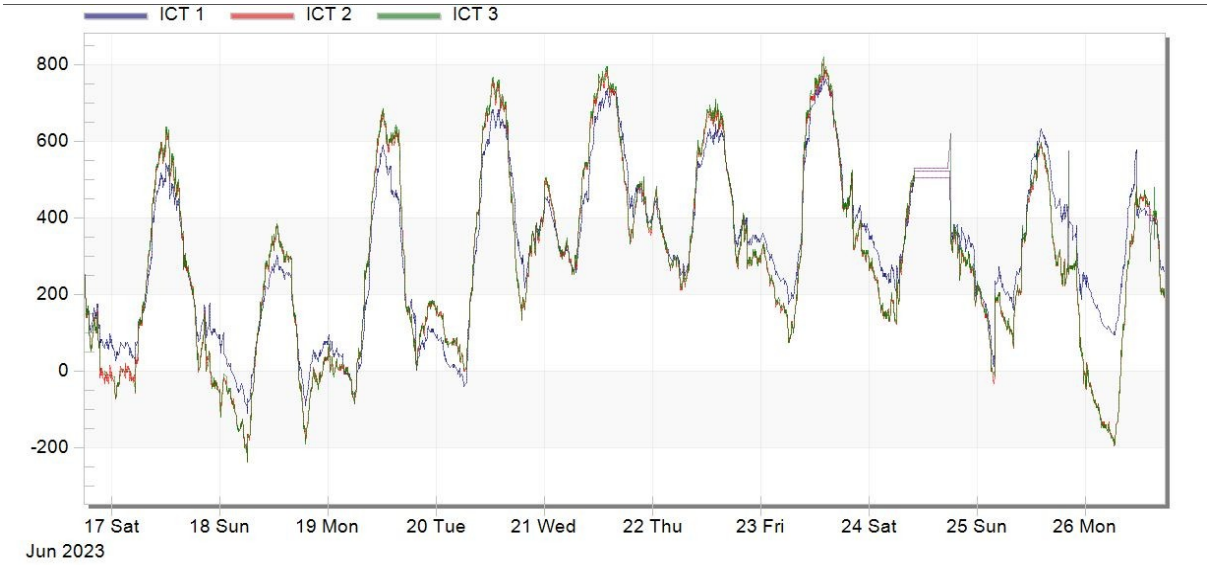
Uttarakhand	https://uksldc.in/ttc-atc
J&K and Ladakh U/T	**NA**

It is seen that most of the links are old and have old ATC/TTC limits.

All SLDCs are requested to regularly update ATC/TTC limits after mutually agreement between SLDC and NRLDC.

N-1 non compliance of 765/400 kV Bhiwani(PG) ICTs

NRLDC representative informed that during high solar generation hours, the loading of 765/400kV 3*1000MVA Bhiwani ICTs is reaching upto 2500 MW crossing the n-1 loading limit threshold of 2100MW.



It was reiterated that the proposal for additional 1500MVA ICT at 765/400kV Bhiwani may be expedited in line with other RE evacuation transmission network in the corridor so that there is no restriction in RE evacuation or on changing power order of Mundra-Mahendragarh HVDC.

To this CTU representative replied that Augmentation of 1x1500 MVA (4th) transformer of Bhiwani S/s is linked with Transmission system for evacuation of RE power from renewable energy parks in Leh and with delay in implementation of Leh scheme will also impact the implementation of 765/400kV, 1x1500MVA (4th) ICT at Bhiwani S/s. In view of urgent requirement of 765/400kV, 1x1500MVA ICT, Proposal for delinking of 765/400kV, 1x1500MVA (4th) ICT at Bhiwani S/s from agreed transmission scheme i.e. Transmission system (EHVAC+HVDC) for evacuation of RE power from renewable energy parks in Leh (5GW Leh- Kaithal transmission corridor) will be taken up in Consultation Meeting for Evolving Transmission Schemes in Northern Region"

18. Frequent forced outages of transmission elements in the month of June'23:

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

S. NO.	Element Name	No. of forced outages	Utility/ SLDC
1	220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1	3	UP/UK
2	220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1	3	BBMB/ Delhi
3	220 KV Kishenpur(PG)-Barn(JK) (PDD JK) Ckt-2	4	PG/JK
4	400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-2	4	PG/PS
5	220 KV Delhi RR(BB)-Narela(DV) (BBMB) Ckt-2	6	BBMB/ Delhi

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

Discussion during the meeting:

- **220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1:** *NRLDC representative raised concerned on frequent tripping of line and non A/R operation in line. He further asked the status of actions taken w.r.t. Main-1&2 relays in reference of OCC 208 UP deliberation. UP representative informed that issues related to Main-1 relay & A/R in Main-2 relay not resolved yet. He further informed that proposal to replace the Main-2 relay has been sent to head quarter and SLDC is also following up to expedite the necessary actions. UP was requested to expedite the necessary actions and submit the remedial action taken report. UP agreed for the same.*

- **220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1:** *NRLDC representative raised concerned on frequent tripping of line and A/R operation. BBMB representative informed that line CVT were faulty and as an interim arrangement supply was taken from bus CVT through AC contactors. He further informed that tripping on 09th & 10th June occurred due to disturbance in AC supply. On 10th June, supply was restored through DC contactors. Order of CVT also has been placed and CVT will be replaced by next month end. Regarding A/R operation issue, it was informed that issue related to A/ R operation at Narela end has been resolved and successful A/R operation is observed in line on 12th & 14th July 2023.*

- **400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-2:** *NRLDC representative raised concerned on frequent tripping of the line. Punjab representative informed that frequent tripping of the line occurred due to damage of porcelain insulating strings. A/R is healthy at both the ends, line tripped after unsuccessful A/R operation on permanent fault. It was further informed that insulators have failed the test conducted by CPRI. Process of replacing*

porcelain insulator with polymer ones has been initiated and it will be completed within next six (06) months. Replacement work of insulators will also be done in 400kV Makhu-Muktsar ckt and 400kV Talwandi-Muktsar ckt. NRLDC representative requested to expedite the necessary actions required. Punjab agreed the same.

- **220 KV Delhi RR(BB)-Narela(DV) (BBMB) Ckt-2:** *NRLDC representative raised concerned on frequent tripping of line. BBMB representative informed that there is issue related to A/R operation at Narela(DTL) end. He further informed that they will inspect and identify the issues in coordination with DTL, issues will be attended during planned shutdown of the line scheduled in September 2023. NRLDC representative requested to expedite the necessary actions required. BBMB agreed for the same.*

NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. He sensitized all the utilities to ensure healthiness/in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standards. He further informed that most of the tripping are transient in nature but due to non-operation of A/R, it resulted into tripping of the transmission element thus reducing the reliability of the grid. All the utilities shall endeavor to keep auto re-closer in service and healthy condition of 220 kV and above voltage level transmission line. 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 to minimize the frequent faults in the line. All utilities agreed for the same.

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

19. Multiple element tripping events in Northern region in the month of June'23:

A total of 19 grid events occurred in the month of Jun'23 of which **09** are of GD-1 category, **06** are of GI-2 Category & **04** 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.III** of Agenda**.**

Further, despite persistent discussions/follow-up in various OCC/PCC meetings, it is observed that provisions 5.2(r) and 5.9.4(d) of the IEGC, pertaining to reporting of events / tripping to RLDC, is not being complied with by many utilities.

Maximum fault duration observed is **800msec** in the event of multiple element tripping at 220kV Pinjore(HR) at 18:52hrs on 13th June, 2023. During the event, 220kV Panchkula(HR) - Pinjore(HR) Ckt 1 & 2 tripped during stormy weather (DPR operated). As per PMU, B-N phase to earth fault with delayed clearance of 280msec followed by R-N phase to earth fault with delayed clearance of 800msec is observed.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **09** events out of **19** grid events occurred in the month. The other events with delayed clearance of faults (>500ms) are as follows:

i. Multiple elements tripping at 400/220kV Mau(UP) at 23:59hrs on 06th Jun, 2023 & 16:15hrs on 10th Jun,2023, fault clearance time: 440msec & 720msec:
UP representative informed that fault occurred due to CT damage of 132kV Mau-Semari Jamalpur ckt-2 and ICTs tripped on over current High set, CT has been replaced. NRLDC representative raised concerned over DR time sync at Mau(UP) and also requested to review the SCADA mapping of circuit ID of 132kV Mau-Semari Jamalpur ckts. UP agreed to resolve the issue of DR time syncing and to review the SCADA mapping of the line at the earliest.

ii. Multiple elements tripping at 220/66kV Palwal(HR) at 01:06hrs on 06th Jun, 2023, fault clearance time: 360msec:
Haryana representative informed that Bus bar protection is not available at 220kV Palwal S/s, TnC wing has been requested to expedite the commissioning work of bus bar protection at all the stations where bus bar protection is not available. Regarding tripping analysis, he informed that details not received yet from protection wing and same will be shared as soon it received. NRLDC representative requested that continuous follow-ups may be taken to ensure timely submission of tripping report. Haryana agreed for the same.

iii. Multiple elements tripping at 220/132kV Mohana(HR) at 21:09hrs on 09th Jun, 2023, fault clearance time: 360msec:
NRLDC representative stated that as per tripping analysis report received from Haryana, distance protection at Mohana S/s end didn't not operate and proposal of relay change was mentioned. He further asked the status of replacement of distance protection relay. Haryana representative informed that as informed by TnC wing new relays are available and same will be replaced within next 15-20 days.

iv. Multiple elements tripping at 220/66kV Khassa(PS) at 20:08hrs on 14th Jun, 2023, fault clearance time: 520msec:
Punjab representative informed that fault was in 220kV Khassa-Civil lines ckt and 220kV Khassa- Chogawan ckt. 220kV Khassa-Amritsar ckt-1&2 sensed the fault in Z-4 from Khassa end and both the lines tripped instantaneously from Khassa end due to malfunction of Z-4 distance protection relay, issue related to Z-4 distance protection has been resolved.

v. Multiple elements tripping at 220/132/66kV Wadala(PS) at 00:07hrs on 18th Jun, 2023, fault clearance time: 440msec
Punjab representative informed that there were two (02) fault event occurred at the incident time, one at 220kV Wadala & another at 220kV Verpal S/s. It

was further informed that, fault occurred on 220kV Verpal-Amritsar ckt-1 due to CT damage at Verpal end, Main-1 relay (differential) also got damaged during the event and Main-2 relay(distance protection) was already out (under repair). As line protection was not available, line didn't trip and fault cleared after tripping of adjacent line & ICTs. Main-1 relay (differential) at Verpal end in 220kV Verpal-Amritsar ckt-1 has been replaced with a spare relay and and Main-2 relay(distance protection) will be restored as soon it received. NRLDC representative requested to expedite the necessary actions. Punjab agreed for the same.

vi. Multiple elements tripping at 400/220kV Ratangarh(RS) at 05:21hrs on 20th Jun, 2023, fault clearance time: 600msec
NRLDC representative asked about the testing of Z-4 distance protection operation as proper operation of Z-4 distance protection at Ratangarh at 220kV side not observed during the event and he also raised the concern over time sync issue at Ratangarh and other Rajasthan S/s also. Rajasthan representative informed that details have been asked from the site and it will be shared as soon it received. Regarding time sync issue also communication has been done to ensure time syncing of DR/EL at site. NRLDC representative requested Rajasthan to take continuous follow-up regarding the status of action taken and to expedite the necessary actions.

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

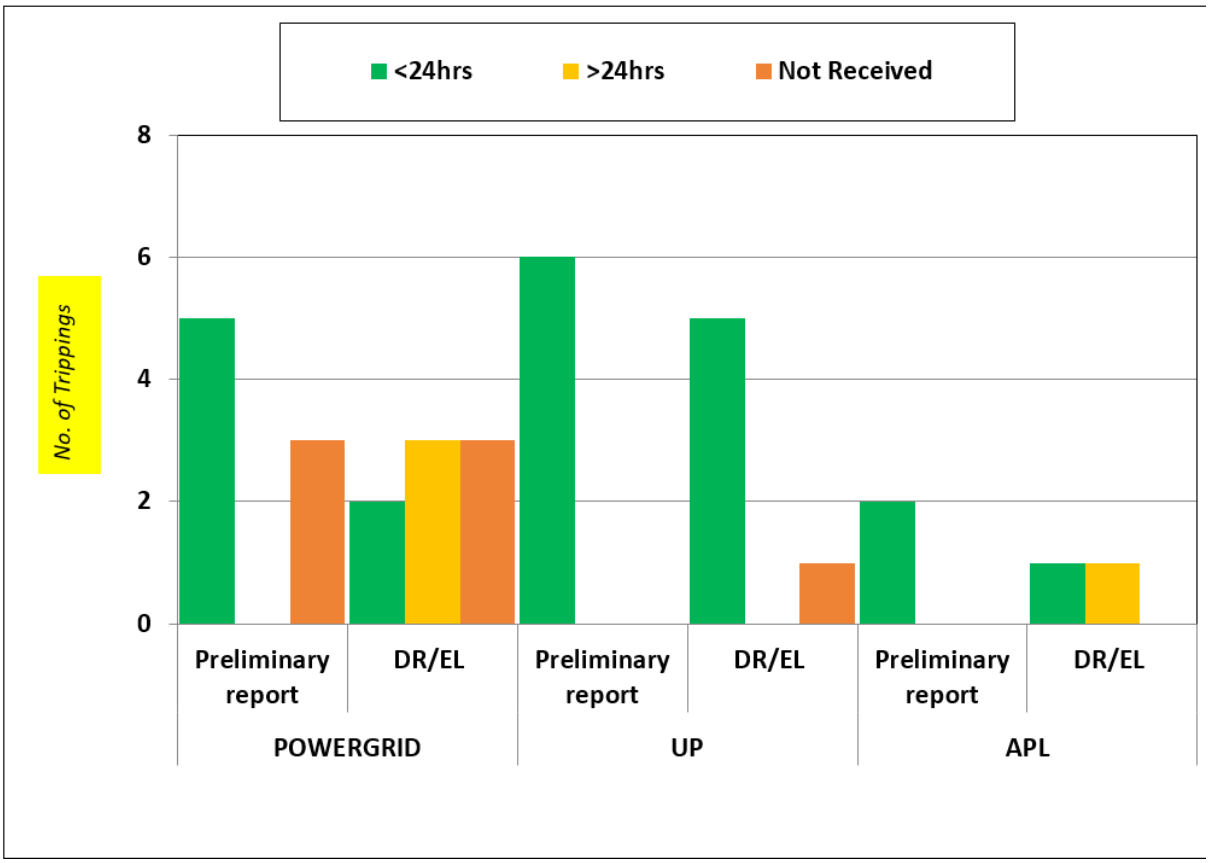
OCC forum suggested all the NR constituents to update the information on tripping portal developed by NRLDC. All the constituents agreed to take proactive remedial actions in this regard to minimize the tripping.

