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 217 वी बैठक का कार्यवृत |

Subject: Minutes of the 217th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 217 वीं बैठक दिनांक 15.03.2024 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

The 217th meeting of the Operation Co-ordination Sub-Committee (OCC) of NRPC was held on 15.03.2024. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक:यथोपरि

Signed by D. K. Meena
Date: 27-03-2024 18:55:37
Reason: Approved
(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 217 वीं बैठक का कार्यवृत्त

The 217th OCC meeting of NRPC was held on 15.03.2024 through video conferencing.

खण्ड-क:उ.क्षे.वि.स. PART-A:NRPC

A.1. Confirmation of Minutes

Minutes of the 216th OCC meeting was issued on 12.03.2024. OCC confirmed the minutes of the meeting.

A.2. Review of Grid operations of February 2024

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

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

- **Delhi**

  Delhi experienced below normal average temperature in Feb-2024 as compared to previous years, which causes increase in heating load. So, peak demand and energy consumption was on higher side than expected.

- **Himachal Pradesh**

  Himachal Pradesh intimated that the Anticipation in Energy Requirement in respect of Himachal Pradesh for the month of February, 2024 came on the lower side due to consistent dry weather in the State.

- **Punjab**

  It is intimated that actual maximum demand and actual energy requirement are more as compared anticipated maximum demand and anticipated energy requirement because of predominantly dry weather and increased demand of all categories of consumers in the state of Punjab during the month of February 2024.

- **Uttarakhand**

  The reason for significant positive variation in peak demand is due to persistent cold wave conditions without rainfall in Jan and first week of Feb 24 w.r.t historical data.

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

The maintenance programme of generating units and transmission lines for the month of April 2024 was deliberated in the meeting on 14.03.2024.

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	160	360	No Revision submitted
	Requirement	133	288	
	Surplus / Shortfall	27	72	
	% Surplus / Shortfall	19.9%	25.2%	
DELHI	Availability	3613	6000	15-Mar-24
	Requirement	2700	6000	
	Surplus / Shortfall	913	0	
	% Surplus / Shortfall	33.8%	0.0%	
HARYANA	Availability	6830	10400	15-Mar-24
	Requirement	5494	10390	
	Surplus / Shortfall	1336	10	
	% Surplus / Shortfall	24.3%	0.1%	
HIMACHAL PRADESH	Availability	1030	1902	11-Mar-24
	Requirement	1054	1875	
	Surplus / Shortfall	-24	27	
	% Surplus / Shortfall	-2.3%	1.4%	
J&K and LADAKH	Availability	1430	3290	No revision submitted
	Requirement	1760	3169	
	Surplus / Shortfall	-330	121	
	% Surplus / Shortfall	-18.7%	3.8%	
PUNJAB	Availability	6910	11230	15-Mar-24
	Requirement	5150	10863	
	Surplus / Shortfall	1760	367	
	% Surplus / Shortfall	34.2%	3.4%	
RAJASTHAN	Availability	9230	17180	14-Mar-24
	Requirement	8700	15800	
	Surplus / Shortfall	530	1380	
	% Surplus / Shortfall	6.1%	8.7%	
UTTAR PRADESH	Availability	11700	25800	07-Mar-24
	Requirement	11400	25800	
	Surplus / Shortfall	300	0	
	% Surplus /	2.6%	0.0%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Shortfall			
UTTARAKHAND	Availability	1263	2340	06-Mar-24
	Requirement	1290	2430	
	Surplus / Shortfall	-27	-90	
	% Surplus / Shortfall	-2.1%	-3.7%	
NORTHERN REGION	Availability	42165	72300	
	Requirement	37681	70600	
	Surplus / Shortfall	4484	1700	
	% Surplus / Shortfall	11.9%	2.4%	

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

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

A.5.2. In 217th OCC, SLDCs were requested again to coordinate with respective Transmission Utilities of states/UTs and submit details about the updated status of Down Stream network by State Utilities from ISTS Station (enclosed as ***Annexure-A-I.I***) before every OCC meeting.

A.6. NR Islanding scheme

A.6.1. In the meeting (217th OCC), NRPC representative apprised forum that a meeting was convened by NRPC Sectt. with UPPTCL, UPSLDC and NTPC Unchahar on 27.02.2024 wherein NTPC informed that work related to installation of UFR panels at their end would be completed within a week. UPPTCL confirmed in the OCC meeting that the UFR panels have been installed at NTPC end. Forum asked UPSLDC to ensure the mapping of islanding scheme on SCADA.

A.6.2. With regard to Agra islanding scheme, UPSLDC representative apprised forum that the islanding scheme was approved in 71st NRPC meeting held on 29.01.2024. UPSLDC is in discussion with STU regarding list of locations where UFR' s are to be installed.

A.6.3. Representative from RRVPNL intimated forum that DPR for Jodhpur-Barmer Rajwest and Suratgarh Islanding scheme is under approval from their management and it would be shared with NRPC Secretariat and NRLDC by 31.03.2024.

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

A.6.5. With regard to Kullu-Manali Islanding scheme, NRPC representative apprised

forum that a meeting was convened by NRPC Sectt. with HPSEB and HPSLDC wherein HPSEB representative informed that the proposal for procurement of UFR is submitted to Chief Engineer (System Planning) for approval on 29th December 2023. However, approval is still awaited from higher management of HPSEB. HPSLDC representative added that the infrastructure required for the implementation of the scheme is in place and only the purchasing and installation of UFRs is pending. In the OCC meeting, MS, NRPC stated that the implementation of scheme should be expedited and asked HPSLDC to follow up with HPSEB on the said matter.

A.6.6. With regard to Shimla-Solan Islanding scheme representative from HPSEB intimated forum that GE officials may visit Bhabha HEP by 20th March 2024 and will then inform the changes, if required in the control system of the Unit. MS, NRPC requested HPSLDC to follow up with HPSEB and GE for early resolution of the issue.

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

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

A.7.2. Average coal stock position of generating stations in northern region, having critical stock, during first ten days of March 2024 is NIL.

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

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

A.8.2. MS, NRPC asked transmission utilities of NR that have not submitted the status of ERS set/towers available with them to submit the requisite information before next OCC meeting.

Decision of the OCC forum

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

A.9. Proposed SPS for 2X315 MVA, 400/220kV ICTs at 400kV GSS Babai (Agenda by RVPN)

A.9.1. In the meeting, EE(O) NRPC apprised that RVPN has proposed a SPS for 2X315 MVA, 400/220kV ICTs at GSS Babai.

A.9.2. Further, Representative of RVPN informed that there are 2x315MVA, 400/220 kV ICTs at 400 kV GSS Babai. Since percentage impedance (%) for both the ICT is approx. same, load sharing on both the ICTs is almost equal and each ICT is loaded near to 180 MVA. Auxiliary supply of the 400 kV GSS Babai is taken from tertiary winding of 315MVA, 400/220 kV ICT-I at Babai and second source is taken from 132 kV GSS Babai.

A.9.3. Further, he presented detailed SPS to the forum (Copy attached as Annexure-A.IV of agenda).

A.9.4. NRLDC representative highlighted following points w.r.t. proposed SPS logic:

- SPS requirement is observed as there is N-1 non-compliance
- Proposed SPS logic seems ok in general
- RVPN to confirm whether load loss would be there in proposed logic. If load is to be shed, whether it is of critical nature.
- Time delay of 1.4sec may be checked. Testing may be carried out to check time taken for signal to travel from Babai to remote tripping stations. The time recorded may be mentioned in the proposed SPS logic itself.
- Confirm whether ICT augmentation is planned at 400kV GSS Babai.

A.9.5. RVPN representative informed that new 315MVA ICT is proposed at 400kV GSS Babai which is under approval.

A.9.6. MS, NRPC asked RVPN to discuss the issues highlighted by NRLDC internally and accordingly revised SPS proposal shall be put for discussion in next OCC meeting.

A.10. Early restoration of NAPP-Khurja 220kV Transmission line from Khurja end & review of NAPS islanding scheme (Agenda by NAPS)

A.10.1. In the meeting, EE (O), NRPC apprised that NAPS vide letter dated 22.02.2024 (copy attached as Annexure-A.V of agenda) has intimated that NAPS-Khurja 220 KV transmission line is out of service from 15.02.2024 due to fire at Khurja substation. Further, it would take approx. 6 months time to normalize the system and connect back to the grid.

A.10.2. Moreover, this line is a part of NAPS islanding scheme. NAPS makes island with Debai, Khurja and Simbholi substation when both units of NAPS are in operating condition. Total island load is in the range of 150-280 MWe. At present both NAPS-1&2 are in operating condition.

A.10.3. In this regard, NAPS has requested for review of existing NAPS Islanding scheme in view of long outage of NAPS Khurja 220kV Transmission line and Khurja substation from grid.

A.10.4. UPPTCL informed forum that Khurja would be temporarily restored by end of March 2024.

A.10.5. MS, NRPC asked UPPTCL to intimate NAPS about their detailed plan of action for restoration of NAPP-Khurja 220kV Transmission line from Khurja end.

A.10.6. UPPTCL representative mentioned that 220kV NAPS-Khurja transmission line is expected to be revived by 25.03.2024. and 220kV Harduaganj-Khurja-D/C transmission line is expected to be revived by 15.04.2024.

A.10.7. Further, UPPTCL representative mentioned that UFR installed at UP end for the cited island scheme were provided by NAPS and same have been completely damaged.

A.10.8. NAPS representative informed forum that NAPS would be providing UPPTCL the replacement of damaged UFR's.

A.11. Table Agenda 1. In-Principle approval for diversion of old transmission lines due to change in soil and land profile in Singrauli / Rihand complex under ADD-CAP. (Agenda by Powergrid NR-3)

A.11.1. Powergrid NR-3 representative stated that some of the lines in Singrauli/Rihand complex have completed its useful life of 35 years or reaching to 35 years. He mentioned that operation and maintenance of such old transmission lines is also very difficult and a big challenge. Total 18 no. of transmission lines are being maintained by POWERGRID under Singrauli/Rihand complex comprising 2003 no. of towers.

A.11.2. Out of 18 no. of Transmission lines, 07 no. of lines are aged more than 35 years & 02 lines are more than 32 years. Due to long period of time and change in profile of soil and land, leg of many towers got rusted /over soiled. Detail of such old Transmission lines are tabulated below-

Sr. No.	Name of Line	Total No. Of Tower	No of Over soiled / Rusted tower	DOCO	Age (years)
1	500KV HVDC Rihand-Dadari -I	371	175	10.01.92	32.18
2	500KV HVDC Rihand-Dadari -II			20.05.91	32.82
3	400KV Rihand-Singrauli - I	118	59	01.03.88	36.04
4	400KV Rihand-Singrauli -II			26.12.88	35.22
5	400KV Singrauli-Anpara Line	81	42	05.04.92	41.95
6	400KV Singrauli-Allahabad -I	180		01.06.83	40.80
7	400KV Singrauli-Allahabad - II	247	140	14.03.87	37.01
8	400KV Singrauli-Lucknow Line	244		01.06.86	37.79
9	400KV Singrauli-Fatehpur Line	253	90	26.12.88	35.22
Total		**1494**	**506**		

A.11.3. Further, Powergrid NR-3 mentioned that as per technical specification, concrete level should be 225mm above the ground level but in most of the locations, concrete level is 1-2 mtr below from existing ground level due to change in soil / land profile. Dumping of coal ash from Generating station is also a big reason for over soiled towers under Singrauli/Rihand complex, which causes water logging and leads rusting in Tower legs. This type of over soiled /rusting problem may lead to breakdown of transmission lines at any time and endangering the overall safety and grid reliability. Hence, timely action is prudent to maintain the reliability and availability of the said Transmission Lines.

A.11.4. In view of the above, Powergrid NR-3 has requested that In-Principle approval may be consented for diversion of 09 no. of old transmission lines (as above) due to change in soil and land profile in Singrauli / Rihand complex under ADD-CAP to avoid breakdown of transmission lines and grid reliability.

A.11.5. MS, NRPC stated that the matter needs to be examined in detail. He suggested Powergrid to submit detailed agenda along with past precedence in the upcoming OCC meeting.

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

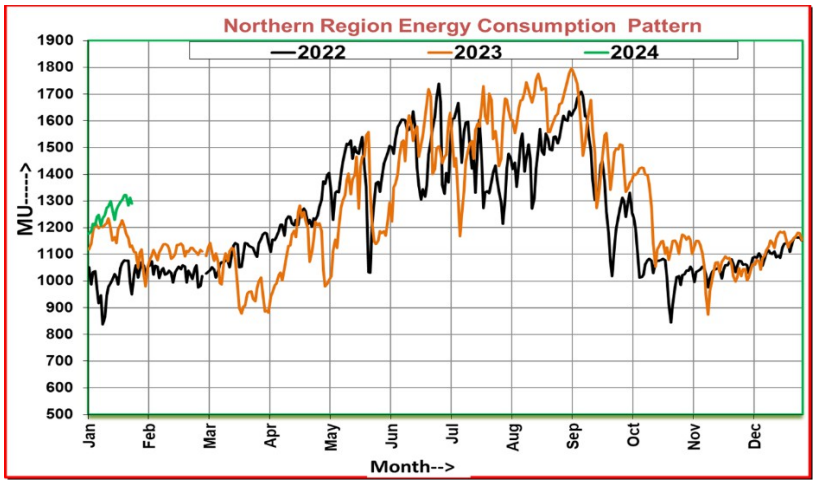
B.1 NR Grid Highlights for February 2024

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

B.2 Summer Preparedness 2024

NRLDC representative stated that with the increase in temperature, demand of Northern Region starts increasing from March onwards every year. Summer of Northern region are typically hot and demand is also high during this time, therefore advance actions help in better grid operation.

Due to extreme weather conditions, high demand is observed during summer/monsoon months in Northern region. Along with high demand, high loadings of lines and transformers and low voltages especially at distribution level are big challenge to safe and secure grid operation.