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

20. Details of tripping of Inter-Regional lines from Northern Region for June' 23:

A total of 16 inter-regional lines tripping occurred in the month of June'23. The list is attached at **Annexure-B.IV** of Agenda**.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) 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.



S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Brief Reason (As reported)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Remarks
			Date	Time				
1	800 KV HVDC Kurukshetra(PG) Pole-2	POWERGRID	7-Jun-23	21:55	Blocked due to TEED protection operated at Champa end. Contactor got burnt at Champa end.	NO	NO	As per PMU, fluctuation in voltage is observed.
2	765 KV Agra-Gwalior (PG) Ckt-2	POWERGRID	9-Jun-23	14:08	Y-N fault , FC=7.6KA , 45 kM from Agra	YES	YES (After 24hrs)	As per PMU & DR at Agra end, line tripped on Y-N fault in reclaim time. As per DR summary of Agra end, Y-N fault at distance ~35km(27.2%, Z-1) from Agra end is observed.
3	765 KV Phagi(RS)-Gwalior (PG) (PG) Ckt-2	POWERGRID	20-Jun-23	17:34	Transient fault	YES	YES	As per PMU at Ajmer(PG) and as per DR of Phagi end, no fault is observed. As reported, PRD-2 Relay of B-ph Line Reactor at Phagi end operated, and DT sent to Gwalior end. Limit switch of PRD relay of Line reactor has been replaced
4	500 KV HVDC Mahindergarh(APL)-Adani Mundra(APL) (ATIL) Ckt-2	APL	14-Jun-23	14:50	Tripped due to DC Line fault.	YES	YES (After 24hrs)	As per EL, DC line fault is observed.
5	500 KV HVDC Mahindergarh(APL)-Adani Mundra(APL) (ATIL) Ckt-2	APL	30-Jun-23	12:26	Earth fault	YES	YES	As per EL, DC line fault is observed.
6	220 KV Sahupuri(UP)-New Karamnsa (BS) (BSEB) Ckt-1	UPPTCL	19-Jun-23	20:38	Transient fault	YES	NA	As per PMU, fluctuation in voltage is observed.
7	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	21-Jun-23	16:24	Phase to earth fault B-N	YES	YES	As per DR summary of Rihand end, B-N fault at distance ~75km(73.5%, Z-1) from Rihand end is observed.
8	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	22-Jun-23	23:49	Phase to earth fault Y-N	YES	YES	As per DR summary of Rihand end, Y-N fault at distance ~1.8km(1.8%, Z-1) from Rihand end is observed.

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Brief Reason (As reported)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Remarks
			Date	Time				
9	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	29-Jun-23	03:46	Phase to Phase Fault R-Y	YES	YES	As per DR summary of Rihand end, R-Y fault at distance ~42.5km(76.5%, Z-1) from Rihand end is observed.
10	132 KV Rihand(UP)-Nagar Untari(JS) (UP) Ckt-1	UPPTCL	26-Jun-23	19:08	Phase to Phase Fault R-N	YES	YES	DR are not time synced. As per DR summary of Rihand end, R-N fault at distance ~45.3km(76.5%, Z-1) from Rihand end is observed.
11	132 KV Rihand(UP)-Nagar Untari(JS) (UP) Ckt-1	UPPTCL	29-Jun-23	02:26	Phase to Phase Fault R-N	YES	YES	DR are not time synced. As per DR summary of Rihand end, R-N fault at distance ~27.8km(46.9%, Z-1) from Rihand end is observed.
12	400 KV Balia-Patna (PG) Ckt-1	POWERGRID	21-Jun-23	20:53	Phase to Ground Fault R-N	YES	YES (After 24hrs)	As per PMU & DR of Balia end, line tripped after unsuccessful A/R operation on permanent R-N fault. As per DR summary of Balia end, R-N fault at distance ~58km(30%, Z-1) from Balia end is observed.
13	400 KV Balia(PG)-Naubatpur(BS) (PG) Ckt-1	POWERGRID	29-Jun-23	07:01	Phase to Ground Fault Y-N	NO	NO	As per PMU at Balia(PG) end, line tripped after unsuccessful A/R operation on permanent Y-N fault.
14	765 KV Varanasi-Gaya (PG) Ckt-1	POWERGRID	19-Jun-23	18:11	Phase to earth fault R-N	YES	YES (After 24hrs)	As per DR of Varanasi end, line tripped after unsuccessful A/R operation on permanent R-N fault.
15	765 KV Varanasi-Gaya (PG) Ckt-2	POWERGRID	21-Jun-23	14:29	Phase to Ground Fault R-N	YES	YES	As per PMU & DR of Varanasi end, line tripped on R-N fault in reclaim time.
16	800 KV HVDC Agra-Bishwanath Chariali (PG) Ckt-2	POWERGRID	23-Jun-23	11:39	Snapping of Conductor	NO	NO	

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

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

21. Status of submission of DR/EL and tripping report of utilities for the month of June'23.

The status of receipt of DR/EL and tripping report of utilities for the month of June'2023 is attached at **Annexure-B.V** of Agenda. It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed 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.

NRLDC representative stated that reporting status has been improved from Delhi & Punjab. However, reporting status from HP & J&K need improvement.

HP representative informed that issue has been taken up with the DISCOM for timely submission of the details so that details could be uploaded at tripping portal within stipulated time.

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 5.2(r) 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 5.2.r 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.

22. Status of PSS tuning/ re-tuning and Step Response Test of generator

Since 182nd OCC meeting, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

S. No.	Name of the Generating Station	Date of last PSS tuning / re-tuning performed (in DD/MM/YYYY format)	Date of last Step Response Test performed (in DD/MM/YYYY format)	Report submitted to NRLDC (Yes/ No)	Remarks (if any)

The status of test performed till date is attached at **Annexure-B.VI** of Agenda**.**

It is to be noted that as per regulation 5.2(k) of IEGC, Power System Stabilizers (PSS) in AVRs of generating units (wherever provided), shall be got properly tuned by the respective generating unit owner as per a plan prepared for the purpose by the CTU/RPC from time to time.

Members were requested to update about their future plan for PSS tuning.

NRLDC representative informed that all the units who have done Step response test before 2018 were requested to plan the exciter step-response test as soon as possible and submit the tentative schedule of step-response test on the units with NRPC/ NRLDC.

OCC forum deliberated that members may kindly accord due priority in this regard and update about their future plan for PSS tuning as there is little progress despite including this agenda in every OCC meeting. Members agreed for the same.

23. Frequency response characteristic:

Two FRC based event occurred in the month of **June-2023**. Description of the event is as given below:
Table:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*	NR FRC during the event (%)
1	28-Jun-	02:28hrs	At 02:28 hrs on 28-06-2023 400kV Teesta -Rangpo S/	50.02	50.00	*0.02*	

	23		C, 400kV Teesta III-Dikchu S/C and 400kV Dikchu-Rangpo S/C tripped simultaneously. Fault was present in 400kV Dikchu-Rangpo S/C & Teesta III -Rangpo line. 400 kV Dikchu-Teesta III tripped from Teesta III end in Back up overcurrent protection. The above tripping led to loss of complete evacuation path for Dikchu and Teesta III substation leading to generation loss of 1304 MW at Teesta III and 106 MW at Dikchu respectively. Hence, generation loss of 1410MW has been considered for FRC calculation.				48

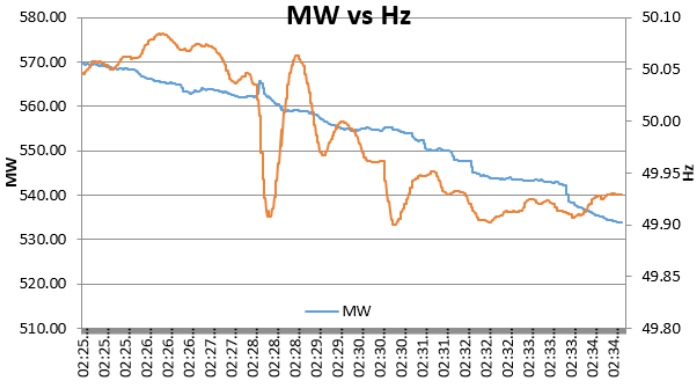
Status of Data received for 28th June 2023 event:

Status of Field Data received of FRC of Grid event occurred at Sikkim hydro complex in Eastern Region at 02:28 Hrs on 28.06.2023			
Data Received from		Data Not Received from	
Koteshwar HEP	TSPL	Uttarakhand	APCPL Jhajjar
UP	Kawai TPS	Haryana	Rihand NTPC
Tehri HEP	NJPS	Punjab	Unchhahar NTPC
Delhi	Singrauli NTPC	HP	Dadri NTPC
BBMB		Rajasthan	NHPC

FRC as per NR SCADA data:

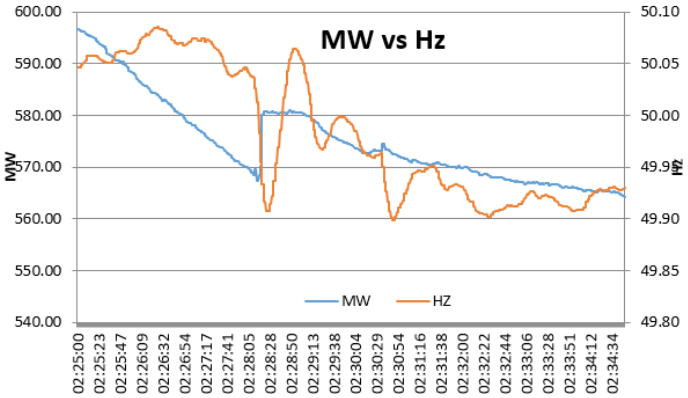
Generator	28-Jun-23 event	Generator	28-Jun-23 event
Singrauli TPS	4%	Salal HEP	-69%
Rihand-1 TPS	-17%	Tanakpur HEP	173%
Rihand-2 TPS	-26%	Uri-1 HEP	-20%
Rihand-3 TPS	-86%	Uri-2 HEP	0%
Dadri-1 TPS	481%	Dhauliganga HEP	-40%
Dadri -2 TPS	247%	Dulhasti HEP	-5%
Unchahar TPS	9%	Sewa-II HEP	0%
Unchahar stg-4 TPS	839%	Parbati-3 HEP	0%
Jhajjar TPS	518%	Jhakri HEP	-111%
Dadri GPS	No generation	Rampur HEP	25%
Anta GPS	No generation	Tehri HEP	120%
Auraiya GPS	No generation	Koteswar HEP	0%
Narora APS	6%	Karcham HEP	174%
RAPS-B	-265%	Malana-2 HEP	No generation
RAPS-C	-65%	Budhil HEP	-28%
Chamera-1 HEP	-23%	Bhakra HEP	4%
Chamera-2 HEP	-13%	Dehar HEP	-41%
Chamera-3 HEP	29%	Pong HEP	13%
Bairasiul HEP	0%	Koldam HEP	224%
		AD Hydro HEP	0%