To overcome the commonly encountered challenges during summer months and ensuring smooth grid operation, following are few points which have been discussed on many occasions in previous OCC and TCC/ NRPC meetings and are required to be followed by all:

S. No.	Issues	Action plan	Action by
1	**Maintenance of reserves** During summer, in anticipation of increasing demand, adequate reserves shall be maintained. During summer, sudden outage of hydro units on silt or other major generation outage affects frequency/voltage, line loading, reliability and security of the corridor/control area/Generation complex etc. In events of sudden load crash, ISGS generators are being instructed to back down to 55% of their installed capacity. However, amongst states only UP state controlled generators are seen to be backing down upto 55%, which ensures that sufficient reserves are available to cater any variation in demand.	In such cases, apart from portfolio management based on proper forecast as discussed above, re-starting of units under reserve shutdown at state as well as Inter-state level through appropriate transactions is required. Moreover, display window showing reserve available in ISGS generators has been developed at NRLDC. SLDCs are also requested to arrange for such display window at their control centers so that system operators readily know quantum of reserve available and hence better real-time actions can be taken. Other states are also requested to take actions to ensure backing down of generators to 55% of their capacity in case of critical situations. This would ensure reserves in the system and also make us prepared for extreme situations.	NRLDC, SLDCs, Generators
2	**Furnishing of coal stock position**		Generators,

	Advance information of coal stock of thermal plants ensures generating units availability and it is very important during high demand season.	It has been observed in past years that sudden information of outage of thermal units on coal unavailability poses challenges to meet high demand. It is therefore requested to update & share coal stock position of thermal plants at least a week in advance as agreed earlier in TCC/NRPC meeting.	SLDCs
3	**Portfolio Management, load staggering** As discussed in previous OCC meetings states such as UP, Rajasthan and Haryana connect/ disconnect large quantum of load at hourly boundaries resulting in frequency spikes and instantaneous over voltages. This has also resulted in tripping of lines on overvoltage in recent past. In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states are requested to maximize their internal generation to avoid low frequency/low voltage operation or other related issues.	Apart from LTA/MTOA/STOA/Market arrangements based on forecast, other short term arrangements should also be planned for real time imbalances. For example, ensuring adequate margin while scheduling own thermal generation, units on bar, maintenance of reserves, technical minimum operation of thermal units in case of load crash, tie up with neighbor states or hydro rich states and utilization of real-time market etc. to bridge the load-generation gap in real time.	SLDCs
4	**Tower Strengthening and availability of ERS** There have been number of instances of tower collapse & damage in the past during thunder storms which resulted in constraints in power transmission for extended duration of time. Number of tower collapse incidents occurred during last summer also in May/Jun 2022 & 2023 in which many EHV lines including 765kV lines were out on tower collapse.	All utilities are requested to ensure availability of Emergency Restoration System (ERS) for early restoration of supply. Each utility shall work on plan for tower repairing work before April. Extra precautions need to be taken care for important lines which have history of tripping during thunderstorm/ windstorm. ***PTCUL, PKTCL, NRSS XXXVI, HPPTCL, HVPNL, NRSS-XXXI are not having ERS as per information available. Further,***	STUs and POWERGRID

	Number of 400kV lines were also out in Rajasthan control area leading to curtailment of RE in Western Rajasthan.	***RVPN and DTL also need to procure ERS for 400kV towers.*** ***It was also highlighted that there were frequent line outages in RVPN control area during last summer season which also led to issues in RE evacuation from Western Rajasthan.*** ***ERS procurement may be expedited by licensees having deficit ERS than requirement as per the Govt. norms***	
5	**Reactive power management** Over the years during summer months, it has been observed that voltage profile during summer has improved. However, it is always essential to remain alert and take all necessary precautions to avoid any issues arising due to low voltages during summer months.	To maintain the voltage profile of Grid within IEGC band during summer, following known actions are suggested: i. Switching ON Capacitor/Switching OFF reactor as per system requirement ii. Tap Optimization at 400/220kV by NRLDC and 220/132kV by respective state control area based on scatter plots of ICTs, offline studies, NRPC RE account etc. iii. Dynamic reactive support from Generator as per their capability curve. iv. SCADA Displays for better visualization during real-time	NRLDC, SLDCs
6	**Defense Mechanism** Several defense mechanisms schemes have been recommended by various committees and advantages of such defense schemes have been discussed in many fora too. Majority of defense mechanism are to cover protection for under voltage, under frequency, rate of	Till date it has been observed that performance of SPS is considerably low. Accurate operation of SPS is very essential and hence, mapping of SPS in SCADA is also being done. It is suggested that all state control area/Users shall ensure before start of summer that their protection and defense system	Transmission utilities (STU/ISTS) and SLDCs

	change of frequency, SPS for line/ICTs loading/generator complex evacuation etc. It is pertinent to mention here that SPS is only for operational defense and should not be considered as long term solution.	are in working conditions and settings are as per the recommendations of NRPC. In addition, all states/user need to provide update for changes or modifications carried out if any. ***Mock-testing of all SPS needs to be carried out before summer 2024 (also mandated as per IEGC 2023)***	
7	**Telemetry** It has been observed number of times, that telemetry of large nos of stations is affected during contingency, inclement weather, or in day to day switching operations etc.	All are requested to ensure the telemetry of all analog & digital points of all stations at respective control centers. Large number of telemetry issues are also encountered with newly commissioned elements. Analog as well as Digital data of from many Rajasthan Stations is not reliable. Matter had been taken up in 24th TEST meeting. Major issues of telemetry data at 400 KV Heerapura, Hindaun, Ratangarh ,Bhilwara and Phagi lines have been reported. At some places isolators are open.	SLDCs STUs

Due to unfavourable weather conditions during summer months, All India demand is on the higher side. On several days, it is observed that frequency is below the band for most of the time. NRLDC representative also presented statistics of year 2022, where very poor frequency profile was observed:

Month	Frequency in band (% time)
Apr'22	50.8
May'22	68.3
Jun'22	54.7

In order to maintain the Grid security all SLDCs are requested to take proactive steps as

follows:

- Ensure that ADMS is in service and expedite its implementation if not commissioned.
- Ensure healthiness and availability of AUFLS and df/dt load shedding.
- Ensure revival of intra-state generators under economic shutdown/RSD
- Ensure portfolio balancing through STOA/RTM market segments
- Ensure no under injection by the generators from schedule
- In case of inadequate margins in intrastate generators measures for emergency load regulation measures may be taken in interest of grid security.
- Pursue generators to expedite revival of thermal units under forced outage wherever feasible.

In this case, the list of radial feeders become very important. Utilities have been requested number of times to update list of radial feeders which can be opened on the directions of NRLDC to regulate the demand. List of such radial feeders has been provided by respective utilities and is part of 'Operating Procedure of Northern Region'. Latest list of radial feeders is also attached as Annexure-B.I of agenda. Following are the attributes for such feeders:

- Feeders shall be radial in nature
- They should usually have substantial load flow so that reduction of drawl can be prominently noticed on opening of such lines.

The opening of feeders is generally an extreme step which shall be required in case of threat to grid security and non-adherence to RLDC instructions to manage over drawl by SLDCs/ DISCOMs. In such a case, every utility needs to take actions to support RLDC by following their instructions including opening of feeders.

SLDCs were once again requested to verify that

- list of feeders are actually radial in nature and are likely to provide the expected relief
- such feeders are not part of any other scheme such as any SPS, UFR or df/dt actuated shedding

UP SLDC representative informed that there has been change in the list of feeders, as some of the feeders are not radial now. The details shared by UP SLDC representative is shown below:

Changes in the List of feeders for physical regulation in supply				
Uttar Pradesh				
Sl.No.	**Name of Feeder**	**Affected Area**	**Previous Status Remarks**	**Updated Status Remarks**
1	220kV Meerut-Gajraula	Gajraula	Radial	Not Radial

2	220kV Baghat (PG)- Baghpat D/C	Baghpat	Radial	Radial
3	220kV Allahabad (PG)-Jhusi	Jhusi	Radial	Not Radial
4	220kV Sohawal (PG)-Barabanki D/C	Barabanki	Not Radial	Not Radial
5	220kV Mainpuri (PG)-Neemkarori D/C	Farukkhabad	Radial	Not Radial
6	220kV Gorakhpur (PG)- Gola D/C	Gorakhpur	Radial	Radial
7	132kV Ballia (PG)- Bansdeeh	Ballia	Radial	Radial
8	132kV Ballia (PG)- Sikandarpur	Ballia	Radial	Radial
50 no.s 132kV feeders can also be opened from SLDC snad testing was also carried out few days back at SLDC level				

NRLDC representative requested UP SLDC to check for other possible radial feeders in view that some of the feeders are not radial now.

Telemetry is to be ensured for all such feeders for monitoring in real time by SLDC/ NRLDC. States were also advised to take remedial measures for minimizing sustained over drawal at low frequencies as per the IEGC.

OCC members agreed to take actions as discussed in the above agenda.

B.3 Quantum of Reserve for SRAS & TRAS

The Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023 (hereinafter called 'Grid Code') was published on 11.07.2023, in the Gazette of India Extraordinary (Part-III, Section-4, No. 488)

Regulation 30 (11)(k) of the Grid Code requires NLDC to prepare a detailed methodology for the assessment of secondary reserve capacity and submit the same for approval of the Commission. Further Regulation 30(11)(a) requires NLDC to assess tertiary reserve requirements for the regional control area and the State control area. In line with above regulations, Grid-India submitted detailed procedure to CERC after stakeholder consultation and same was approved by CERC vide their letter dated 28th Sep 2023. (https://posoco.in/wp-content/uploads/2023/10/Order_SRAS-TRAS-Approved.pdf).

NRLDC representative stated that NLDC vide their letter dated 25.01.2024 (Annexure-B.II of agenda) has highlighted SRAS & TRAS at regional level for reserves for year ahead basis.

Apart from this, number of other procedures and timelines have been provided for data submission in IEGC 2023 and various procedures prepared in line with IEGC 2023.

Accordingly, it is requested that all states once again go through the procedures, available @ https://posoco.in/en/nldc-procedures/ and ensure that all the data that is to be submitted as per these procedures is adhered and submitted timely. Executives at NRLDC/NLDC may always be consulted for any doubts/clarifications related to data submission or thereof. In the meeting, NRLDC representative also demonstrated the NLDC webpage wherein various NLDC procedures are listed.

OCC members agreed to go through various procedures listed on NLDC website listed after IEGC 2023 and take actions accordingly.

B.4 RE related Issues in Northern region

NRLDC representative stated that presently more than 13000MW of renewable generation has been connected in the ISTS network in Western Rajasthan. As deliberated in previous NRPC meetings, number of issues have been observed with increasing RE integration in Western Rajasthan. On many occasions, multiple element tripping including outage of renewable generation has also taken place.

Following issues are being observed w.r.t. performance of RE plants:

a. As stipulated in Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2013, Part-II, clause B1, Sub-clause (1), (2), (3) & (4) about requirements with respect to Harmonics, Direct Current (DC) Injection and Flicker are as follows;

B1. Requirements with respect to Harmonics, Direct Current (DC) Injection and Flicker

(1) Harmonic current injections from a generating station shall not exceed the limits specified in Institute of Electrical and Electronics Engineers (IEEE) Standard 519.

(2) The Generating station shall not inject DC current greater than 0.5 % of the full rated output at the interconnection point.

(3) The generating station shall not introduce flicker beyond the limits specified in IEC 61000. Provided that the standards for flicker will come into effect from 1st April 2014.

(4) Measurement of harmonic content, DC injection and flicker shall be done at least once in a year in presence of the parties concerned and the indicative date for the same shall be mentioned in the connection agreement.

Provided that in addition to annual measurement, if distribution licensee or transmission licensee or the generating company, as the case may be, desires to measure harmonic content or DC-injection or flicker, it shall inform the other party in writing and the measurement shall be carried out within 5 working days.

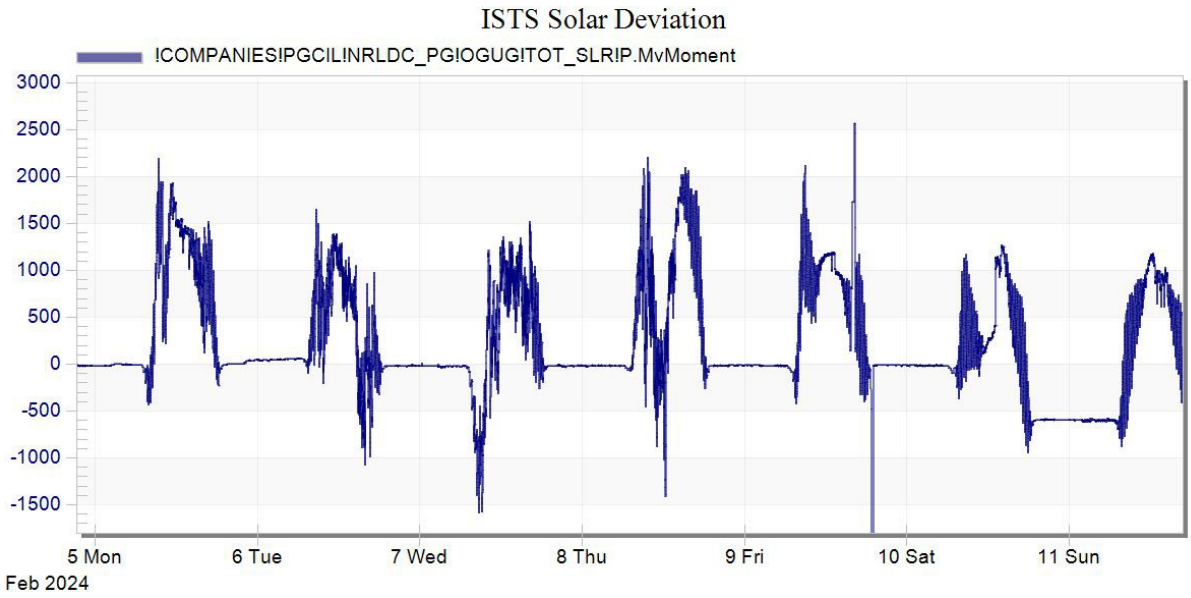
It is requested to perform Power Quality measurement, Harmonic analysis test and Flicker test at Field as per CEA regulation as mentioned above and submit the Test report for Power Quality measurement, Harmonic analysis, DC injection and Flicker test showing the %THD and distortion due to nth Harmonic at Point of Interconnection for Voltage and Current, DC injection and Flicker at POI. Same was also requested vide NRLDC letter dated 04.03.2024 attached as Annexure-B.III. Earlier also 2-3 letters were sent from NRDLC seeking response from RE plants.

b. Significant amount of Reactive MVAr is required for the collector system/IDTs/ICTs and dedicated line at the time of Peak Solar generation of a RE plant. This leads to MVAr absorption from Pooling station and subsequent low voltage issue in pooling

station.

Now RE plants are installing either SVGs (Static VAr generators) or additional Inverters or STATCOMs to provide adequate dynamic reactive support to ensure Voltage stability. This has been ensured from the connectivity stage itself after WG 2022 report.

c. Common Challenges associated with RE integration are Variability, Balancing Reserves, System Inertia, Predictability, Observability, Net Load Ramp, Reactive power management and Protection coordination etc. On several days it is being observed that RE plants in NR are overinjecting during the day time. The aggregate overinjection from 12-13GW ISTS RE capacity is coming to be in range of 1000-1500MW.



All RE plants are requested to strictly generate as per their respective schedule.

d. Various events of RE generation loss occurred during events of fault in the complex, Non-compliance of LVRT/HVRT requirement at Interconnection point are still being observed. To avoid any generation loss, LVRT/HVRT compliance at POI need to be ensured by RE plant(s)

It has been observed that there have been several events in the last 2-3 months which

have led to significant RE generation loss, although faults are getting cleared within stipulated time.

Some of these events are mentioned below:

S. No.	Generation Loss (MW)	Date & Time of Event	Frequency Dip (Hz)	Triggering incident
1	**~2510**	03.03.2024 14:01:03hrs	0.25	R-Y phase to phase fault on 400 KV Kankani-Jaisalmer (RS) Ckt-2
2	**~1225**	24.01.2024 12:16:51hrs	0.12	Y-B phase to phase fault on 400kV Bhadla-Bikaner (RS) ckt-1
3	**~2020**	15.01.2024 13:59:34hrs	0.15	R-B phase to phase fault on 400kV Bhadla-Bikaner (RS) ckt-1
4	**~1760**	15.01.2024 14:06:41hrs	0.21	R-Y phase to phase fault on 400kV Bhadla-Bikaner (RS) ckt-2
5	**~1360**	10.01.2024 12:19:43hrs	0.21	Y-B phase to phase fault on 400kV Bhadla-Bikaner (RS) ckt-2
6	**~1600**	17.12.2023 13:01:03hrs	0.15	Y-B phase to phase fault on 400kV Bhadla-Bikaner (RS) ckt-1
7	**~1600**	17.12.2023 13:14:25hrs	0.18	Y-B phase to phase fault on 400kV Bhadla-Bikaner (RS) ckt-2

RE generation dip in the range of 1500-2500MW were observed, Due to which significant drop in frequency occurred. As per analysis of PMU data of RE plants, some of the RE plants were found Non-compliant w.r.t CEA clause B2(3) and B2(7) (LVRT & HVRT requirement at Interconnection point).

In view of above, RE plants were requested to share the root cause analysis (RCA report) of LVRT/HVRT Non-compliance at POI of their respective plants along with DR/EL & inverter logs data showing clearly the cause of generation loss/inverters tripping vide following NRLDC letters.

1. NRLDC letter NRLDC\ RES\TS-108\ dated 22.01.2024
2. NRLDC letter NRLDC\ RES\TS-108\ dated 16.01.2024
3. NRLDC letter NRLDC\ RES\TS-108\656-668 dated 27.12.2023

NRLDC has also written to the RE plants on 1st March'24 that the model submitted during First time charging showed that plants are complying with LVRT/HVRT regulations of CE technical standards for connectivity to the Grid, however same is not being observed in real-time. Accordingly, suitable changes in model may also be provided so that actual behavior of RE plants is represented through simulation tests.

Following RE plants were observed to be non-compliant w.r.t. CEA clause B2(3) and B2(7) (LVRT & HVRT requirement at Interconnection point) in most of the grid-events involving RE generation loss for last several months:

Pooling Station	Plant Name	Capacity (MW)
Bhadla-I	Clean Solar Power (Jodhpur) Pvt. Ltd.	300
Bhadla-II	Avaada Sunrays Pvt. Ltd.	320
Bikaner	Renew Surya Ravi Private Limited Bikaner (RSRPL)	300
	Renew Solar Power Pvt Ltd, Bikaner (BIKNP)	250
Fatehgarh-II	ReNew Solar Energy Jharkhand Three Pvt. Ltd (RJ3PL)	300
	Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2)	375
	Adani Solar Energy Jaisalmer one Limited: Wind	420
	ReNew Solar Urja Private Limited(RSUPL)	300

Above RE plants are specially requested to analyse the past grid events in detail and take corrective actions. Corrective Actions taken to improve performance during fault ride through condition may be subsequently shared with NRLDC/NRPC. Apart from this, for some of the other plants where PMU data was down, are requested to make sure that PMU healthiness is checked at site and it may be ensured in coordination with NRLDC SCADA team that PMUs are reporting to NRLDC control room.

e. Few events of High frequency voltage oscillation occurred in RE complex of Northern Regional grid during Aug'23-Feb'24. Issue have been addressed by PMU data analysis, taking identified plants in Fixed-Q mode, taking STATCOM at Fatehgarh-II(PG) in Fixed-Q (Manual mode), changing mode of operation of

STATCOMs keeping minimal outage of line in the RE complex.

However, it is important that all RE plants record the data at inverter & PPC level for such events and share with NRLDC. It is being observed that even after repeated requests from NRLDC side, very little information is being received at NRLDC.

Further, in view of past experience of frequent outage of lines in RE complex during summer after thunderstorm, there may be requirement of RE curtailment due to inadequate evacuation paths. Accordingly, in such cases RE plants need to ensure that diligent manpower is made available at control center, so that in case of any instruction from NRLDC, such instructions are quickly acted upon.

The above issues were highlighted briefly by NRLDC representative in the meeting. The same could not be discussed as the ISTS connected RE plants were not present in the meeting, even though meeting invitation was sent to them.

It is to be noted that number of issues are being observed related to RE plants in Northern region during grid operation. For resolution of the issues, separate meetings are also being organized by NRPC/NRLDC with RE plants, however it is observed that during these meetings, the participation from RE plants is less, there is no submission of data for analysis even after repeated mails/letters/communication. Further, during the meetings, the RE plants are generally not able to respond to the queries from NRPC/NRLDC and are relying on inverter and PPC OEMs for further inputs.

In view of the above highlighted issues and the issues being observed in grid operation, it was agreed that MS NRPC shall take up the matter with Member, GO&D and Chairperson, CEA that RE plants may also be asked to attend regular OCC/NRPC meetings after becoming member of NRPC or separate subgroup at NRPC level may be formed for effective discussion and early resolution of issues.

B.5 Sharing of ATC/TTC assessment and basecase with NRLDC

All NR states Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

CERC vide their order dated 29.09.2023 has granted approval of "'Detailed Procedure for Allocation of Transmission Corridor for Scheduling of General Network Access and Temporary General Network Access under Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022".

Detailed roles and responsibilities for State Load Dispatch Centers in various timelines of

the approved procedure are provided in the table below.

Purpose	***Sl No***	***Action of Stakeholder***	***Responsibility***	***Submission to***	***Data/ Information Submission Time line***
1. Revision 0 TTC/ATC Declaration for Month 'M'	*1(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability*	*SLDC*	*RLDC*	*10th Day of 'M-12' month*
		Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models			
	1(b)	*Declaration of TTC/ATC of the intra- state system by SLDC in consultation with RLDC*			*26th Day of 'M-12' month*
2. Interconnection Studies for elements to be integrated in the month 'M'	*2(a)*	*Submission of node-wise load and generation data & sharing of network simulation models for intra-state elements coming in the next six months*	*SLDC*	*RLDC*	*8th Day of 'M-6' month*
	2(b)	*Sharing of inter-connection study results*			*21st Day of 'M-6' month*
3. Month Ahead TTC/ATC Declaration & Base case for Operational Studies for Month 'M'	*3(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability*	*SLDC*	*RLDC*	*8th Day of 'M-1' month*
		Assessment of TTC/ATC of the intra- state system and sharing of updated network simulation models			
	3(b)	*Declaration of TTC/ATC of the intra- state system in consultation with RLDC*	*SLDC*	*RLDC*	*22nd Day of 'M-1' month*

To encourage participation from SLDCs with regard to basecase preparation and

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

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

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

The procedure mentions that:

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

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

S. No.	Scenario	Time of Scenario
1	Off-Peak	03:00 Hrs
2	Morning Peak	10:30 Hrs
3	Evening Peak	18:45 Hrs
4	Solar Peak	12:00 Hrs

It is requested that the basecases as well as ATC/TTC assessments may be shared with NRLDC as per CERC approved procedure. Further, above exercise needs to be carried out regularly on monthly basis.

Basecase & ATC/TTC assessment was received from only Haryana and UP SLDC for M-12 scenarios.

It was discussed in last several OCC meetings & all states were requested to share basecase as well as ATC/TTC assessments for M-11 scenarios on monthly basis with NRLDC as per CERC approved procedure. Accordingly, it is requested to submit the basecase as well as ATC/TTC assessments.

Members may please discuss.

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

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

(9) Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC.

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

In line with above, utilities are requested to share the list of **elements/LGB data/interconnection study results** etc as per the approved procedure which are expected to be commissioned up to **September 2024, before 08.03.2024. Above was also requested vide mails dated 29.02.2024 by NRLDC. This needs to be practised as monthly exercise on regular basis.**

It was discussed in last several OCC meetings & all utilities were requested to share list of elements/LGB data/interconnection study results etc as per the approved procedure on monthly basis.

In the meeting, it was informed that data was received only from UP & Indigrid. NRLDC representative stated that in case no new transmission element is expected in next 6 months, then the same may also be communicated through mail so that a confirmation is received and that would mean that data has been submitted by state.

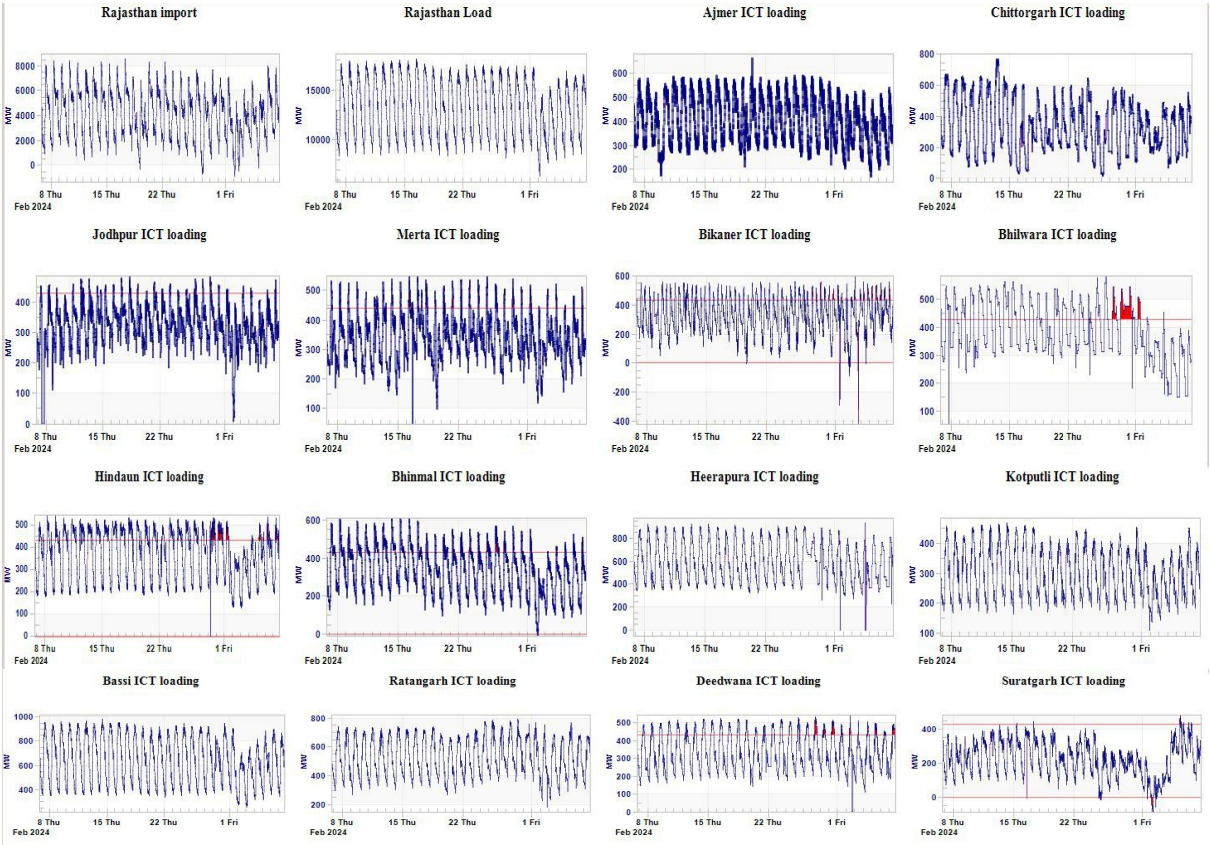
B.5.3 ATC/TTC of states for summer 2023-24 (M-1)

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

ATC/TTC assessment for summer 2024 is yet to be received from the states

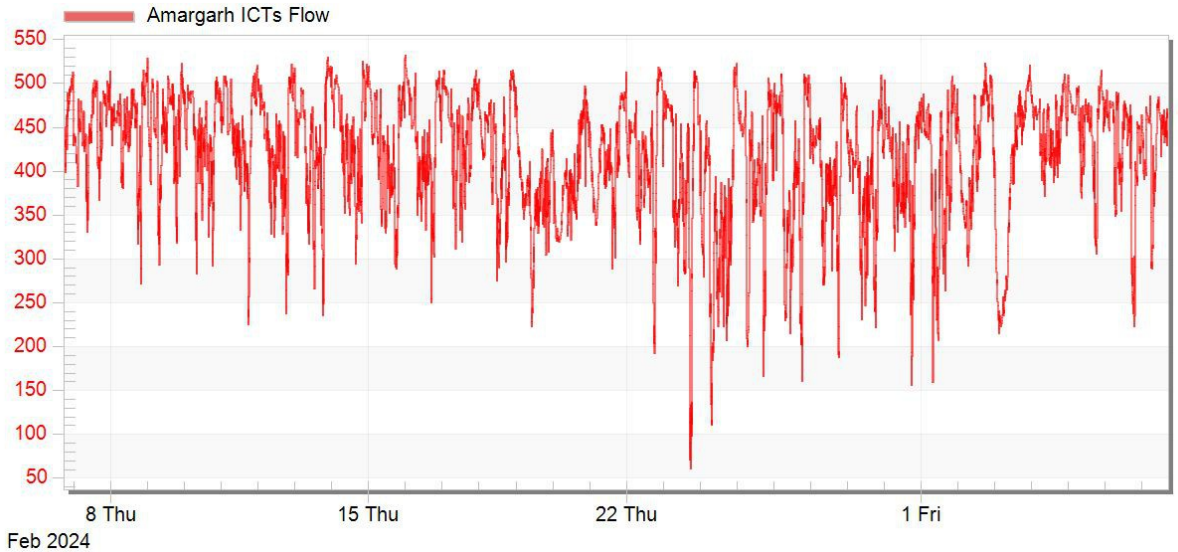
B.5.4 Constraints observed during last month

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



From the data available at NRLDC, it is being observed that the loading of almost all 400/220kV substations (intrastate as well as interstate) in Rajasthan is beyond their N-1 contingency limit during day-time. Such situation may always lead to load loss in particular area of N-1 non-compliance apart from possibilities of major grid disturbance in Rajasthan control area. Further, RVPN was also asked to take up the matter with CTUIL and POWERGRID for capacity augmentation as per requirement at ISTS substations.