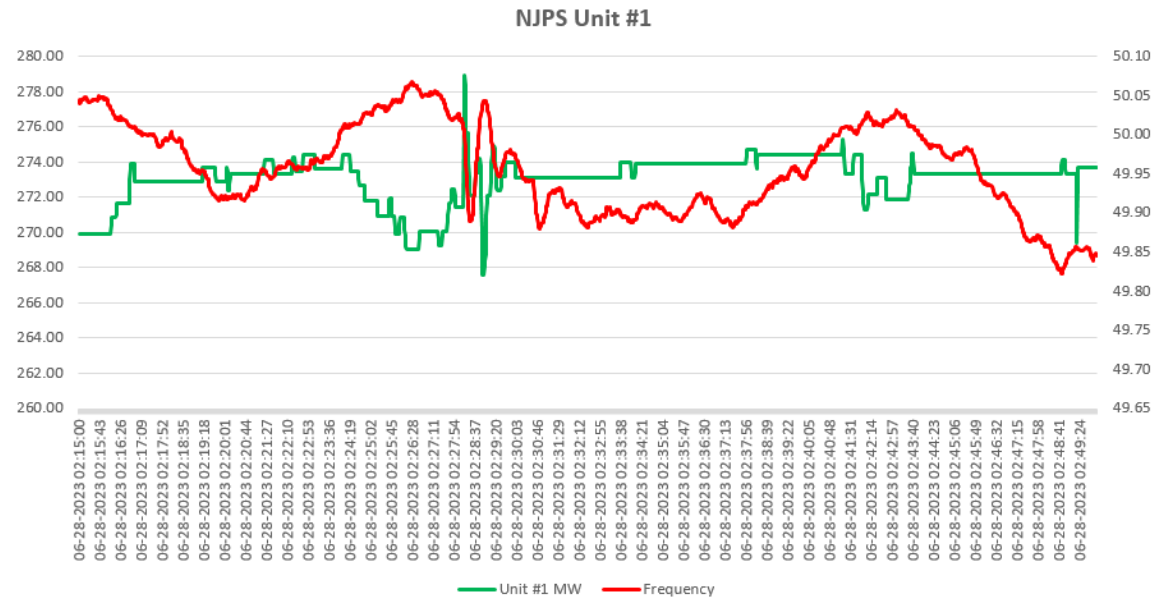
Generator	28-Jun-23 event	Generator	28-Jun-23 event
PUNJAB		UP	
Ropar TPS	0%	Obra TPS	-11%
L.Mohabbat TPS	-9%	Harduaganj TPS	No generation
Rajpura TPS	68%	Paricha TPS	-2%
T.Sabo TPS	67%	Rosa TPS	-39%
Goindwal Sahib TPS	616%	Anpara TPS	-19%
Ranjit Sagar HEP	127%	Anpara C TPS	82%
Anandpur Sahib HEP	-51%	Anpara D TPS	31%
HARYANA		Bara TPS	134%
Panipat TPS	12%	Lalitpur TPS	-37%
Khedar TPS	-118%	Meja TPS	-72%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	0%
CLP Jhajjar TPS	29%	Alaknanda HEP	0%
Faridabad GPS	No generation	Rihand HEP	-59%
RAJASTHAN		Obra HEP	-14%
Kota TPS	0%	UTTARAKHAND	
Suratgarh TPS	-34%	Gamma Infra GPS	0%
Kalisindh TPS	19%	Shravanti GPS	No generation
Chhabra TPS	No generation	Ramganga HEP	0%
Chhabra stg-2 TPS	130%	Chibra HEP	-57%
Kawai TPS	25%	Khodri HEP	41%
Dholpur GPS	No generation	Chilla HEP	-20%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	-6%
RPS HEP	No generation	Malana HEP	2%
JS HEP	No generation	Sainj HEP	-13%
DELHI		Larji HEP	-25%
Bawana GPS	0%	Bhabha HEP	-17%
Pragati GPS	-56%	Giri HEP	-41%
		J&K	
		Baglihar-1&2 HEP	No generation
		Lower Jhelum HEP	No generation



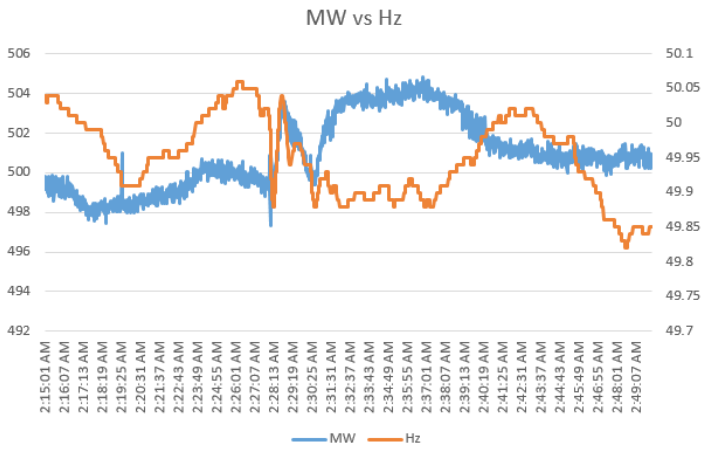
Kawai TPS Unit-1: PFR: ~-48% of ideal response

Kawai TPS Unit-2: PFR: ~157% of ideal response



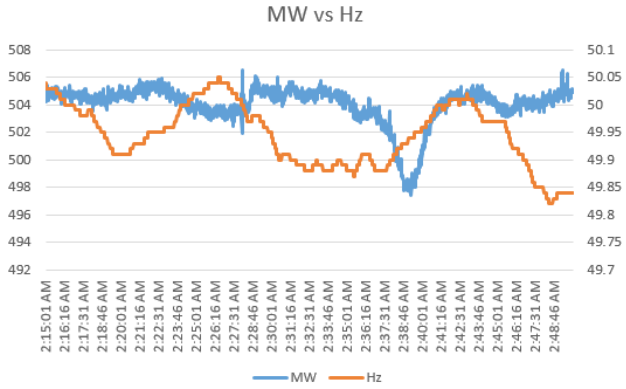


MW Data resolution is not proper for calculation of FRC



Singrauli Unit-6: PFR: ~126% of ideal response

Singrauli Unit-7: Frequency data is not proper



NRLDC representative stated that primary frequency response is not satisfactory at some of the ISGS and intrastate generating stations. States may plan to conduct the primary frequency response testing of their generating stations. Any tuning required may also be conducted in coordination with OEM.

NRLDC representative stated that FRC of Kawai Unit-2 is satisfactory however, unit-1 showed insignificant and early die out of response. Rajasthan was requested to review the same with Kawai TPS (ADANI).
No frequency response observed in Singrauli Unit-7 & Talwandi Sabo TPS units. Punjab was requested to explore the possibility of PFR testing of TSPL units.

Punjab representative informed that PFR testing of one(01) unit at Lehra Mahobat TPS has been conducted. PFR testing at other generating stations (Ropar TPS, RSD HEP, Rajpura TPS) is also in process.

Rajasthan representative informed that approval for conducting PFR testing has been taken at plant level and further process are being done. Necessary actions are being taken to expedite the PFR testing process.

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

24. Status of Bus bar protection:

Clause - 4 in schedule - V of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 reads as
"Bus bar protection and local breaker backup protection shall be provided in 220kV and higher voltage interconnecting sub- stations as well as in all generating station switchyards".
During analysis of many grid incidents/disturbances, it has been found that the Busbar protection at the affected substation was **not present or non-operational** which resulted in considerably increasing both the number of affected elements and fault clearance time. Accordingly, it becomes critical to monitor and keep Busbar protection at all the 220 kV and above voltage level substations healthy and operational.
Constituents were requested vide NRLDC letter dated 28th Dec 2022 to furnish status of Busbar protection in the following format in your control area**.**

Details are yet to be received from Rajasthan, J&K & Delhi.

Constituent wise status of bus bar protection where bus bar protection is either not installed or installed but not operational is attached as **Annexure-B.VII** of Agenda.

NRLDC representative stated that constituents agreed in last OCC meeting to share the current status of the bus bar protection, however details received from Uttarakhand only as of now.

BBMB representative informed that bus bar protection at 220kV Charkhi Dadri has been commissioned on 31st Jan, 2023.

UP representative informed that bus bar at 400kV Agra(UP) has been made operational. only 220kV Sabjumandi & Rajghat S/s don't have bus bar protection scheme. At 220kV Sabjimandi S/s elements are connected at single bus only and at 220kV Rajghat S/s, line and transformer bay are connected together so bus bar protection is not feasible at both these S/s as of now. Rest of the stations have bus bar protection operational.

HP representative informed that issue w.r.t. bus bar protection at 220kV Chamba has been taken up with OEM, feedback from OEM yet to be received. At remaining 04 stations, ABB has started the review work all the bus bar protection will be made operational by 15th September, 2023.

Rajasthan was requested to share the present status of the bus bar protection and also take necessary actions to expedite the commissioning/restoration of bus bar protection at 220kV & above substations. Rajasthan agreed the same.

NRLDC requested all the concerned members to expedite the commissioning of bus bar protection at 220kV & above stations wherever it is not healthy/not commissioned. Constituents are also requested to ensure the healthiness of bus bar protection at stations of their control area.

OCC forum requested all the constituents to update the status of bus bar protection at S/s of their control area and also expedite the commissioning and implementation work of bus bar protection system. Members agreed for the same.

25. Replacement of electromechanical relays with numerical relays:

Clause-5.2(r) of IEGC, clause-15(4) of CEA Grid standards and clause-48(4) of CEA Construction Standards 2022 mandates that *''each line or transformer or reactor or any other bay shall be provided with facility for disturbance recording, event logging and time synchronizing equipment''.*

During analysis of grid incidents/disturbances, it has been found that there are few stations where electromechanical relays are still in use and thus disturbance recorder are not available there which accounts for violation of Clause-5.2(r) of IEGC, clause-15(4) of CEA Grid Standards and clause 48(4) CEA Construction Standards 2022.

In addition, clause-3 in part III (Grid Connectivity Standards applicable to Transmission Line and Sub-Station) of Standards for Connectivity to the Grid, 2007 reads as

''*Two main numerical Distance Protection Schemes shall be provided on all the transmission lines of 220 kV and above for all new sub-stations. For existing sub-stations, this shall be implemented in a reasonable time frame''*

It is known that Disturbance recorder (DR) is essential for analysis of grid incidents/ disturbances. Its non-availability eventually affects the proper analysis of grid incidents/disturbances and monitoring of protection system.

Deliberation on same subject has also been done during 207 OCC. During the meeting, all the constituents/SLDC/STU were requested to review the same in their control area and take expedite actions to replace electromechanical relays with numerical relays. Constituents are requested to share the status of remedial action taken/to be taken regarding replacement of electromechanical relays with numerical relays w.r.t. their control area**.**

NRLDC representative stated that constituent wise status of protection relays have received. There are significant number of elements at 220kV & above level where static/electromechanical type protection relays are in use. All the concerned constituents are requested to initiate the process of replacement of static/electromechanical type protection relays with numerical relays.

OCC forum requested all the constituents to update the status of type of protection relays at S/s of their control area and also expedite the replacement work of static/electromechanical type protection relays with numerical relays. Members agreed for the same.

26. Additional agenda: Over voltage protection at 220kV & below level:

It has been observed that some of the users (mainly RE plants) keep over voltage protection in line, ICT, bus coupler etc. at 220kV & below level. On 17th July 2023, 220kV bus coupler breaker at Azure Mapple RE station tripped on over voltage which led to the loss of —125MW RE generation. In past also, tripping of line/ICT on over voltage reported at RE station connected at ISTS which had led to loss of significant quantum of RE generation. Frequent undesired tripping on over voltage protection leading to sudden loss of significant quantum of generation affect the security and reliability of grid.

It is also observed that many of the RE stations keep over voltage protection in consultation with their OEM without taking approval at OCC/PSC forum and most of the time information regarding changing protection settings also not shared.

NRLDC representative stated that in our Indian Grid, practice of keeping over-voltage protection disabled at 220 kV & below levels is followed and in case it needs to be enabled due to special need/circumstances, approval of NR OCC/ PSC forum is required. Hence, constituents are also requested to follow the same procedure w.r.t. over voltage protection at 220kV & below voltage level.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Jun-2023
◎ HARYANA — May-2023
◎ HP — Jun-2023
◎ J&K and LADAKH — Not Available
◎ PUNJAB — May-2023
◎ RAJASTHAN — Jun-2023
◎ UP — Jun-2023
◎ UTTARAKHAND — May-2023
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Mar-2023
◎ HARYANA — Jun-2023
◎ HP — May-2023
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Jun-2023
◎ RAJASTHAN — Mar-2023
◎ UP — Jun-2023
◎ UTTARAKHAND — Mar-2023
◎ BBMB — Jun-2023
All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest .</td></tr>
<tr><td></td><td></td><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Not increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased
◎ UTTARAKHAND — Increased
◎ BBMB — Increased
J&K and LADAKH were requested to update status for increasing settings of UFRs.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>Status of FGD installation vis-à-vis installation plan at identified TPS</td><td>List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed.
Further, progress of FGD installation work on monthly
basis is monitored in OCC
meetings.</td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td>◎</td><td>HARYANA</td><td>Sep-2022</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jun-2023</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jun-2023</td></tr><tr><td>◎</td><td>UP</td><td>Jun-2023</td></tr><tr><td>◎</td><td>NTPC</td><td>Feb-2023</td></tr></table>FGD status details are enclosed as Annexure-A.I.II.
All States/utilities are requested to update status of FGD installation progress on monthly basis.</td></tr>
<tr><td>5</td><td>Submission of breakup of Energy Consumption by the states</td><td>All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:
<table><tr><td>Category→</td><td>Consumption by Domestic Loads</td><td>Consumption by Commercial Loads</td><td>Consumption by Agricultural Loads</td><td>Consumption by Industrial Loads</td><td>Traction supply load</td><td>Miscellaneous / Others</td></tr><tr><td><Month></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td></td><td>State / UT</td><td>Upto</td></tr><tr><td>◎</td><td>CHANDIGARH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>DELHI</td><td>May-23</td></tr><tr><td>◎</td><td>HARYANA</td><td>Apr-23</td></tr><tr><td>◎</td><td>HP</td><td>Jun-23</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>PUNJAB</td><td>May-23</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>May-23</td></tr><tr><td>◎</td><td>UP</td><td>Apr-23</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Mar-23</td></tr></table>J&K and Ladakh and Chandigarh are requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format</td></tr>
<tr><td>6</td><td>Information about variable charges of all generating units in the Region</td><td>The variable charges detail for different generating units are available on the MERIT Order Portal.</td><td>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>7</td><td>Status of Automatic Demand Management Sysytem in NR states/UT's</td><td>The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:</td><td>Status:
<table><tr><td>◎</td><td>DELHI</td><td>Fully implemented</td></tr><tr><td>◎</td><td>HARYANA</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>HP</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Under implementation. Likely completion schedule is 15.08.2023.</td></tr><tr><td>◎</td><td>UP</td><td>Scheme implemented by NPCIL only</td></tr></table></td></tr>
</table>

8	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: Jul'23
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	Anticipated commissioning: 15.08.2023
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	Price bid has been opened and is under evaluation. Retendered in Jan'23
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	1x25 MVAR Reactor at Bikaner has been commissioned on dated 24th June 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months.