Plot of loading of 400/220kV 2*315MVA ICTs at Amargarh which was not N-1 compliant for last 30 days is shown below:



It was discussed in 217 OCC meeting, that:

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

OCC members agreed to take actions as discussed above.

B.6 Frequent forced outages of transmission elements in the month of February'24:

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Alusteng-Drass (PG) Ckt-1	4	POWERGRID
2	220 KV Ganguwal-Jamalpur (BB) Ckt-1	4	Rajasthan/RAPS
3	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	4	Rajasthan/RAPS
4	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	4	Rajasthan/RAPS
5	400 KV Agra-Unnao (UP) Ckt-1	4	UP
6	400 KV Bareilly-Unnao (UP) Ckt-2	4	UP
7	400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-2	5	UP

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

Discussion during the meeting:

- **220 KV Alusteng-Drass (PG) Ckt-1:** *NRLDC representative raised concerned on frequent fault in line. This line is the only path through which Leh/Ladakh region is connected to the grid. Tripping of this line leads to blackout in Ladakh region. POWERGRID (NR-2) representative stated that during two incidents, line tripped due to fault in remote stations. Autorecloser is operational at Alusteng end however, there is no A/R function implemented at Ziankote end. NRLDC representative requested POWERGRID (NR-2) to suggest protection and operation & maintenance related measures to remote stations of PDD J&K nearby substations such as 220kV Ziankote etc. POWERGRID agreed for the same.*

- **220 KV Ganguwal-Jamalpur (BB) Ckt-1***: NRLDC representative raised concerned on frequent fault in line. BBMB representative stated that fault in one of the incidents occurred due to kite thread and in another case, it is due to snapping of earth wire. NRLDC representative suggested BBMB to taken necessary operation & maintenance related measure if required. BBMB agreed for the same.*

- **220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1 & 2 and 220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1 :** *NRLDC representative raised concerned on frequent tripping of line. Rajasthan representative stated that A/R has been kept off at RAPS_A end. It was further informed that lines pass through hill forest area and most of the faults are of transient nature and at location approx. 24-30km from Sakatpura end. It was further informed that tree trimming is being done near fault location. Analysis of TFR is also in review. NRLDC representative also requested to ensure the time sync of DR at Sakatpura end. Rajasthan agreed to take remedial measures.*

- **400 KV Agra-Unnao (UP) Ckt-1:** *NRLDC representative raised concern frequent tripping of line. UP representative stated that there was issue in PLCC at Unnao end due to which A/R didn't operate during transient fault on 5th February 2024. Issue has been taken up with maintenance team and will be resolved on priority. On 26th Feb'24 tripping, it is suspected that it occurred due to maloperation of pole discrepancy relay however, no abnormality found during testing.*

- **400kV Bareilly-Unnao D/C:** *NRLDC representative raised concern over frequent tripping of the line due to protection related issues at both the ends. Issue related to non-proper operation of autorecloser at both the ends was also raised. Issues has been highlighted in previous OCC meetings also, however no remedial actions have been taken yet. Representative from 400/220kV Bareilly(UP) stated that there is FSC in both the lines, there is difference in time delay setting of distance protection in both the lines which might be leading to maloperation of protection. NRLDC representative requested 400/220kV Bareilly(UP) and UP to take up the protection related issues with STU. STU may be requested to review of protection settings of 400kV Bareilly-Unnao(UP) D/C and if necessary protection audit also may be conducted. UP agreed to take suitable remedial actions to rectify the same at the earliest.*

- **400 KV Unnao(UP)-Jehta_Hardoi Road (UP) (PG) Ckt-2:** UP *representative stated that tripping occurred due to DT received at Jehta end. There was no fault in system. During inspection DC wiring in PLCC was found incorrect which was leading to maloperation of PLCC. On 24th Feb'24 issue related to DC wiring was rectified, no tripping observed thereafter.*

NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. He sensitized all the utilities to ensure healthiness/in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standards. He further

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

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

B.7 Multiple element tripping events in Northern region in the month of February'24:

A total of 20 grid events occurred in the month of Feb'24 of which **13** are of GD-1 category, **01** are of GI-1 Category and **06** are of GI-2 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at Annexure-B.VI of agenda**.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Bhadla(RS) on 25th February, 2024 (As per PMU at Bikaner(PG), R-Y phase to phase fault converted to 3-phase fault is observed with delayed fault clearance time of 880 msec.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **06** events out of **20** grid events occurred in the month. In 05 (no.) of grid events, there was no fault in the grid.

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

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

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

a) 220kV Jamalpur(BB) on 1st Feb'24

b) 220kV Kunihar(HP) on 2nd, 8th & 16th Feb'24

c) 220kV Jamalpur(BBMB) on 24th Feb'24

d) 220kV Yamunanagar(HR) on 8th Feb'24

e) 400/220kV Bhadla(RS) on 25th Feb'24

f) 400/220kV Hinduan(RS) on 28th Feb'24 (partial data received)

g) 400/220kV Suratgarh(RS) on 28th Feb'24

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

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

BBMB representative stated that after analysis of these two incidents at Jamalpur(BB), line/disc washing has been recommended by committee as one of the remedial measure. NRLDC representative requested to expedite the remedial actions and share the detailed report.

HP representative stated that HPSEBL have informed that they are taking up with POWERGRID for third party protection audit at Kunihar S/s. Exact schedule date has not been communicated yet by HPSEBL. NRLDC representative requested to take further follow-up with HPSEBL and expedite the protection audit at Kunihar S/s.

Rajasthan representative stated that they will taken necessary remedial actions to improve the status of submission of tripping details and ensure the timely submission of details in future. NRLDC representative requested to share the detail analysis report of aforementioned tripping incidents in Rajasthan control area.

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

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

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

B.8 Details of tripping of Inter-Regional lines from Northern Region for February' 24:

A total of 09 inter-regional lines tripping occurred in the month of February'24. The list is attached at Annexure-B.VII of agenda**.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 37.2(c) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

NRLDC representative stated that details not received w.r.t. 220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt tripping on 16th Feb'24 and requested NTPC to share the tripping details.

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

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

B.9 Grid disturbance in 220kV Kunihar, Baddi complex during Feb'24:

Frequent event of multiple elements tripping have been reported in recent past (on 02nd Feb, 08th Feb and 16th Feb) in HP control area. Major affected substations were 220kV Kunihar, Baddi and Bhabha. Significant quantum of load in the range of 400-700MW affected during these grid events.

During Aug-Sept 2023 also, Grid events at Kunihar area were reported. Those events were discussed in 48th PSC meeting and PSC forum had recommended third party protection audit of Kunihar S/s. However, no update on the same have received and multiple events in recent past indicates that issues related to protection system and their coordination at these affected stations are still existing.

DR/EL and detail analysis of any of these events have not received from HP. Therefore, HP is requested to analyse the tripping events in detail and share following details w.r.t. all three grid events occurred in Feb'24:

- Disturbance recorder and event logger details of all the tripped elements.
- Sequence of tripping of elements.
- Details of protection operated along with their protection settings.
- Tripping analysis report along with corrective actions taken / planned to be taken.

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

HP representative stated that HPSEBL have informed that they are taking up with POWERGRID for third party protection audit at Kunihar S/s. Exact schedule date has not been communicated yet by HPSEBL.

NRLDC representative requested HP to take further follow-up with HPSEBL and expedite the protection audit at Kunihar S/s.

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

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

has improved, however, reporting status from RAPS-A, BBMB, Punjab, Delhi, HP, Rajasthan & J&K need further improvement.

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

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

HP representative stated that there are few DISCOMS whose reporting status is poor, follow-up has been taken up with them for improvement in reporting status.

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

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

B.11 Mock black start exercises in NR:

As per Indian Electricity Grid Code (IEGC) clause 34.3

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

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

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

Mock black start exercise conducted during 2023-24:

i) Tehri HEP: conducted on 07th Dec'23

ii) Dadri GPS: conducted on 15th Dec'23

iii) Anta GPS: conducted on 29th Feb'24

iv) Rihand & Obra HEP: 16th Feb'24

v) Koldam HEP: 14th Mar'24

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

i) Malana-II HEP: Mar'24 by HP

ii) Tanakpur HEP: Mar'24

iii) Koldam HEP: Mar'24

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

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

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Jan-2024
◎ HARYANA — Dec-2023
◎ HP — Feb-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Dec-2023
◎ RAJASTHAN — Jan-2024
◎ UP — Feb-2024
◎ UTTARAKHAND — Feb-2024
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Dec-2023
◎ HARYANA — Dec-2023
◎ HP — Feb-2024
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Dec-2023
◎ RAJASTHAN — Dec-2023
◎ UP — Dec-2023
◎ UTTARAKHAND — Dec-2023
◎ BBMB — Dec-2023
All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest .</td></tr>
<tr><td></td><td></td><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased
◎ UTTARAKHAND — Increased
◎ BBMB — Increased</td></tr>
</table>

<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-2023</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Feb-2024</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jul-2023</td></tr><tr><td>◎</td><td>UP</td><td>Jan-2024</td></tr><tr><td>◎</td><td>NTPC</td><td>Feb-2023</td></tr></table>FGD status details are enclosed as Annexure-A.I.II.
All States/utilities are requested to update status of FGD installation progress on monthly basis.</td></tr>
<tr><td>5</td><td>Submission of breakup of Energy Consumption by the states</td><td>All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:
<table><tr><td>Category→</td><td>Consumption by Domestic Loads</td><td>Consumption by Commercial Loads</td><td>Consumption by Agricultural Loads</td><td>Consumption by Industrial Loads</td><td>Traction supply load</td><td>Miscellaneous / Others</td></tr><tr><td><Month></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td></td><td>State / UT</td><td>Upto</td></tr><tr><td>◎</td><td>CHANDIGARH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>DELHI</td><td>Jan-24</td></tr><tr><td>◎</td><td>HARYANA</td><td>Dec-23</td></tr><tr><td>◎</td><td>HP</td><td>Jan-24</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Dec-23</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jan-24</td></tr><tr><td>◎</td><td>UP</td><td>Dec-23</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Dec-23</td></tr></table>J&K and Ladakh and Chandigarh are requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format</td></tr>
<tr><td>6</td><td>Information about variable charges of all generating units in the Region</td><td>The variable charges detail for different generating units are available on the MERIT Order Portal.</td><td>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>7</td><td>Status of Automatic Demand Management Sysytem in NR states/UT's</td><td>The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:</td><td>Status:
<table><tr><td>◎</td><td>DELHI</td><td>Scheme Implemented but operated in manual mode.</td></tr><tr><td>◎</td><td>HARYANA</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>HP</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Under implementation. Likely completion schedule is 31.03.2024</td></tr><tr><td>◎</td><td>UP</td><td>Scheme implemented by NPCIL only</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Scheme not implemented</td></tr></table></td></tr>
</table>

8	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	500 MVAr TCR at Kurukshetra has been commissioned on dated 15th December 2023
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	1x50 MVAr Reactor at Peeragarhi has been commissioned on dated 18.09.2023
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	2x50 MVAR Reactor at Harsh Vihar has been commissioned on dated 31th March 2023.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work completed on 07.11.2023. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - 1x125 MVAR Reactor at Dhuri has been commissioned on dated 30th March 2023. 220kV Reactors - 1x25 MVAR Reactor at Dhuri has been commissioned on dated 27th January 2023.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February 2023.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	SLDC informed that PTCUL has intimated that tender has been scrapped. Retendering will
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	1x25 MVAR Reactor at Bikaner has been commissioned on dated 24th June 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. Out of 13 Nos. of reactors, 10 Nos. have been erected and three are under erection. Tentative charging plan is
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. 01 No. of 125 MVAR reactor is under final inspection. Tentaive charging plan is 31.03.2024.

Annexure-A-I.I

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24	02 No. of bays shall be utilized for LILO-II of 220kV Jatwal-Bishnah Transmission Line, the work of which is delayed due to severe ROW problem at Location No. 1 near Grid Substation Jatwal where the Land owner is not allowing erection of Tower. The Deputy Commissioner Samba has been approached for intervention and facilitating the erection of Tower. He is persuading the Land owner to get the work completed. Updated in 210th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	Mar'25	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. RoW issues persisting; At present new-wampoh-mirbazar 5km and harwan-alstung 16km have been completed, expected date of completion is Mar 2025 subject to availability of funds and resolving of RoW issues), Updated in 214th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Jul'24	Updated in 205th OCC by HVPNL
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 7	• 220 kV D/C Shahajahanpur (PG) - Gola line	Commissioned	Energization date: 26.10.2023 updated by UPPTCL in 215th OCC
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• 220 kV Hamirpur-Dehan D/c line	Commissioned	HPPTCL has commissioned the Planned 220kV Dehan-Hamirpur TL utilizing 2 No. 220kV Bays.Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
				• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 215th OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	Commissioned	Updated in 216th OCC by DTL
				• Masjid Mor – Tughlakabad 220kV D/c line.	Commissioned	Updated in 216th OCC by DTL
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 2 Under Implementation:2	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Mar'24	Work completed and the line is ready for charging however connection agreement with CTU and PKATL is under process thereafter line shall be charged.Updated in 217th OCC by HPPTCL
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	HPPTCL to update the status.
				• Network to be planned for 2 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Mar'24	Forest approval is pending for 220 KV Pali - Sector 56 D/C line. Updated in 215th OCC by HVPNL
				• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	Mar'24	Updated in 205th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of both circuits of 220kV D/c Sohna-Rangla Rajpur at Roj Ka Meo line at 400kV Sohna Road	Dec'24	Updated in 216th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. **Status:-** Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Aprroved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	Mar'24	Updated in 216th OCC by HVPNL. **Status:** Work was held up due to ROW at T.L. No. 7,8,11,12 & 13 by the farmers of Jajji villagers during July'23 and now the matter has been resolve and work under progress from 01.08.2023. The erection work of T.no. 1 is pending due to non availability of shut down at 220KV Mohana-Smk line and 220KV Jajji-Mohana line. • PLCC protection coupler and Forest approval is also pending.
				• Sonepat - HSIISC Rai 220kV D/c line	Mar'24	Updated in 212th OCC by HVPNL. **Status:** Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely. Now, the matter is under approval from competent authority of Nigam.,
				• Sonepat - Kharkhoda Pocket A 220kV D/c line	31.07.2024	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. The Survey work has been completed.
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work is under progres. Stub Setting: 02/2017. Permission for forest, Highway & pipeline crossing is awaited from concerned department as updated in 215th OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Date of bid opening has been extended up to 28.02.2024 as updated in 216th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL. _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Mar'24	SCDA System & PLCC work pending at 220 KV S/stn. Rajokheri Updated in 215th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Mar'24	Updated in 217th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Mar'24	Updated in 217th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Jul'24	Updated in 205th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Under Implementation:2	• Amritsar – Patti 220kV S/c line	Mar'24	Work is completed, agreement is expected to be signed by March 2024. Updated in 216th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	Mar'24	Work is completed, agreement is expected to be signed by March 2024. Updated in 216th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL	Mar'25	Updated in 205th OCC by HVPNL. **Status:** Under Tendering process
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	Mar'25	Updated in 216th OCC by HVPNL. **Status:** Tendering under progress.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	Jul'24	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. The Survey work has been completed.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV S/C Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG)	06.10.2025	Work order has been issued on 06.10.2023, work under progress as updated by RVPNL in 215th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220 kV D/C Kankroli(PG) - Nathdwara line	Mar'24	Price bid opened on 29.01.2024 as updated bu RVPN in 216th OCC.
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchagon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Mar'24	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed , final agrrement is expected to be signed by Mar'24. Updated in 216th OCC by PSTCL.
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	Commissioned	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is commissioned on 20.01.2024. Updated in 217th OCC by HPPTCL.
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'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)

Status of availability of ERS towers in NR

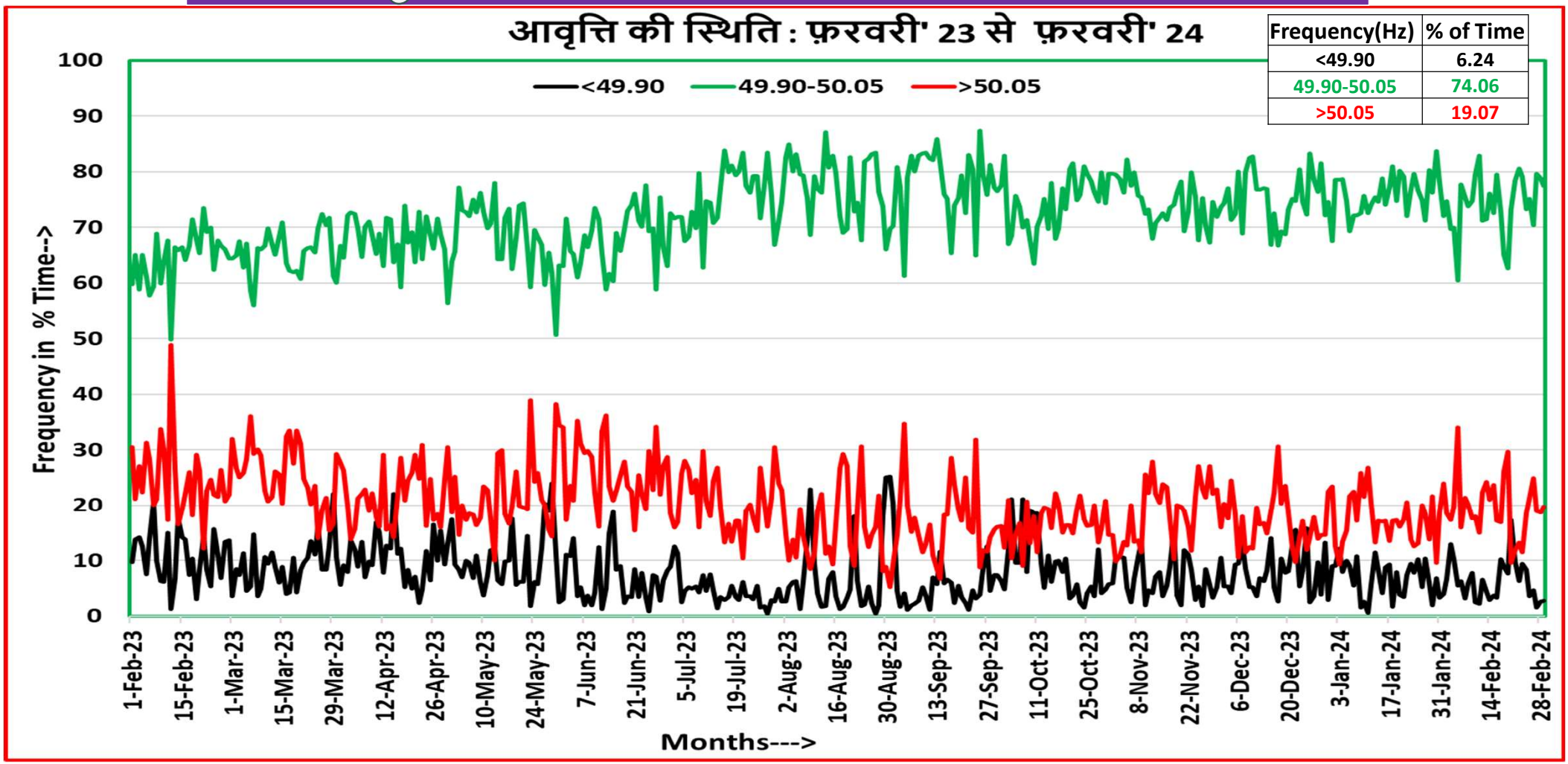
Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
1	PTCUL	400kV	418.394	NIL	1		DPR Under preparation.
		220kV	1045.135	NIL	1		DPR Under preparation.
2	Powergrid NR-1	220 KV	1842.88	NIL	1		
		400 KV	11074.26	12 Towers	3	All 400kV ERS at Ballabhgarh	make-Lindsey
		765 KV	4721.85	15 Towers	1	All 765kV ERS at Meerut	Make-SBB
		500 KV HVDC	653.88	NIL	1		
		800 KV HVDC	416.58	NIL	1		
3	Powergrid NR-2	66 KV	37.56	Nil	1		ERS tower available for 400KV rating can be used in place of lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can be erected will reduce due to increase in Tower Hight.
		132 KV	262.7	Nil	1		
		220 KV	2152	Nil	1		
		400 KV	8097.3	02 Set (32 Towers)	2	Kishenpur & Jalandhar	
		765 KV	337.5	Nil	1		
4	Powergrid NR-3	800KV HVDC	2205	NIL	1		400KV ERS will be also be used in other voltage level lines
		500KV HVDC	2566	NIL	1		
		765KV	4396	NIL	1		
		400KV	12254	26 Towers	3	Kanpur	
		220KV	1541	NIL	1		
		132KV	207	NIL	1		
5	PARBATI KOLDAM TRANSMISSION COMPANY LIMITED	400kV	457	NIL	1		Procurement under process.
6	PATRAN TRANSMISSION COMPANY LTD	400kV	0.4	NIL	1	It is kept in Bhopal and on need basis is moved across region	Not available, will tie up based on the requirements in future. However the parent company IndiGrid owns one set of ERS for all five regions.
7	NRSS-XXIX TRANSMISSION LTD	400kV	853	NIL	1		
8	GURGAON PALWAL TRANSMISSION LTD	400kV	272	NIL	1		
9	RAPP Transmission Company Limited.	400kV	402	NIL	1		
10	NRSS XXXVI Transmission Limited	400kV	301.924	NIL	1		Element I - Operational comprising of 3 kms. Element II - Work Under Progress comprising of 221.924 kms. Element II - Work Under Progress comprising of 77 kms.
11	HPPTCL	220 kV	659	NIL	1		
		400 kV	75.7	NIL	1		
12	RVPN	132 kV	18969.958	1	4	01 No. ERS available at 220 kV GSS Heerapura, Jaipur	ERS proposed : 01 Set at 400 kV GSS, Jodhpur. 01 set at 400 kV GSS Bikaner
		220 kV	16227.979		3		
		400 kV	6899.386		2		
		765 kV	425.498		1		
13	DTL	220kV	915.498	NIL	1	400kV Bamnauli Sub station	ERS tower available for 400KV rating can also be used for lower voltage lines as well
		400kV	249.19	02 Sets (32 towers)	1		

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

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

प्रचालन समन्वय उपसमिति की बैठक
फ़रवरी- 2024

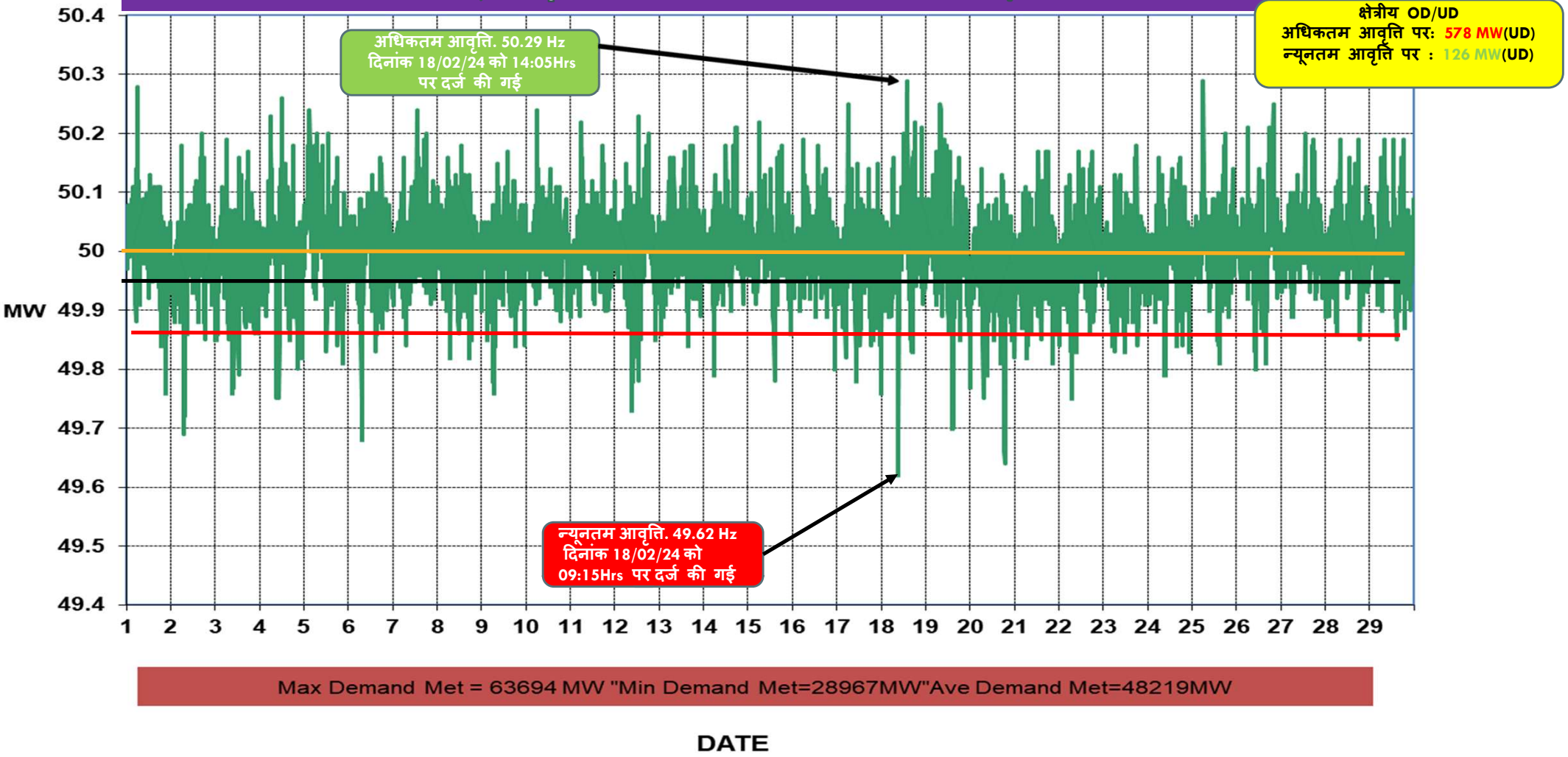
आवृत्ति की स्थिति: फ़रवरी -2023 से 2024



Frequency(Hz)	% of Time
<49.90	6.24
49.90-50.05	74.06
>50.05	19.07

फ़रवरी -2024 के दौरान आवृत्ति की स्थिति

(As per 5 Minute SCADA data)



Max Demand Met = 63694 MW "Min Demand Met=28967MW"Ave Demand Met=48219MW

पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	फ़रवरी 2023	मार्च 2023	अप्रैल 2023	मई 2023	जून 2023	जुलाई 2023	अगस्त 2022	सितम्बर 2023	अक्टूबर2023	नवम्बर 2023	दिसंबर 2023	जनवरी 2024	फ़रवरी 2024
< 49.7 Hz(%)	0.32	0.16	0.24	0.24	0.22	0.09	0.47	0.11	0.53	0.10	0.17	0.12	0.095
<49.8 Hz(%)	1.95	1.26	1.68	1.48	0.86	0.66	1.63	0.57	1.99	0.96	1.40	0.92	0.797
<49.9 Hz(%)	10.75	9.03	10.54	9.83	8.42	4.60	7.11	5.21	8.87	6.83	7.83	6.80	6.239
49.90-50.05 Hz(%)	*64.68*	*63.84*	*67.90*	*68.48*	*67.83*	*74.96*	*77.25*	*77.86*	*74.42*	*74.36*	*75.21*	*75.83*	*74.06*
50.05-50.10 Hz(%)	14.59	17.86	12.54	13.25	15.59	15.64	13.28	13.32	13.53	13.74	10.47	11.91	14.118
>50.10 Hz(%)	8.49	7.99	6.46	8.44	8.15	4.79	2.35	3.61	3.18	5.06	6.49	5.47	5.581
>50.20 Hz(%)	1.49	1.28	0.88	0.77	1.09	0.80	0.23	0.32	0.14	0.66	0.53	0.41	0.565
औसत आवृत्ति	50.00	50.00	49.99	49.99	50.01	50.01	50.00	50.00	49.99	50.00	49.99	49.99	50.00