Annexure-A-I.I

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Jun'23	02 No. of bays shall be utilized for LILO-II of 220kV Hiranagar Bishnah Transmission Line, the work of which is under progress and shall be completed by end of Jun'2023. Updated in 207th 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 commission 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: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	31.07.2023	Due to ROW issue work was delayd.Updated in 209th OCC by UPPTCL
				• 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 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	Commissioned	Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Dec'23	Issue related to ROW as intimated in 208th OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad	Commissioned: 6 Under Implementation: 4	Utilized: 6 Unutilized: 0	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
	GIS	Total: 10	Under Implementation:4	• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Sep'23	Updated in 208th 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. **Status:-** Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Aprroved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	05.10.2023	Updated in 205th OCC by HVPNL
				• Sonepat - HSIISC Rai 220kV D/c line	-	Updated in 205th OCC by HVPNL. **Status:** Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
		Total: 8	Implementation:2	• Sonepat - Kharkhoda Pocket A 220kV D/c line	31.07.2024	Updated in 205th OCC by HVPNL. **Status:** The Possession of land for construction of 220KV S/Stn. Pocket-A i.e 6.33 Acres and for Pocket-B is 5.55 Acres has been taken over by HVPNL. Work order yet to be issued by O/o CE/PD&C, Panchkula for construction of 2 no. 220KV GIS S/Stn Pocket-A & Pocket-B.
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 Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line comiisioned 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	25.08.2023	• Lucknow -Kanduni, 220 kV D/C line expected energization date Aug'23 updated by UPPTCL in 209th OCC due to sub-station commissioning delay _____ • 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	31.07.2023	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date is 31.07.2023 updated by UPPTCL in 209th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	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	Sep'23	Updated in 205th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Sep'23	Updated in 205th 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
		Commissioned:7	Utilized: 6	• Amritsar – Patti 220kV S/c line	31.07.2023	Route survey/tender under process. Updated in 209th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
26	400/220kV Amritsar S/s	Approved in 50th NRPC- 1 no. Total: 8	Unutilized: 1 Approved in 50th NRPC- 1 no.	• 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)	15.08.2023	Route survey/tender under process. Work expected to be completed by 15th August 2023. Updated in 208th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL	31.03.2024	Updated in 205th OCC by HVPNL. **Status:** 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. **Status:** 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	
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
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 Panchagon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Work completed but pending for FTC.	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed but pending for first time charging.Updated in 209th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is not ready.Updated in 198th 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)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (09.07.2023)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (17.10.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (18.06.2022)
ANPARA-C TPS

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

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (18.06.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (17.10.2022)
Prayagraj TPP
APCPL (25.02.2022)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB

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

Target Dates for FGD Commissioning (Utility-wise)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
APCPL	INDIRA GANDHI STPP U#1 (Target: 31-01-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2023), INDIRA GANDHI STPP U#3 (Target: 30-06-2023)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
HGPCL	PANIPAT TPS U#6 (Target: 31-12-2022), PANIPAT TPS U#7 (Target: 31-12-2022), PANIPAT TPS U#8 (Target: 31-12-2022), RAJIV GANDHI TPS U#1 (Target: 31-12-2024), RAJIV GANDHI TPS U#2 (Target: 31-12-2024), YAMUNA NAGAR TPS U#1 (Target: 31-12-2024), YAMUNA NAGAR TPS U#2 (Target: 31-12-2024)

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

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2026), GGSSTP, Ropar U#3 (Target: 31-12-2026), GGSSTP, Ropar U#4 (Target: 31-12-2026), GGSSTP, Ropar U#5 (Target: 31-12-2026), GGSSTP, Ropar U#6 (Target: 30-12-2026)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)

Annexure-A.II

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र
उ0प्र0पॉवर ट्रांसमिशन कारपोरेशन लि0
(उत्तर प्रदेश सरकार का उपक्रम)
यू0पी0एस0एल0डी0सी0 परिसर, विभूति खण्ड–II
गोमती नगर, लखनऊ–226010
ई–मेल : cepso@upsldc.org
sera@upsldc.org

U.P. State Load Despatch Centre
U.P. Power Transmission Corporation Ltd.
(A U.P. Govt. Undertaking)
UPSLDC Complex, Vibhuti Khand – II
Gomti Nagar, Lucknow- 226010
E-mail: cepso@upsldc.org
sera@upsldc.org

No 2728 /SE(R&A) /EE-II /SPS

Date: - 18/07/ 2023

Member Secretary, NRPC,

18 – A, SJSS Marg, Katwaria Sarai,

New Delhi, 110016.

Subject: Regarding the inclusion of "Revised SPS Scheme for Anpara Complex" in the Agenda of 209th OCC meeting.

It is to inform that revised SPS scheme for Anpara Complex was discussed in 208th OCC meeting of NRPC. In the meeting UPSLDC was asked to submit the base case for the proposed SPS with NRLDC for its examination. Accordingly UPSLDC submitted PSS/E base case and SPS scheme to NRLDC and NRPC via email on 20 June, 2023. It is also mentioned that NRLDC has examined the revised SPS scheme for Anpara Complex and provided its comment (copy enclosed).

It is therefore, requested that revised SPS scheme for Anpara Complex may be included in the agenda of 209th OCC meeting of NRPC so that the same may be discussed and approved.

Encl: As above.

Superintending Engineer (R&A)

No /SE(R&A) /EE-II /SPS

Date: - 2023

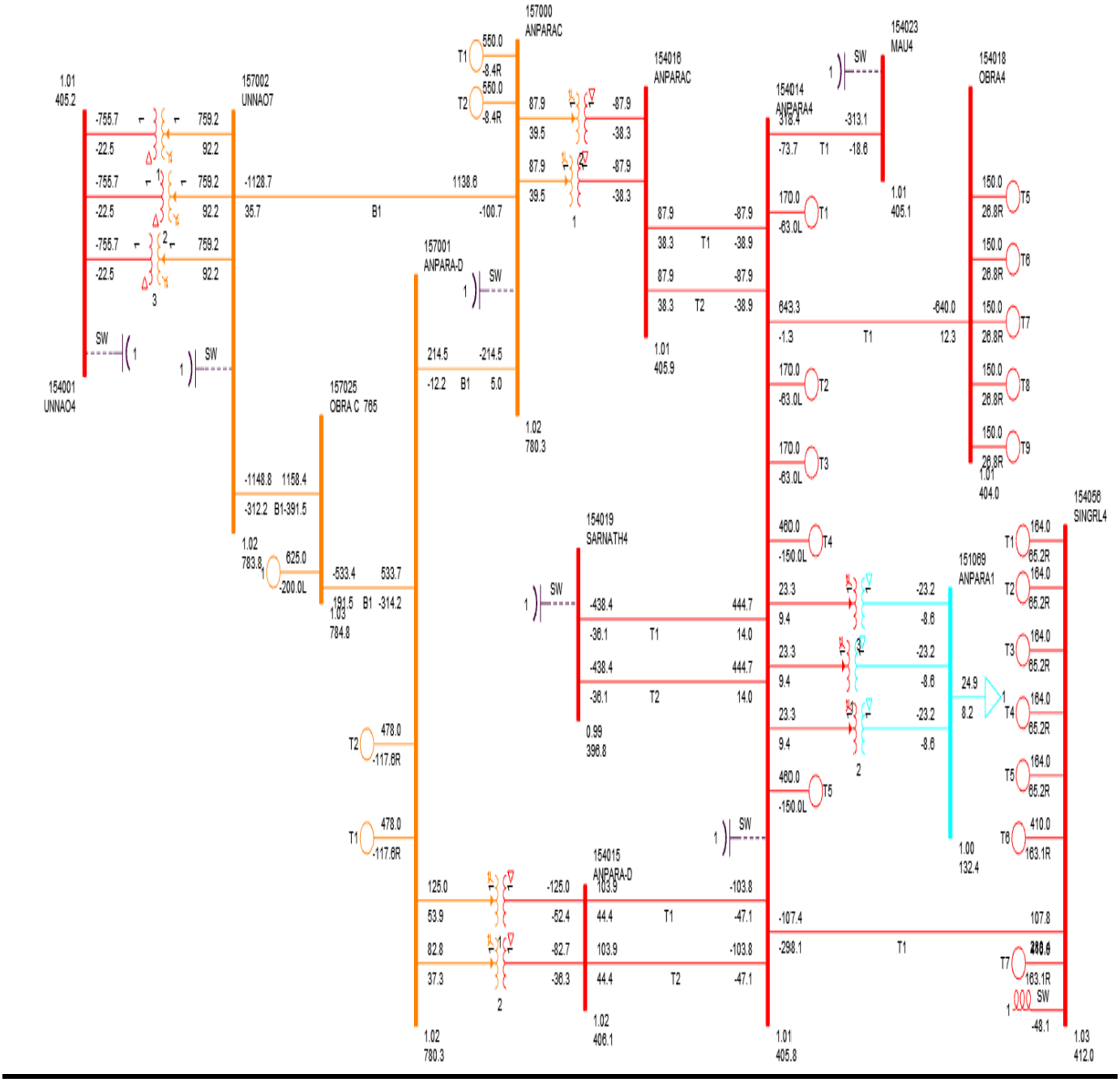
Copy forwarded to following via email for information and necessary action:-

1. Director, UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Chief Engineer (PSO), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.

Superintending Engineer (R&A)

Revision of SPS scheme for Anpara Complex

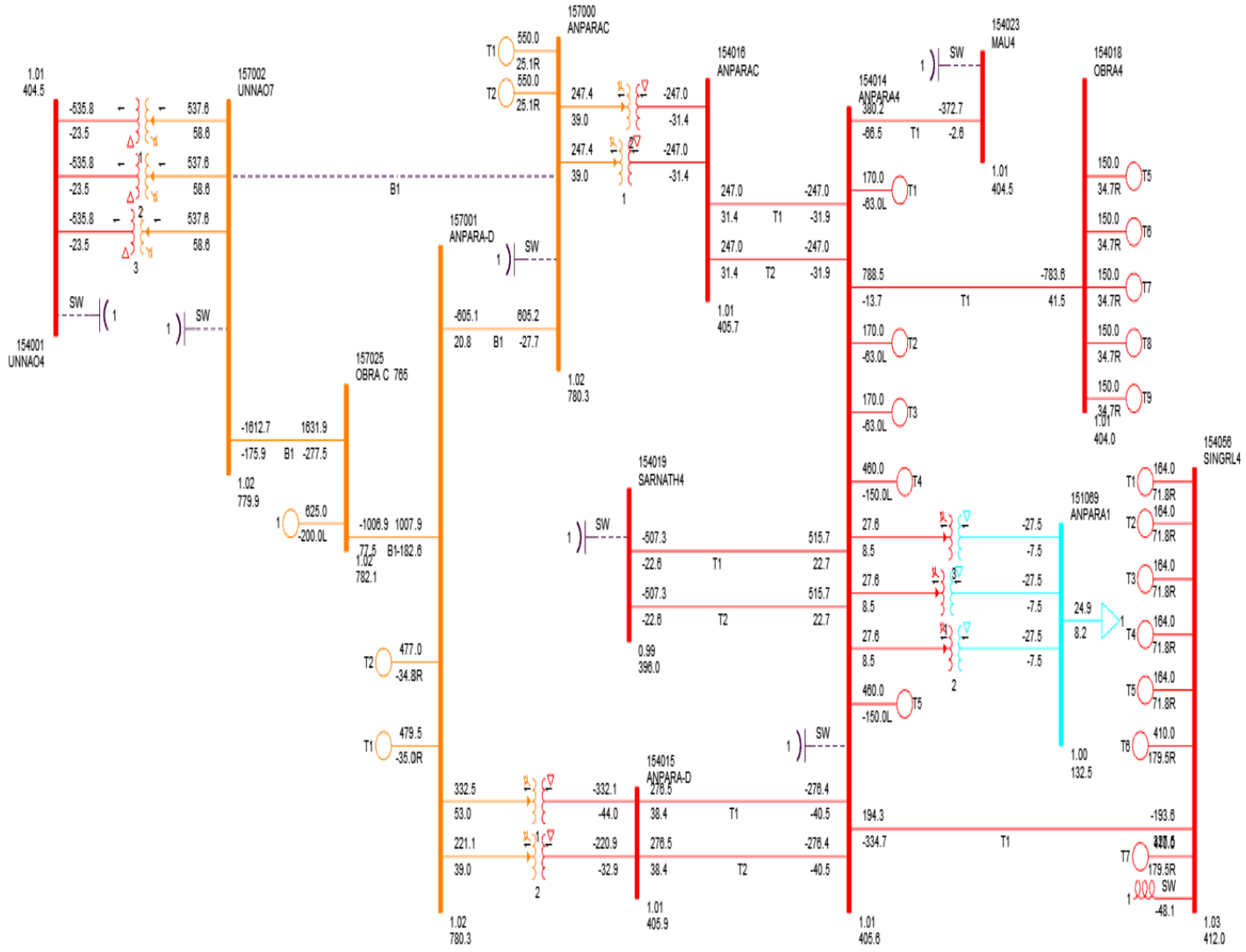
Following the LILO of 765kV Anpara D-Unnao line at Obra C TPS and in view of synchronization of 1x660 MW Unit at Obra-C TPS, existing system protection scheme for safe evacuation of power from Anpara Complex, needs to be revised.