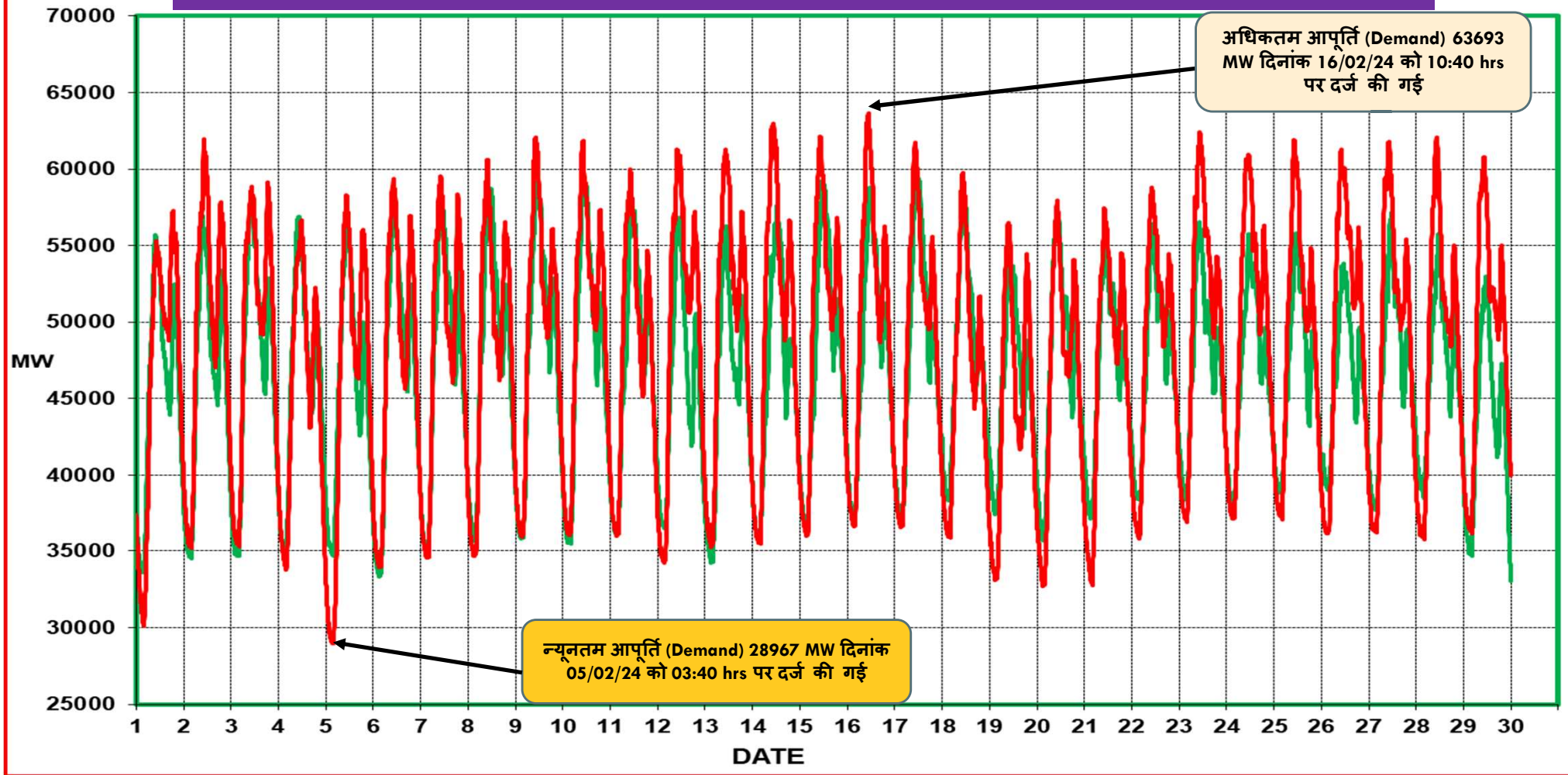
फ़रवरी-2023 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

राज्य	अधिकतम मांग (MW) (in Feb'24)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Jan'24)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Feb'24)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Jan'23)	दिनांक
पंजाब	10307	25.02.24 at 12:15	15293	24.06.23 को 11:45 बजे	181.24	25.02.2024	344.1	24.06.2023
हरियाणा	8868	14.02.24 at 14:30	12768	28.06.22 को 11:56 बजे	159.3	24.02.2024	273.1	18.08.2023
राजस्थान	17787	16.02.24 at 09:00	17949	20.01.24 को 11:00 बजे	327.55	13.02.2024	371.6	04.09.2023
दिल्ली	5406	02.02.24 at 10:40	7695	29.06.22 को 15:10 बजे	87.28	02.02.2024	153.5	28.06.2022
उत्तर प्रदेश	19726	01.02.24 at 18:45	28284	24.07.23 को 21:43 बजे	337.25	02.02.2024	580	03.09.2023
उत्तराखंड	2328	07.02.24 at 08:00	2594	14.06.22 को 21:00 बजे	45.72	03.02.2024	56.2	17.06.2023
हिमाचल प्रदेश	2133	14.02.24 at 08:00	2235	20.01.24 को 07:00 बजे	38.29	07.02.2024	39.29	24.01.2024
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	3048	04.02.24 at 20:00	3107	12.01.24 को 20:00 बजे	64.69	03.02.2024	66.8	26.01.2024
चंडीगढ़	301	02.02.24 at 07:00	426	08.07.21 को 15:00 बजे	4.94	01.02.2024	8.4	08.07.2021
उत्तरी क्षेत्र #	63481	16.02.24 at 10:00	81048	04.09.23 को 14:50 बजे	1192.81	16.02.2024	1792.7	04.09.2023

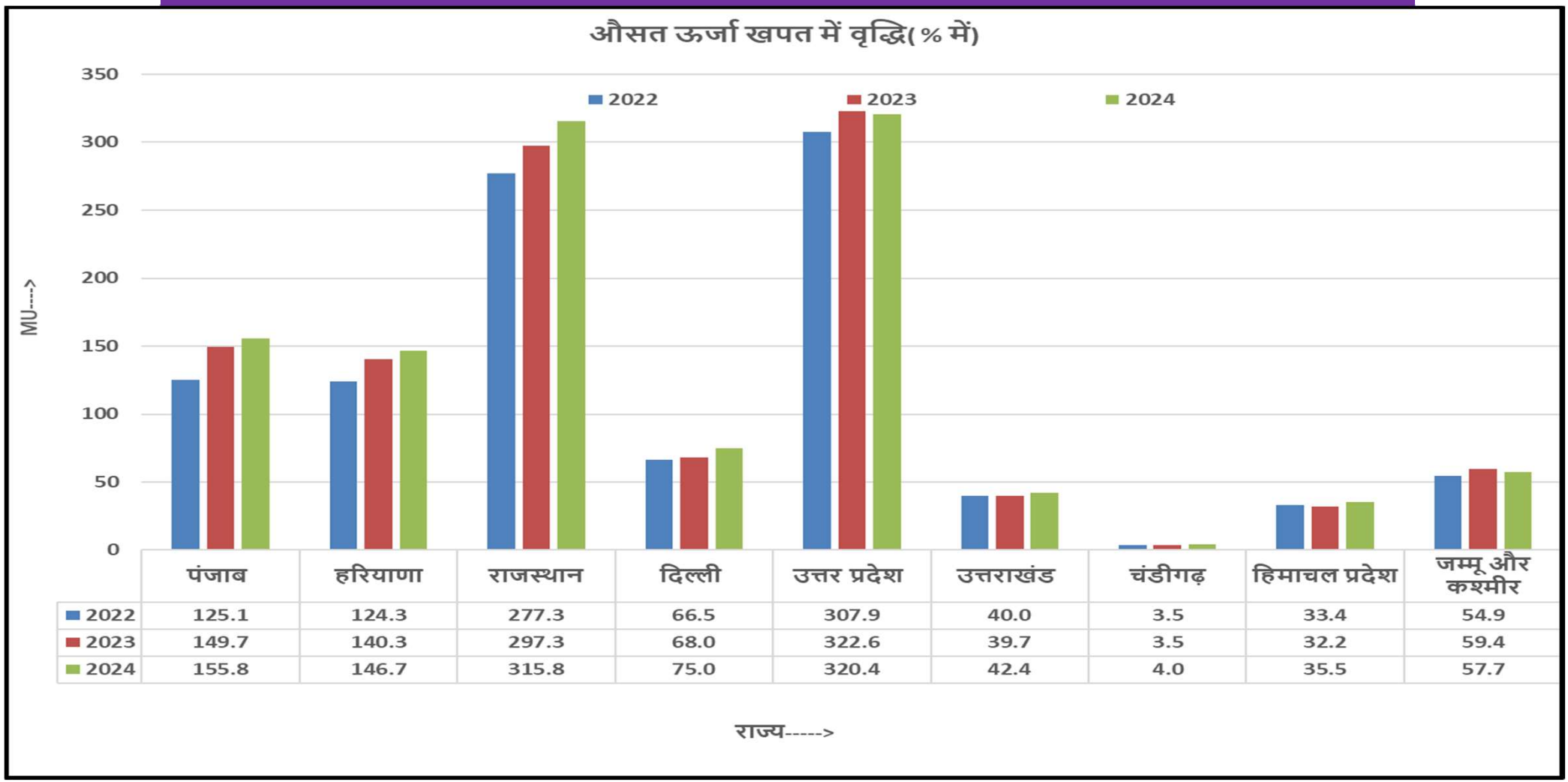
उत्तरी क्षेत्र अधिकतम मांग (Demand Met) as per SCADA Data

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



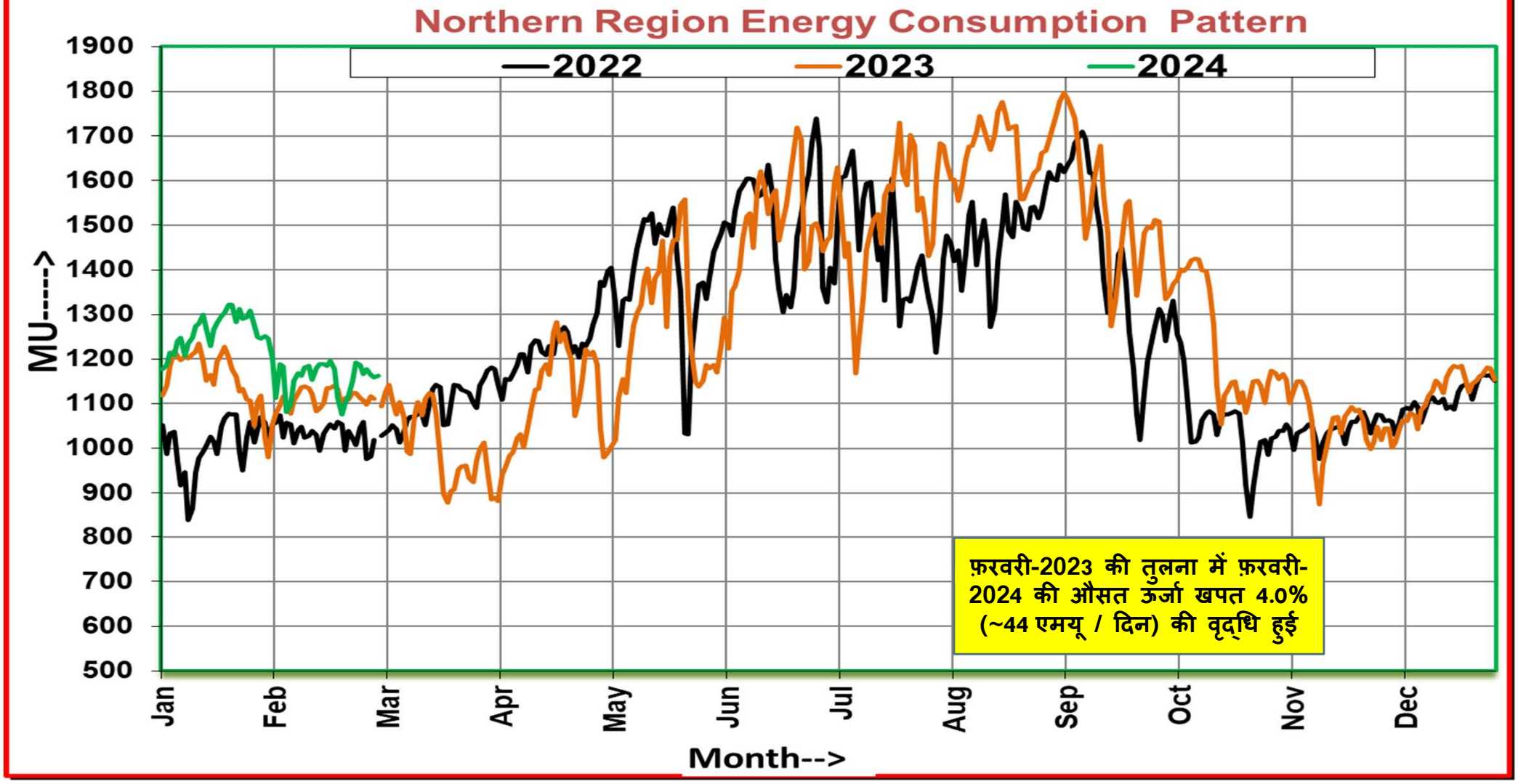
फ़रवरी -2023 की तुलना में फ़रवरी -2024 की औसत विद्युत आपूर्ति में 3.45% (~1608 MW) वृद्धि हुई

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

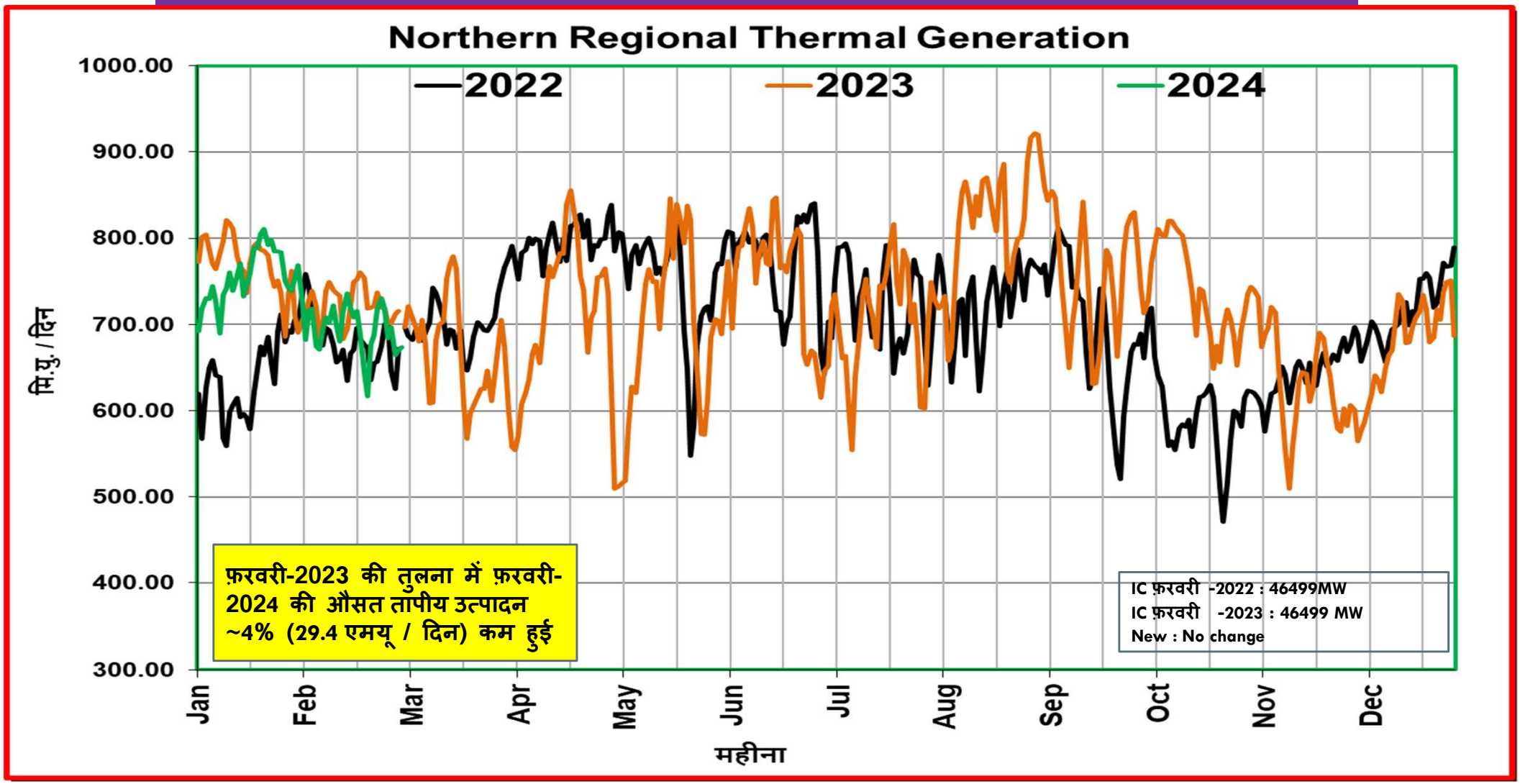


	पंजाब	हरियाणा	राजस्थान	दिल्ली	उत्तर प्रदेश	उत्तराखंड	चंडीगढ़	हिमाचल प्रदेश	जम्मू और कश्मीर
2022	125.1	124.3	277.3	66.5	307.9	40.0	3.5	33.4	54.9
2023	149.7	140.3	297.3	68.0	322.6	39.7	3.5	32.2	59.4
2024	155.8	146.7	315.8	75.0	320.4	42.4	4.0	35.5	57.7

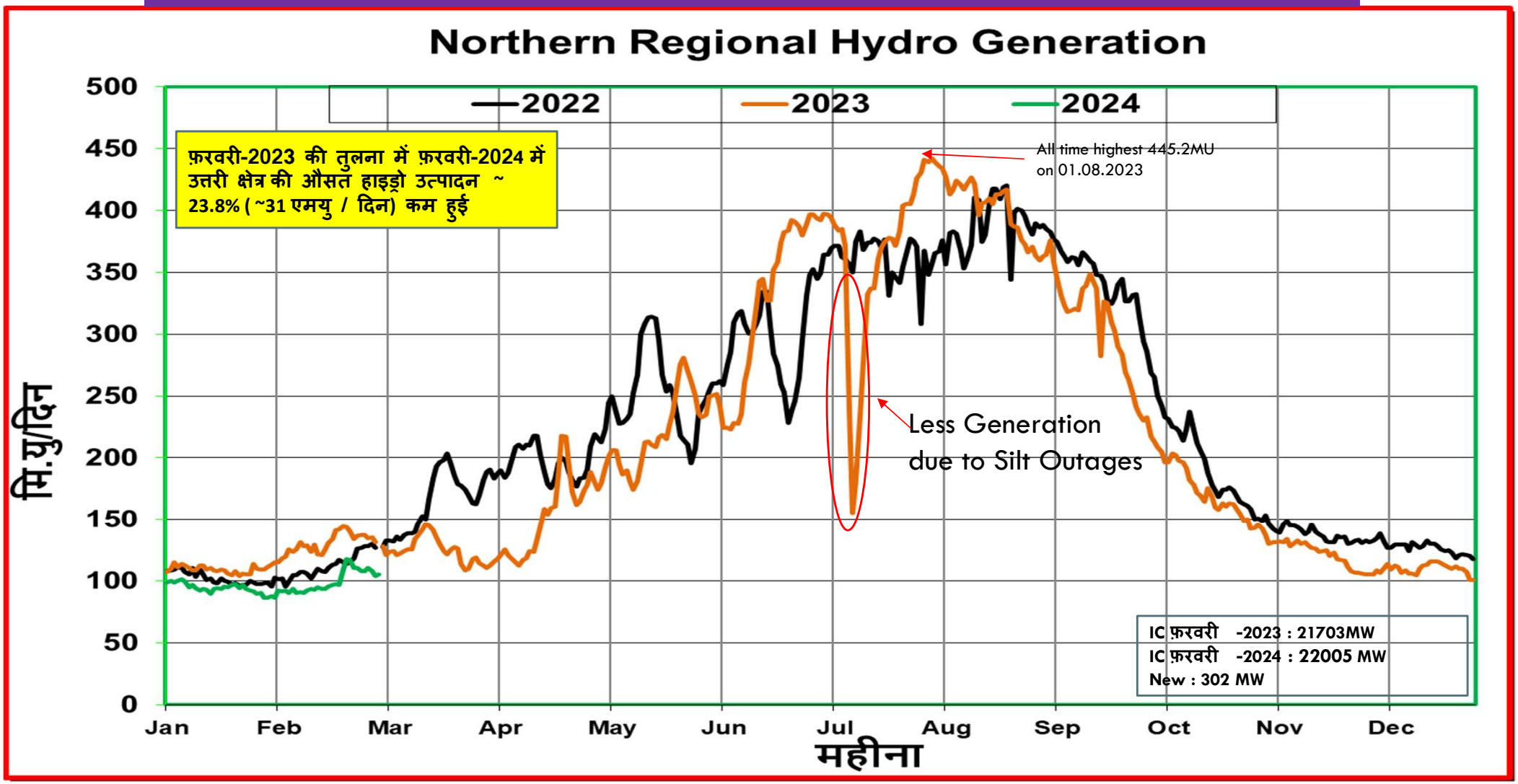
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



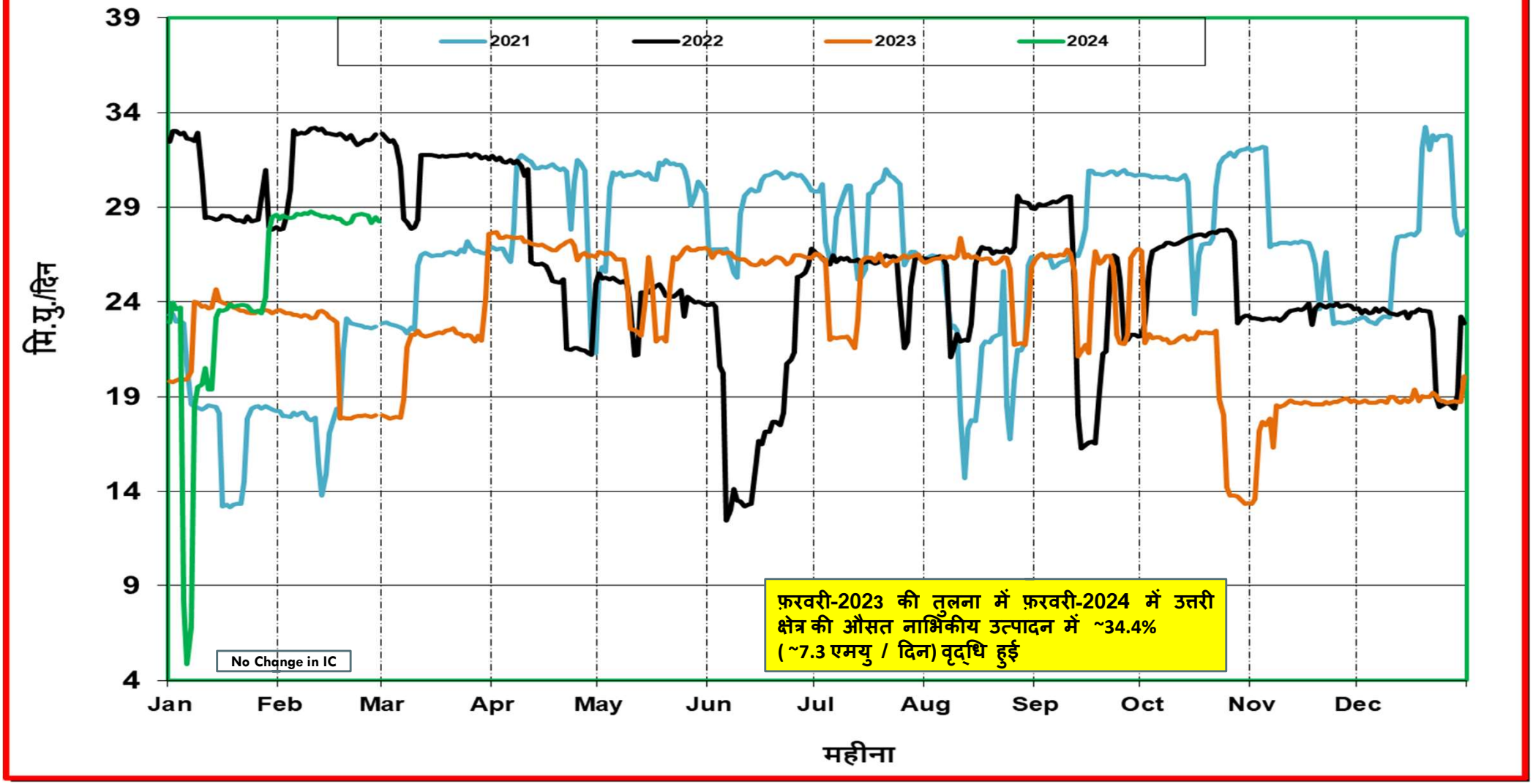
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(MUs/Day)



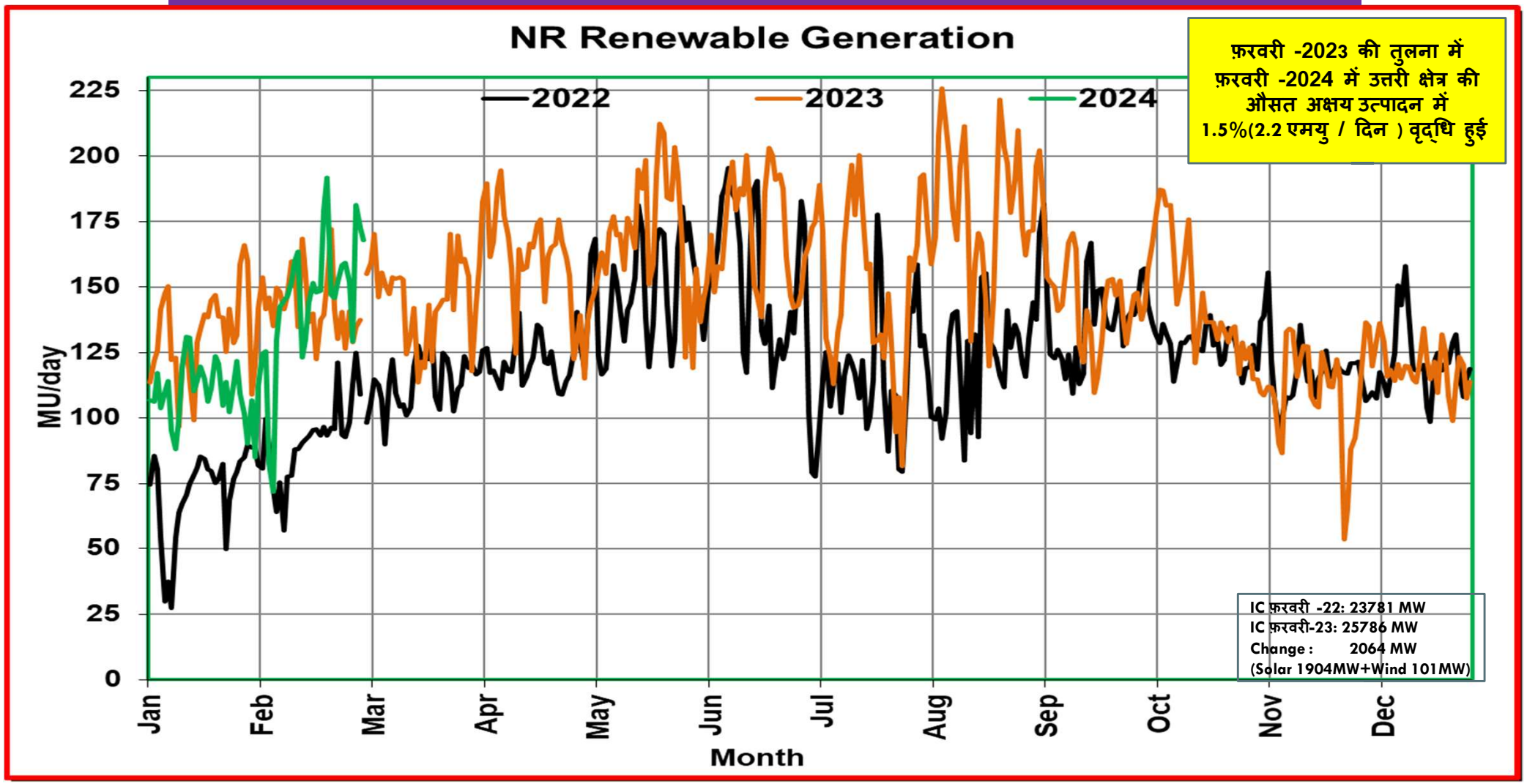
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(MUs/Day)