Single Contingency

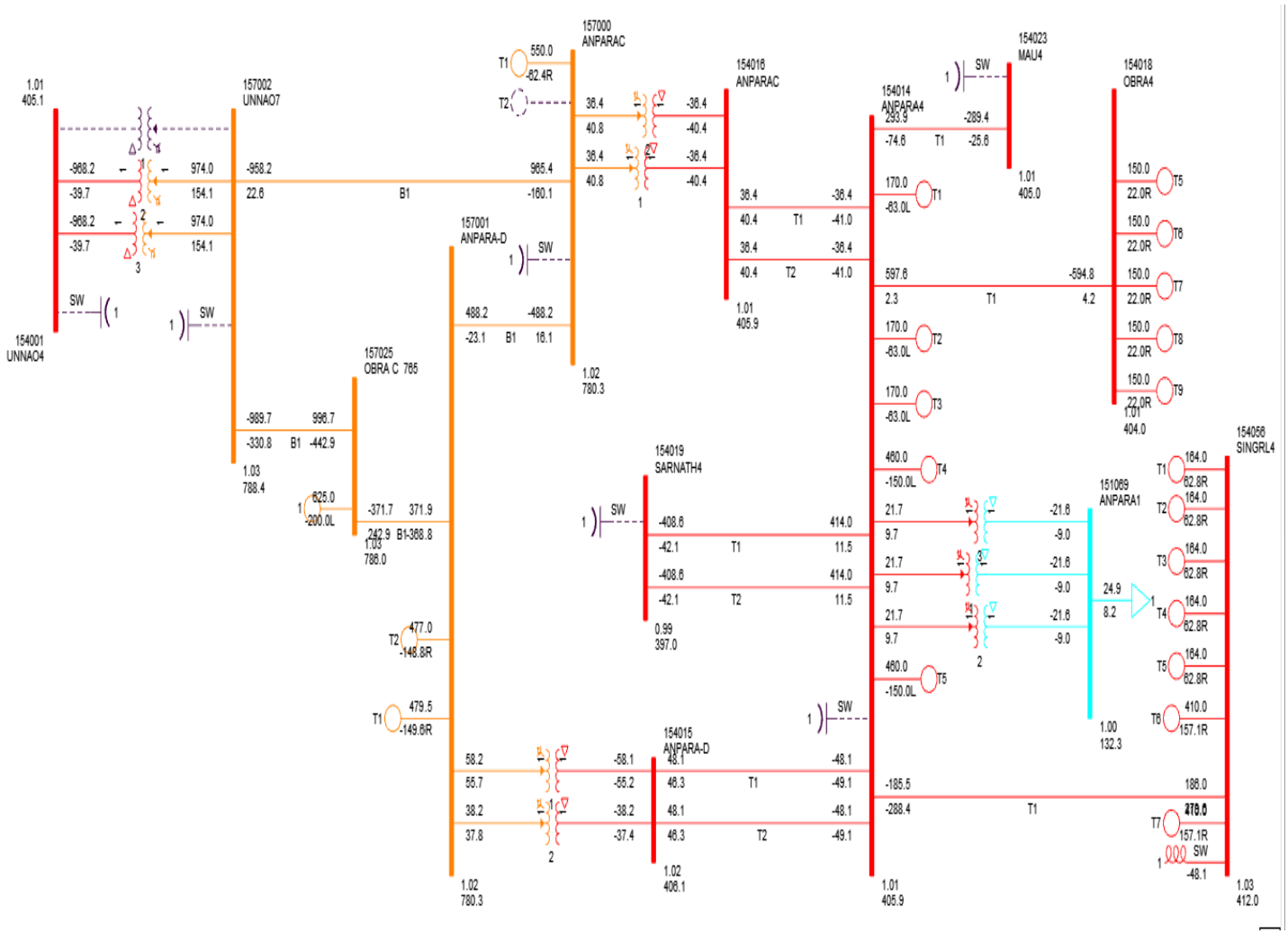
1. **Tripping of 765kV Anpara C-Unnao line OR 765 kV Obra C- Unnao line OR 765 kV Anpara D-Obra C line**

   Action: - No automatic back down or tripping of unit is required. However, as a standard operating procedure control room operator shall take immediate action to keep the loading of remaining 765 KV lines at Unnao end below 1280 MW so that system remains N-1 Compliant.



2. **Tripping of one ICT of 1000 MVA at 765 kV substation Unnao**

Action: - Tripping of one unit either from Obra CTPS or Anpara CTPS or Anpara DTPS on rotation basis if antecedent loading on 765kV Anpara C-Unnao line is more than 1050 MW. After tripping of one ICT at 765 kV Substation Unnao, backing down is required at Obra CTPS, Anpara C TPS, Anpara DTPS till loading of each ICT is below 950 MW.



Multiple contingencies

1. **Tripping of 2x 1000 MVA ICT at 765 kV substation Unnao.**
   Action: - Tripping of one unit each at Obra CTPS, Anpara CTPS and Anpara DTPS and tripping of 765 kV Obra C –Unnao line. In case any of the unit is under shutdown at aforementioned plants, tripping command shall not be issued to that plant.

2. **Tripping of 765kV Anpara C-Unnao AND 765 kV Anpara D-Obra C line simultaneously.**

   Action 1- Tripping of one unit each at Anpara CTPS and Anpara DTPS if antecedent loading on 765kV Anpara C-Unnao line is more than 1100 MW.
   Action 2- Tripping of one unit either from Anpara CTPS OR Anpara DTPS on rotation basis if antecedent loading on 765kV Anpara C-Unnao line is more than 950 MW.

3. **Tripping of 765kV Anpara C-Unnao AND 765 KV Obra C-Unnao line simultaneously OR Tripping of 3 x 1000 MVA ICT at 765 KV substation Unnao**.

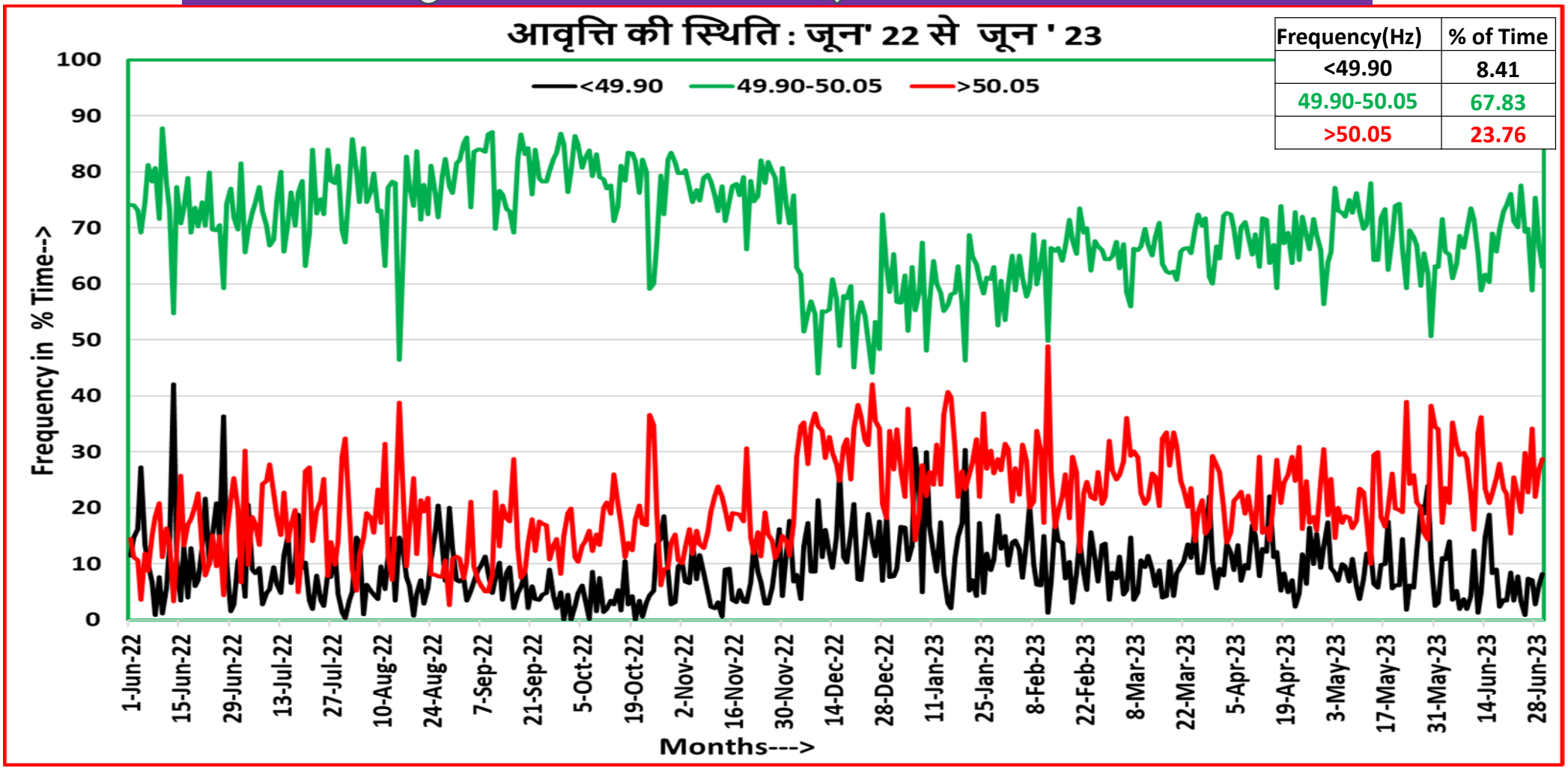
   Action 1- Tripping of one unit each at Obra CTPS, Anpara CTPS and Anpara DTPS if antecedent loading on 765kV Anpara C-Unnao line is more than 1100 MW.
   Action 2- Tripping of total 2 units to be selected from two of three plants namely Obra CTPS, Anpara CTPS and Anpara DTPS on rotation basis if antecedent loading on 765kV Anpara C-Unnao line is more than 1000 MW.
   Action 3- Tripping of 1 unit to be selected from one of three plants namely Obra CTPS, Anpara CTPS and Anpara DTPS on rotation basis if antecedent loading on 765kV Anpara C-Unnao line is more than 900 MW.

प्रचालन समन्वय उपसमिति की बैठक
जून- 2023

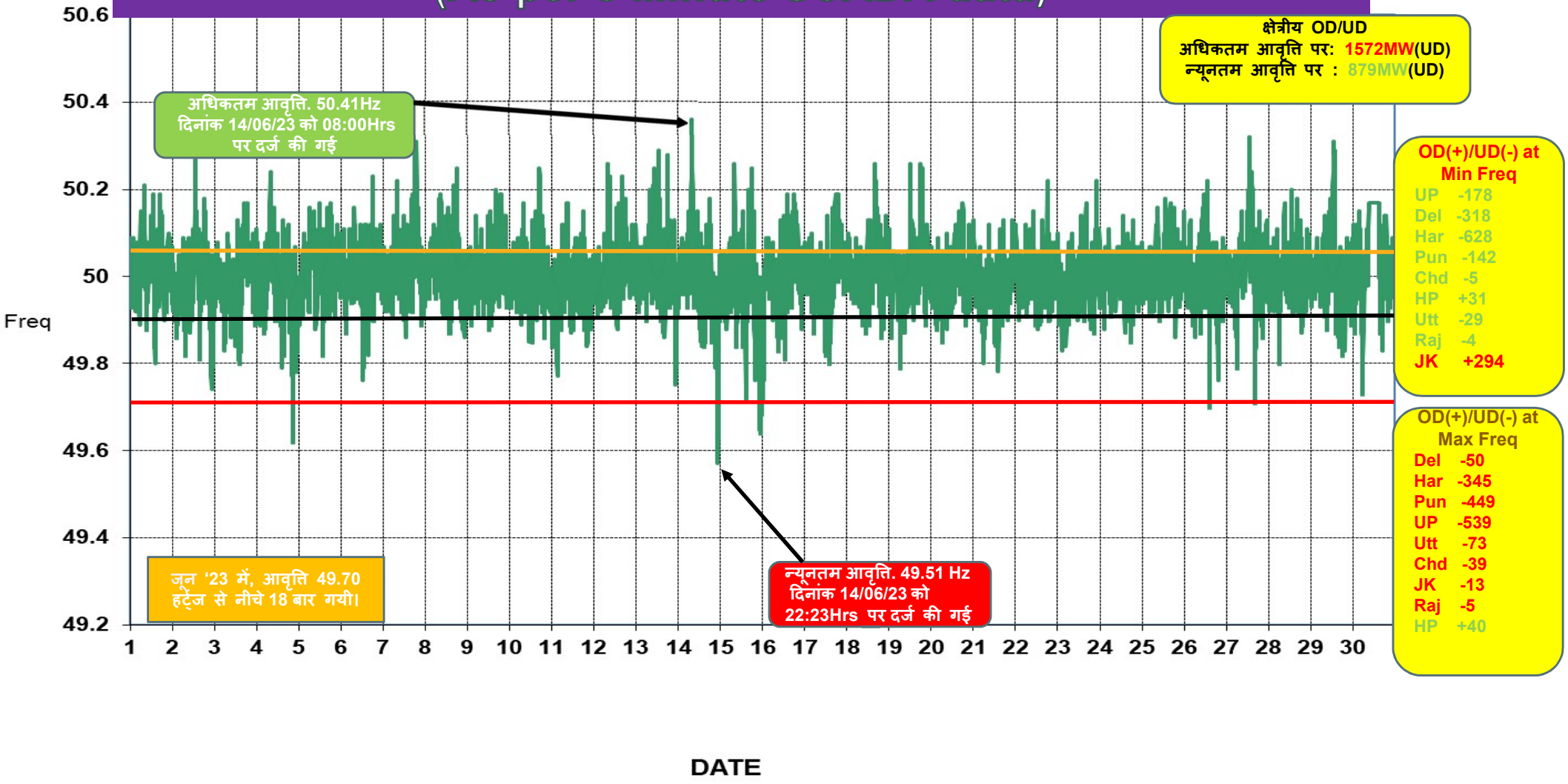
पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	जून 2022	जुलाई 2022	अगस्त 2022	सितम्बर 2022	अक्टूबर 2022	नवम्बर 2022	दिसंबर 2022	जनवरी 2023	फ़रवरी 2023	मार्च 2023	अप्रैल 2023	मई 2023	जून 2023
< 49.7 Hz(%)	0.42	0.42	0.49	0.17	0.04	0.13	1.11	1.25	0.32	0.16	0.24	0.24	0.22
<49.8 Hz(%)	2.41	1.78	2.02	0.91	0.46	0.76	3.96	3.60	1.95	1.26	1.68	1.48	0.86
<49.9 Hz(%)	12.45	7.82	8.77	5.94	4.88	6.70	12.78	13.30	10.75	9.03	10.54	9.83	8.42
49.90-50.05 Hz(%)	**73.38**	**73.45**	**75.77**	**80.77**	**78.27**	**77.00**	**57.39**	**58.70**	**64.68**	**63.84**	**67.90**	**68.48**	**67.83**
50.05-50.10 Hz(%)	11.46	14.84	11.99	11.55	14.04	13.88	11.99	15.26	14.59	17.86	12.54	13.25	15.59
>50.10 Hz(%)	2.43	3.58	3.00	1.65	2.63	2.30	17.84	12.34	8.49	7.99	6.46	8.44	8.15
>50.20 Hz(%)	0.28	0.31	0.47	0.08	0.18	0.12	4.07	1.83	1.49	1.28	0.88	0.77	1.09
औसत आवृत्ति	49.99	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	49.99	49.99	50.01

आवृत्ति की स्थिति: जून-2022 से 2023



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



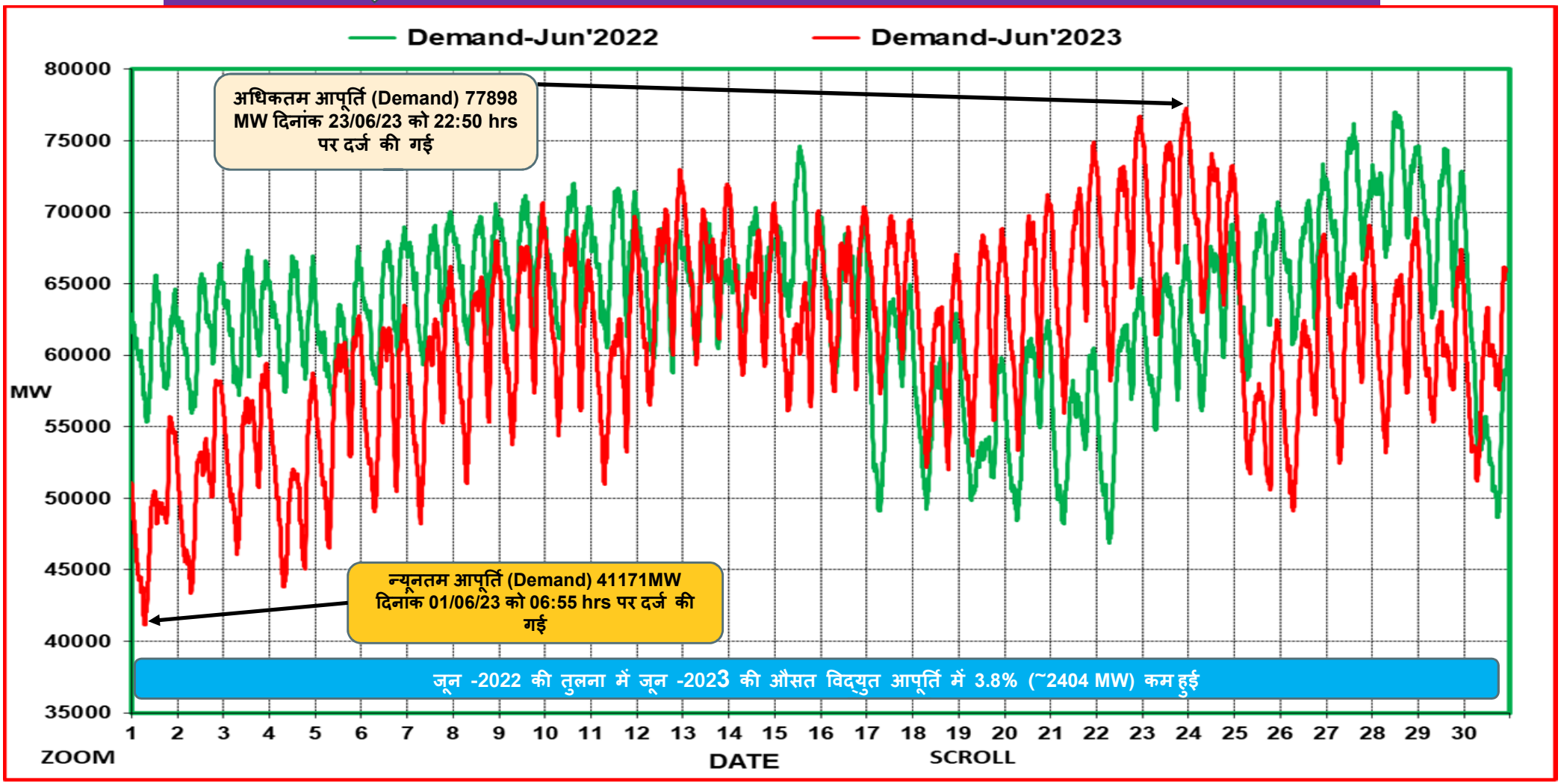
जून -2023 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

राज्य	अधिकतम मांग (MW) (in Jun'23)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto May'23)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Jun'23)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto May'23)	दिनांक
पंजाब	15293	24.06.23 at 11.45	14295	22.08.22 को 14:45 बजे	344	24.06.2023	334.45	29.06.22
हरियाणा	11634	23.06.23 at 23.45	12768	28.06.22 को 11:56 बजे	251	24.06.2023	266.15	07.07.21
राजस्थान	15840	13.06.23 at 12:30	17206	18.01.23 को 14:30 बजे	332	13.06.2023	330.9	23.05.2023
दिल्ली	7226	14.06.23 at 15:24	7695	29.06.22 को 15:10 बजे	144	13.06.2023	153.52	28.06.22
उत्तर प्रदेश	27611	13.06.23 at 23:33	26589	09.09.22 को 21:39 बजे	568	17.06.2023	547.40	19.08.22
उत्तराखंड	2436	17.06.23 at 21:00	2594	14.06.22 को 21:00 बजे	56	17.06.2023	54.27	15.06.22
हिमाचल प्रदेश	1753	30.06.23 at 10.15	2071	06.01.23 को 09:45 बजे	36	30.06.2023	37.0	06.01.23
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2542	02.06.23 at 09:00	3044	02.02.23 को 20:00 बजे	59	12.06.2023	64.6	20.01.23
चंडीगढ़	377	21.06.23 at 15:30	426	08.07.21 को 15:00 बजे	8	22.06.2023	8.41	08.07.21
उत्तरी क्षेत्र #	77898	23.06.23 at 22:00	77006	28.06.22 को 11:50 बजे	1714	23.06.2023	1737.09	28.06.22

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

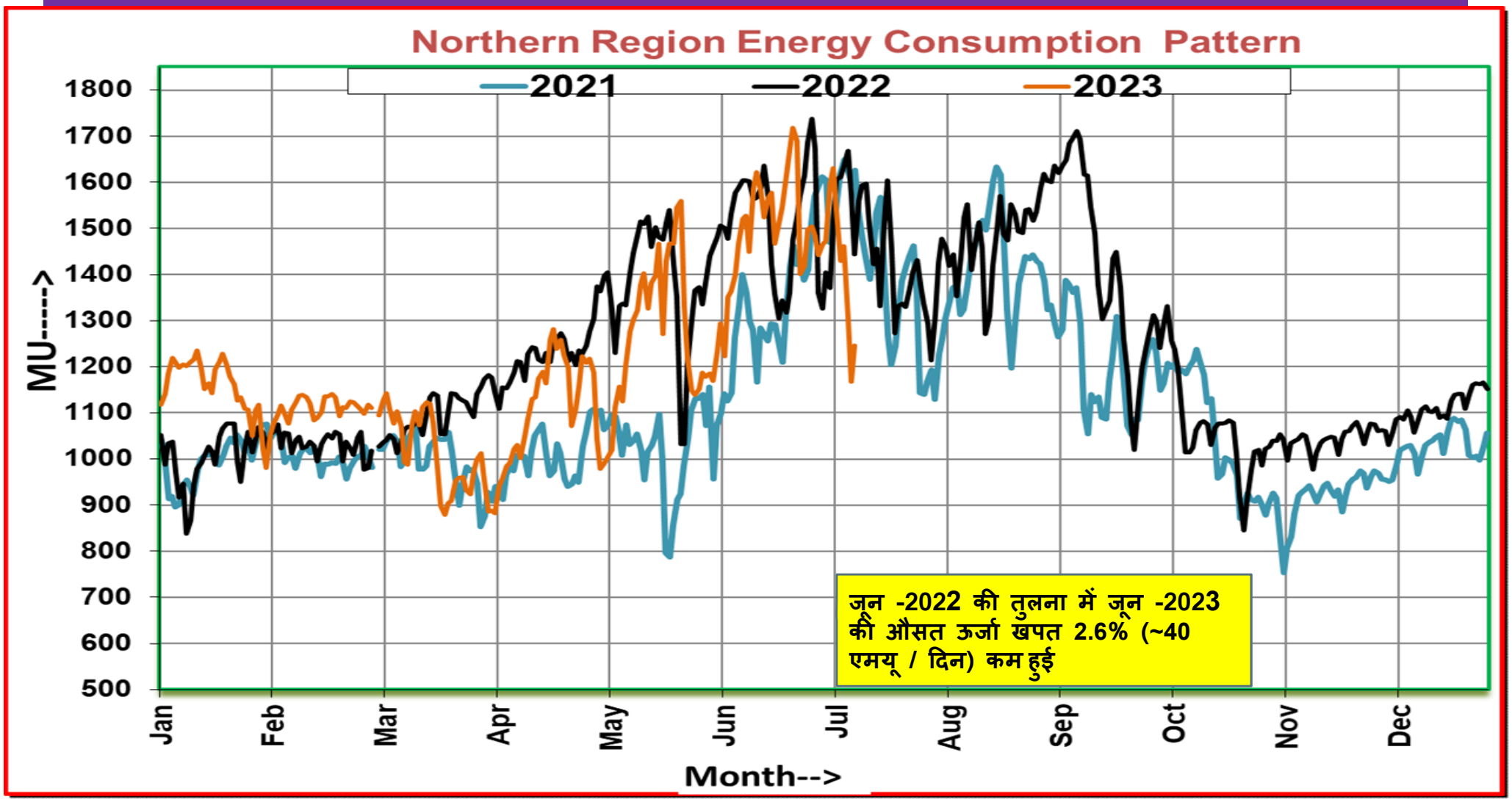
क्षेत्रीय विद्युत आपूर्ति (Demand) जून 2022 बनाम जून 2023 (As per 5 Minute SCADA data)



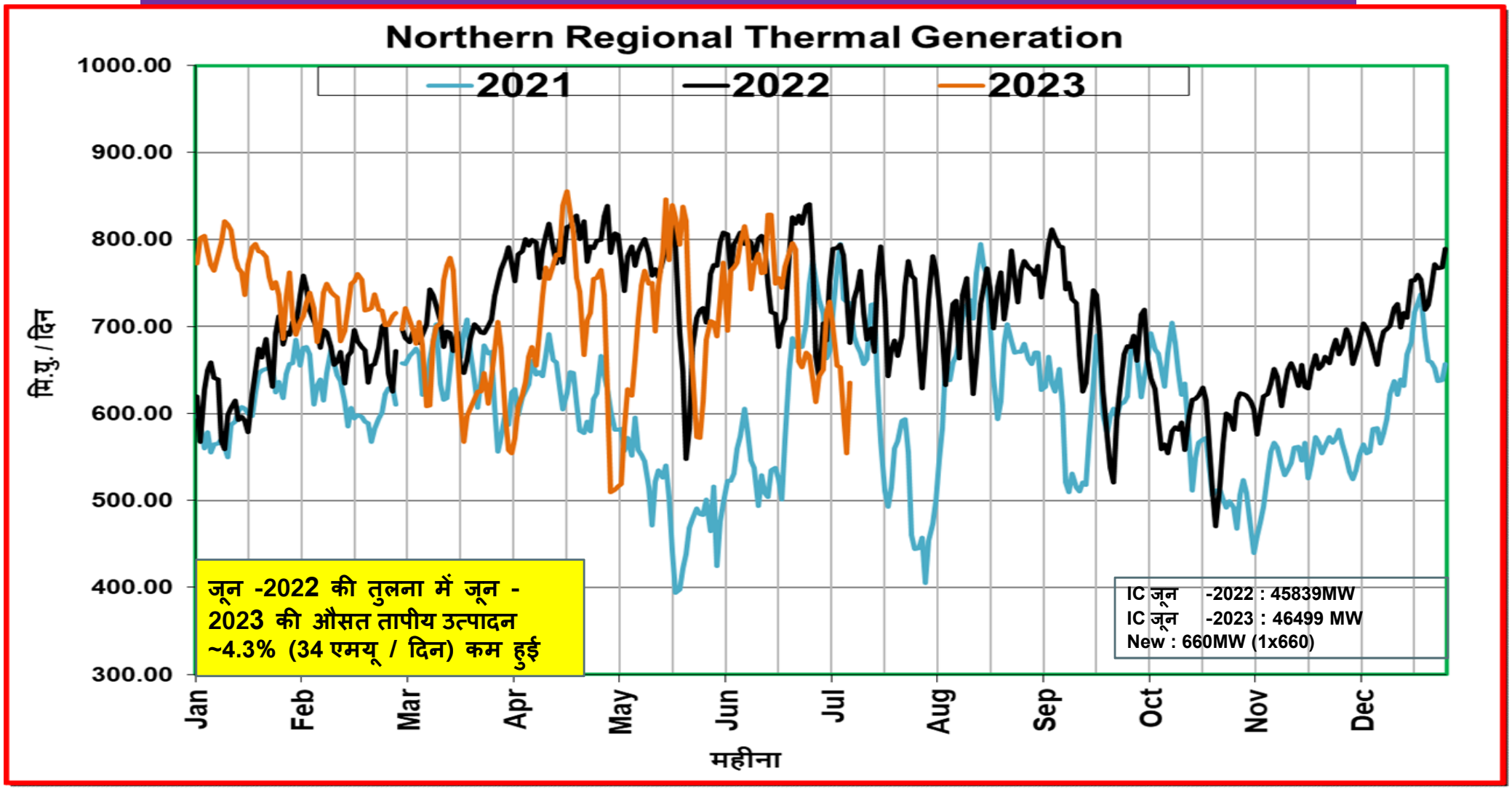
उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) जून -2023/ जून -2022 / जून -2021

राज्य	जून -2021	जून -2022	जून -2023	% वृद्धि (जून -2022 vs जून -2021)	% वृद्धि (जून -2023 vs जून -2022)
पंजाब	234.4	251.1	235.9	7.1%	-6.0%
हरियाणा	187.6	211.7	204.6	12.8%	-3.4%
राजस्थान	243.3	290.8	271.1	19.5%	-6.8%
दिल्ली	108.7	130.1	122.2	19.6%	-6.1%
उत्तर प्रदेश	399.9	495.2	503.9	23.8%	1.7%
उत्तराखंड	40.8	49.3	49.7	20.9%	0.8%
चंडीगढ़	5.6	6.6	6.1	18.3%	-7.7%
हिमाचल प्रदेश	30.0	34.3	31.1	14.3%	-9.3%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	50.0	50.8	52.0	1.7%	2.3%
उत्तरी क्षेत्र	1300.3	1520.1	1480.5	16.9%	-2.6%

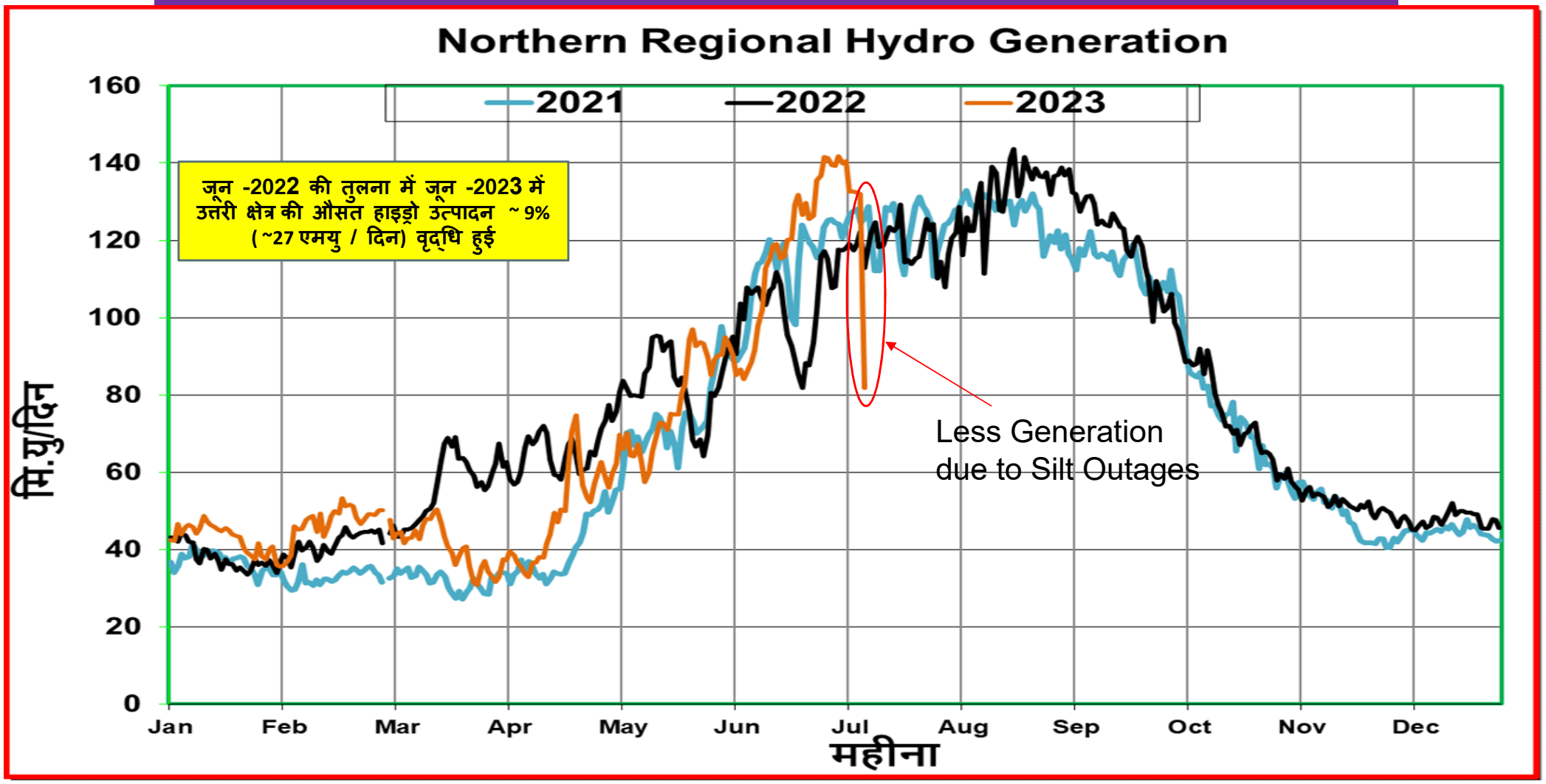
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



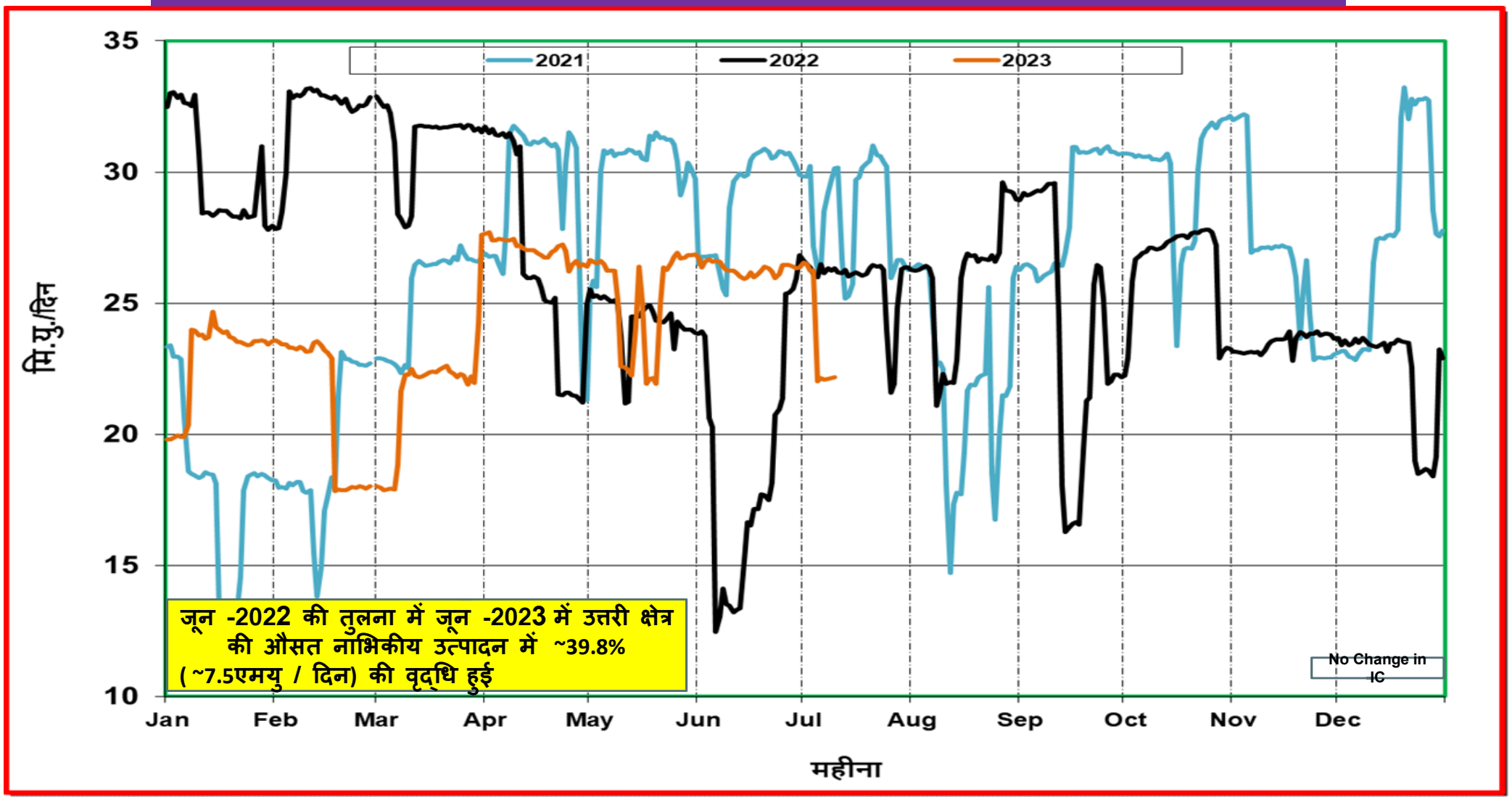
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



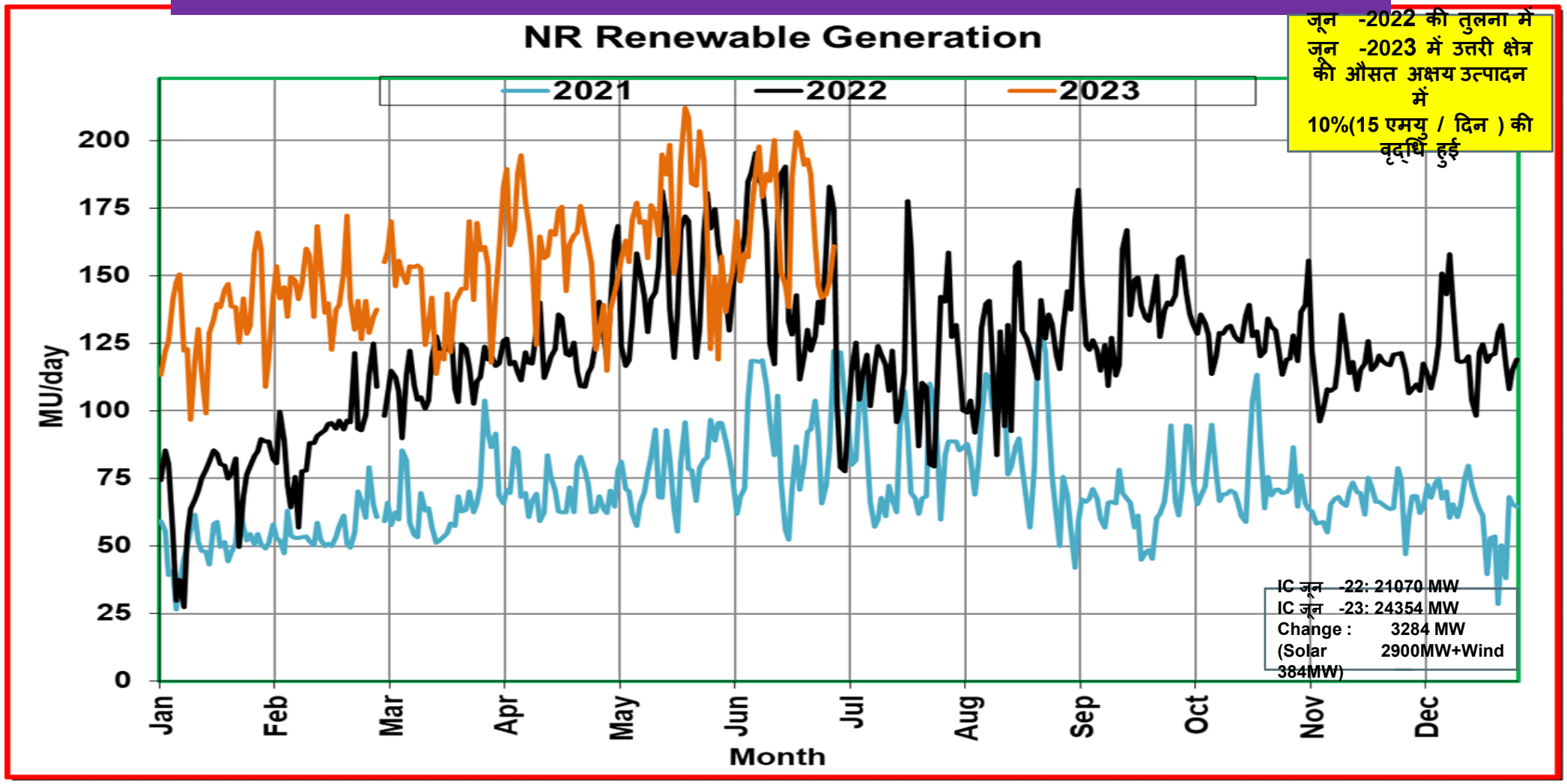
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



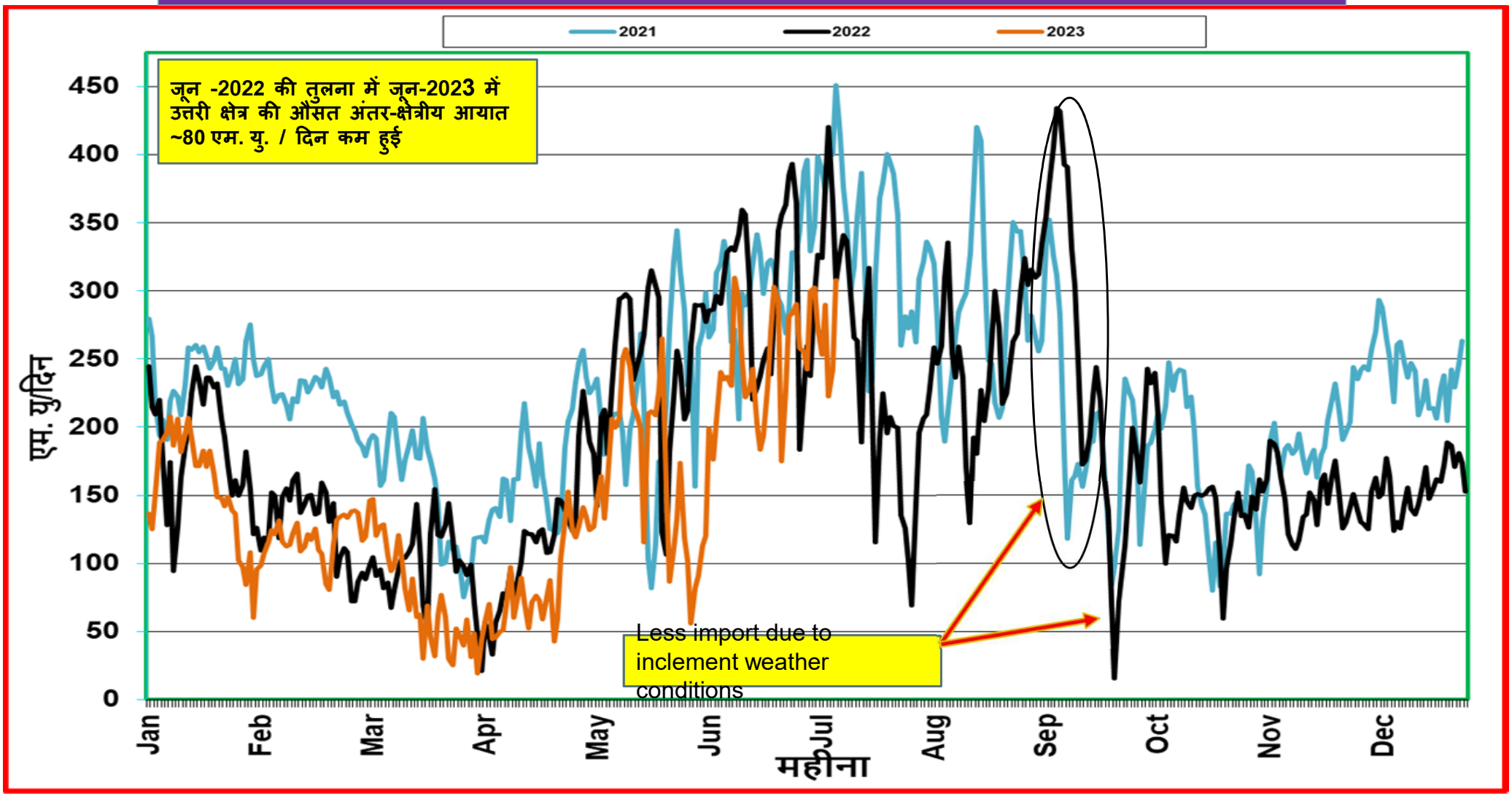
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



(Mus/Day)


NR Renewable Generation
2021
2022
2023
200
175
150
125
100
75
50
25
0
MU/day
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
जून -2022 की तुलना में जून -2023 में उत्तरी क्षेत्र की औसत अक्षय उत्पादन में 10%(15 एमयु / दिन) की वृद्धि हुई
IC जून -22: 21070 MW
IC जून -23: 24354 MW
Change : 3284 MW
(Solar 2900MW+Wind 384MW)

अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



वास्तविक सारांश -
जून -2021 बनाम जून -2022

	जून -2022 (मि.यु. /दिन)	जून -2023 (मि.यु. /दिन)	जून माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	779.33	755.07	-24.26
जलीय (Hydro) उत्पादन	292.55	319.34	26.79
नाभिकीय (Nuclear) उत्पादन	18.82	26.31	7.49
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	302.46	222.22	-80.23
अक्षय (Renewable) उत्पादन	153.13	168.42	15.28
कुल	**1546.3**	**1491.4**	**-54.9**

RE Penetration

	Maximum Daily MU Penetration			
	June '2023		Record upto May '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	4.52	01-06-2023	12.28	01-04-2020
Rajasthan	31.35	20-06-2023	36.47	22-10-2021
UP	2.95	01-06-2023	4.72	22-03-2023
NR	13.90	04-06-2023	20.69	02-04-2023

	Maximum Instantaneous Penetration in MW			
	June '2023		Record upto May '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	7.38	01-06-2023	26.87	22-04-2020
Rajasthan	53.56	17-06-2023	68.38	31-03-2020
UP	9.32	14-06-2023	17.78	13-02-2023
NR	33.84	04-06-2023	53.72	02-04-2023

Outage Summary For June 2023									
CONSTITUENTS	PLANNED (A)	FORCED OUTAGES (B=C+D)	EMERGENCY SHUTDOWNS (C)	TRIPPING (D)	% PLANNED SHUTDOWNS (A/(A+C))	% EMERGENCY SHUTDOWNS(C/(A+C)	% ESD SHUTDOWNS(C/B)	% TRIPPING (D/B)	TOTAL OUTAGES (A+B)
POWERGRID	257	256	158	98	61.9%	38.1%	61.7%	38.3%	513
UPPTCL	67	177	75	102	47.2%	52.8%	42.4%	57.6%	244
RRVPNL	59	85	25	60	70.2%	29.8%	29.4%	70.6%	144
PSTCL	26	62	24	38	52.0%	48.0%	38.7%	61.3%	88
HVPNL	32	52	22	30	59.3%	40.7%	42.3%	57.7%	84
BBMB	14	47	13	34	51.9%	48.1%	27.7%	72.3%	61
DTL	11	26	11	15	50.0%	50.0%	42.3%	57.7%	37
ATIL	0	22	18	4	0.0%	100.0%	81.8%	18.2%	22
NTPC	6	16	9	7	40.0%	60.0%	56.3%	43.8%	22
PTCUL	9	12	4	8	69.2%	30.8%	33.3%	66.7%	21
PDD JK	5	14	1	13	83.3%	16.7%	7.1%	92.9%	19
HPPTCL	1	16	5	11	16.7%	83.3%	31.3%	68.8%	17
Adani	5	9	5	4	50.0%	50.0%	55.6%	44.4%	14
Avaada solar	5	6	4	2	55.6%	44.4%	66.7%	33.3%	11
PKTSL	5	4	2	2	71.4%	28.6%	50.0%	50.0%	9
MAHINDRA	8	0	0	0	100.0%	0.0%	0.0%	0.0%	8
Renew Solar Urja (RSUPL)	5	3	2	1	71.4%	28.6%	66.7%	33.3%	8
Cleansolar_Jodhpur	3	3	3	0	50.0%	50.0%	100.0%	0.0%	6
SBSRPC-11	2	4	1	3	66.7%	33.3%	25.0%	75.0%	6
Tata Power	3	3	1	2	75.0%	25.0%	33.3%	66.7%	6
PFTL	0	5	2	3	0.0%	100.0%	40.0%	60.0%	5
ACME	3	1	1	0	75.0%	25.0%	100.0%	0.0%	4
POWERLINK	4	0	0	0	100.0%	0.0%	0.0%	0.0%	4
EDEN (ERCPL)	2	1	0	1	100.0%	0.0%	0.0%	100.0%	3
Saurya Urja	3	0	0	0	100.0%	0.0%	0.0%	0.0%	3
THDC	0	3	1	2	0.0%	100.0%	33.3%	66.7%	3
APCPL	0	2	1	1	0.0%	100.0%	50.0%	50.0%	2
GPTL	0	2	1	1	0.0%	100.0%	50.0%	50.0%	2
NHPC	0	2	1	1	0.0%	100.0%	50.0%	50.0%	2
PVTSL	0	2	1	1	0.0%	100.0%	50.0%	50.0%	2
Sekura	0	2	0	2	0.0%	0.0%	0.0%	100.0%	2
Sterlite	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
Chandigarh SEB	0	1	0	1	0.0%	0.0%	0.0%	100.0%	1
NPCIL	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
NRSS XXIX	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
Total	537	840	393	447	57.7%	42.3%	46.8%	53.2%	1377

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))	
March-23	878	545	225	324	79.6%	20.4%	1423
April-23	777	629	267	362	74.4%	25.6%	1406
May-23	543	1007	359	648	60.2%	39.8%	1550
June-23	**537**	**840**	**393**	447	**57.7%**	**42.3%**	**1377**

New Elements First Time Charged During June 2023

S. No.	Type of transmission element	Total No
1	400/220kV lines	09
2	ICTs	3
3	STATCOM Devices	01
4	Line Reactors	04
5	FSC	01
6	Bus Reactor	02
7	Capacitor Bank	02
8	Generating Units	01
Total New Elements charged		23

Transmission Lines

S.NO.	LINE NAME	Owner	Length (KM)	Conductor Type	DATE	REMARKS
1	132kV Pithoragarh(PG)-Lohaghat(PTCUL)	PTCUL	41.97	Panther	02-June-2023	Antitheft charged from Pithorgarh (PG) upto tower location 158
2	400kV Khurja STPP (TH)-Aligarh(PG)-1	THDC	35.15	MOOSE	03-Jun-2023	
3	400kV Khurja STPP (TH)-Aligarh(PG)-2	THDC	35.15	MOOSE	08-Jun-2023	
4	400kV Bikaner_2 (PBTSL)-Khetri (PKTSL)-1	PBTSL	275.5	Twin HTLS	22-Jun-2023	
5	400kV Bikaner_2 (PBTSL)-Khetri (PKTSL)-2	PBTSL	275.5	Twin HTLS	23-Jun-2023	
6	400kV Bikaner_2 (PBTSL)-Khetri (PKTSL)-3	PBTSL	275.5	Twin HTLS	23-Jun-2023	
7	400kV Bikaner_2 (PBTSL)-Khetri (PKTSL)-4	PBTSL	275.5	Twin HTLS	23-Jun-2023	
8	400kV Khetri (PKTSL)-Bhiwadi(PG)-1	PBTSL	125.66	Twin HTLS	25-Jun-2023	
9	400kV Khetri (PKTSL)-Bhiwadi(PG)-2	PBTSL	125.66	Twin HTLS	25-Jun-2023	

ICTs/GTs/Transformers

S.NO.	SUB-STATION	Voltage Level (kV)	CAPACITY (MVA)	DATE
1	Nakodar(PG)	400/33kV	500 MVA	18-Jun-2023
2	Bikaner_2(PBTSL)	400/33kV	550 MVA	27-Jun-2023
3	Sohawal(PG)	400/33kV	500 MVA	28-Jun-2023

STATCOM DEVICES

S.NO.	SUB-STATION	Voltage Level (kV)	CAPACITY (MVAR)	DATE
1	STATCOM No : 2, 34.5kV, 2* +/-150Mvar each | Coupling Transformer: 400KV/34.5KV, 550 MVA | MSR : 2, 34.5kV, 125 Mvar each | MSC : 2, 34.5KV, 2*125 Mvar each | Auxillary Transformer : 630KVA at Bhadla_2 (PG)	400	2 x +/- 150MVAr	07-June-2023

Line Reactors

S.NO.	SUB-STATION	Voltage Level (kV)	CAPACITY (MVAR)	DATE
1	80 MVAr Switchable LINE_REACTOR of 400 KV Bikaner_2 -Khetri Ckt-1 at Bikaner_2 (PBTSL)	400	80 Mvar	22-Jun-2023
2	80 MVAr Switchable LINE_REACTOR of 400 KV Bikaner_2 -Khetri Ckt-2 at Bikaner_2 (PBTSL)	400	80 Mvar	23-Jun-2023
3	80 MVAr Switchable LINE_REACTOR of 400 KV Bikaner_2 -Khetri Ckt-3 at Bikaner_2 (PBTSL)	400	80 Mvar	23-Jun-2023
4	80 MVAr Switchable LINE_REACTOR of 400 KV Bikaner_2 -Khetri Ckt-4 at Bikaner_2 (PBTSL)	400	80 Mvar	23-Jun-2023

FSC

S.NO.	FSC AND LINE NAME	Voltage Level (kV)	% Compensation and rated current	DATE
1	765KV Meerut-Koteshwar-1, FSC at Meerut(PG)	400	39% and 2600 Amps	07-June-2023

Bus Reactor

S.NO.	SUB-STATION	Voltage Level (kV)	CAPACITY (MVAR)	NO	DATE
1	400kV, 125 MVAr Bus Reactor 1 at Bikaner_2 (PBTSL)	400	125 Mvar	1	23-Jun-2023
2	400kV, 125 MVAr Bus Reactor 2 at Bikaner_2 (PBTSL)	400	125 Mvar	2	23-Jun-2023

Capacitor Bank

S.NO.	SUB-STATION	Voltage Level (kV)	CAPACITY (MVAR)	DATE
1	Capacitor Sub Bank No : A of Capacitor Bank A associated with 33kV Feeder A at TPSL_BKN	33kV	25 (9+8+8) MVAr	20-Jun-2023
2	Capacitor Sub Bank No : B of Capacitor Bank B associated with 33kV Feeder B at TPSL_BKN	33kV	25 (9+8+8) MVAr	20-Jun-2023

RE Generating Units

SL. NO.	Station name	Owner	Capacity (MW)	DATE
1	TP Saurya Limited (TPSL) (Solar)	TPSL	18.75	20-June-2023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