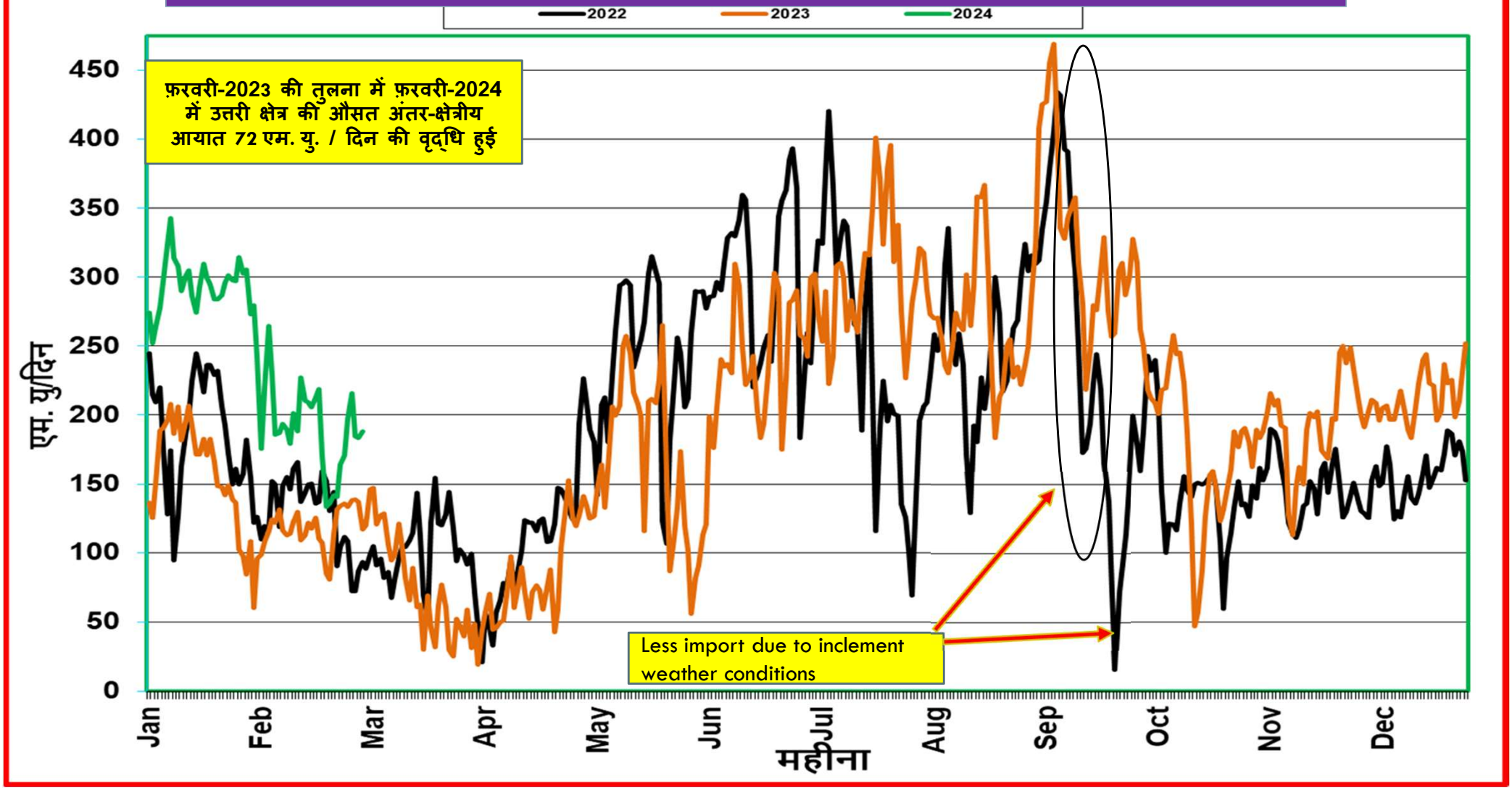
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (MUs/Day)



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



अंतर-क्षेत्रीय आयात(MUs/Day) की स्थिति



वास्तविक सारांश - फ़रवरी-2023 बनाम फ़रवरी-2024

	फ़रवरी-2023 (मि.यु. /दिन)	फ़रवरी-2024 (मि.यु. /दिन)	फ़रवरी माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	723.53	694.15	-29.38
जलीय (Hydro) उत्पादन	130.56	99.49	-31.06
नाभिकीय (Nuclear) उत्पादन	21.21	28.49	7.29
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	118.77	190.57	71.80
अक्षय (Renewable) उत्पादन	143.458	145.664	2.21

RE Penetration

	Maximum Daily MU Penetration			
	Feb '2024		Record upto Jan '2024	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	5.04	19-02-2024	12.28	01-04-2020
Rajasthan	25.71	19-02-2024	36.47	22-10-2021
UP	4.56	28-02-2024	4.72	22-03-2023
NR	17.84	19-02-2024	20.69	02-04-2023

Outage Summary For Feb 2024									
CONSTITUENTS	PLANNED (A)	FORCED OUTAGES (B=C+D)	EMERGENCY SHUTDOWNS (C)	TRIPPING (D)	% PLANNED SHUTDOWNS (A/(A+C))	% EMERGENCY SHUTDOWNS(C/(A+C)	% ESD SHUTDOWNS(C/B)	% TRIPPING (D/B)	TOTAL OUTAGES (A+B)
POWERGRID	411	237	146	91	73.8%	26.2%	61.6%	38.4%	648
UPPTCL	137	163	50	113	73.3%	26.7%	30.7%	69.3%	300
RRVPNL	90	135	76	59	54.2%	45.8%	56.3%	43.7%	225
PSTCL	101	22	12	10	89.4%	10.6%	54.5%	45.5%	123
BBMB	56	41	13	28	81.2%	18.8%	31.7%	68.3%	97
HVPNL	43	38	21	17	67.2%	32.8%	55.3%	44.7%	81
DTL	7	22	5	17	58.3%	41.7%	22.7%	77.3%	29
NTPC	19	7	3	4	86.4%	13.6%	42.9%	57.1%	26
PDD JK	10	14	2	12	83.3%	16.7%	14.3%	85.7%	24
PTCUL	17	5	3	2	85.0%	15.0%	60.0%	40.0%	22
ADHPL	16	2	0	2	100.0%	0.0%	0.0%	100.0%	18
Adani	11	0	0	0	100.0%	0.0%	NA	NA	11
NRSS36	1	10	10	0	9.1%	90.9%	100.0%	0.0%	11
AHEJ4L	4	3	3	0	57.1%	42.9%	100.0%	0.0%	7
NRSS XXIX	4	3	1	2	80.0%	20.0%	33.3%	66.7%	7
THDC	0	6	4	2	0.0%	100.0%	66.7%	33.3%	6
AREPRL	2	3	1	2	66.7%	33.3%	33.3%	66.7%	5
Azure	1	4	1	3	50.0%	50.0%	25.0%	75.0%	5
MAHINDRA	3	2	1	1	75.0%	25.0%	50.0%	50.0%	5
Cleansolar_Jodhpur	3	1	1	0	75.0%	25.0%	100.0%	0.0%	4
GPTL	1	3	3	0	25.0%	75.0%	100.0%	0.0%	4
NHPC	1	3	2	1	33.3%	66.7%	66.7%	33.3%	4
GTL	2	1	0	1	100.0%	0.0%	0.0%	100.0%	3
Saurya Urja	3	2	2	0	60.0%	40.0%	100.0%	0.0%	5
Chandigarh SEB	2	0	0	0	100.0%	0.0%	NA	NA	2
PKTSL	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
Total	946	728	361	367	72.4%	27.6%	49.6%	50.4%	1674

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))	
Nov-23	935	631	347	284	72.9%	27.1%	1566
Dec-23	1078	658	331	327	76.5%	23.5%	1736
Jan-24	711	827	401	426	63.9%	36.1%	1538
Feb-24	**946**	**728**	**361**	367	**72.4%**	**27.6%**	**1674**

ROOF TOP SOLAR

- Monitoring of Roof-Top Solar in Real Time by Control Centres
- Presently, In Pan India , Roof Top solar commissioned till date is around 3 GW. And with the inauguration of "***Pradhanmantri Suryoday Yojana"*** more and faster integration of roof top solar is expected in the near future of 2-3 years both at Government associated Building and private customers.
- So for reliable and integrated Grid-Operation, Real Time Monitoring has become inevitable for the system operations. So SLDCs are requested to have the app based monitoring of Roof top Solar in their respective control area and same can be shared to NRLDC.

New Elements First Time Charged During Dec 2023

S. No.	Type of transmission element	Total No
1	Transmission Lines	06
2	LINE REACTOR	02
3	ICTs/GTs/Transformers	11
4	SOLAR ICR/BLOCK	13
5	LILO Line Charging	01
6	Capacitor Bank	03
Total New Elements charged		36

Transmission Lines

S.No	Name of element	Owner	Voltage Level (in kV)	Circuit No	Line Length(Km)	Conductor Type	State	Actual date charging
1	220kV PGPL_SL_BIK2_PG-Bikaner_2 (PBTSL)-1	PRERAK GREENTECH PVT LTD	220kV	1	10.9	HTLS	RAJASTHAN to RAJASTHAN	03-Feb-2024
2	220kV Fatehgarh_II(PG)-ASER2PL_SL_FTHG2_PG-1	ADANI SOLAR ENRGY RJTWO PRIVATE LIMITED	220kV	1	13.9	AL59 Zebra	RAJASTHAN to RAJASTHAN	04-Feb-2024
3	220kV Fatehgarh_III(PG)-RSAPL_SL_FTHG3_PG-1	RENEW SURYA AAYAN PRIVATE LIMITED	220kV	1	9.34	AL59 Moose	RAJASTHAN to RAJASTHAN	06-Feb-2024
4	220kV Fatehgarh_III(PG)-RSRPL_Hyb_FTHG3_PG-1	RENEW SURYA ROSHNI PRIVATE LIMITED	220kV	1	18.01	AL59 Moose	RAJASTHAN to RAJASTHAN	17-Feb-2024
5	765kV Hapur(UP)-Rampur_PRSTL (UP)-1	GTL	765kV	1	229.804	Quad Bersimis	UTTAR PRADESH to UTTAR PRADESH	24-Feb-2024
6	765kV Mainpuri(UP)-Hapur(UP)-1	WUPPTCL	765kV	1	216.98	ACSR Quad Bersimis	UTTAR PRADESH to UTTAR PRADESH	27-Feb-2024

LINE REACTOR

S.No	Name of element	Owner	Voltage Level (in kV)	MVAR Capacity	State	Actual date charging
1	330 MVAr Non-Switchable LINE_REACTOR of 765 KV HAPUR-RAMPUR LINE at Hapur(UP)	GTL	765kV	330 MVAr	UTTAR PRADESH	24-Feb-2024
2	**189 Non-Switchable LINE_REACTOR of 765 KV MAINPURI(SEUPPTCL)- HAPUR (WUPPTCL) LINE at Mainpuri(UP)**	**WUPPTCL**	**765kV**	**189 MVAr**	**UTTAR PRADESH**	24-Feb-2024

ICTs/GTs/Transformers

S.No	Name of element	Owner	Voltage Level (HV/LV/Tertiary)	MVA Capacity	State	Actual date charging
1	220/33kV, 150 MVA, 3-Phase, Meiden, Power Transformer - 1 atPGPL_SL_BIK2_PG	PRERAK GREENTECHPVT LTD	220/33 KV	150	RAJASTHAN	03-Feb-2024
2	220/33kV, 150 MVA, 3-Phase, Meiden, Power Transformer - 2 atPGPL_SL_BIK2_PG	PRERAK GREENTECHPVT LTD	220/33 KV	150	RAJASTHAN	04-Feb-2024
3	220/33kV, 100 MVA, 3-Phase, INDOTECH TRANSFORMER LIMITED, Power Transformer - 1 at ASER2PL_SL_FTHG2_PG	ADANI SOLAR ENRGY RJTWO PRIVATE LIMITED	220/33 KV	100	RAJASTHAN	04-Feb-2024
4	220/33kV, 100 MVA, 3-Phase, INDOTECH TRANSFORMER LIMITED, Power Transformer - 2 at ASER2PL_SL_FTHG2_PG	ADANI SOLAR ENRGY RJTWO PRIVATE LIMITED	220/33 KV	100	RAJASTHAN	04-Feb-2024
5	220/33kV, 150 MVA, 3-Phase, IndoTech, Power Transformer - 1 at RSAPL_SL_FTHG3_PG	RENEW SURYA AAYAN PRIVATE LIMITED	220/33 KV	150	RAJASTHAN	06-Feb-2024
6	220/33kV, 150 MVA, 3-Phase, IndoTech, Power Transformer - 2 at RSAPL_SL_FTHG3_PG	RENEW SURYA AAYAN PRIVATE LIMITED	220/33 KV	150	RAJASTHAN	06-Feb-2024
7	400/220/33kV, 315 MVA MVA, 3-Phase, EMCO, ICT - 2 at Orai(UP)	UPPTCL	400/220/33kV	315	UTTAR PRADESH	08-Feb-2024
8	220/33kV, 200 MVA, 3-Phase, Prime Meiden, Power Transformer - 2 at RSRPL_Hyb_FTHG3_PG	RENEW SURYA ROSHNI PRIVATE LIMITED	220/33 KV	200	RAJASTHAN	17-Feb-2024
9	220/33kV, 200 MVA, 3-Phase, Prime Meiden, Power Transformer - 1 at RSRPL_Hyb_FTHG3_PG	RENEW SURYA ROSHNI PRIVATE LIMITED	220/33 KV	200	RAJASTHAN	17-Feb-2024
10	765/400kV, 1500 MVA MVA, 3x1-Phase, GE T& D, ICT - 6 atFatehgarh_II(PG)	POWERGRID	765/400 KV	1500	RAJASTHAN	22-Feb-2024
11	**400/220/33kV, 500 MVA MVA, 3-Phase, GE, ICT - 2 at Sahupuri(UP)**	**UPPTCL**	**400/220/33kV**	**500**	**UTTAR PRADESH**	24-Feb-2024

SOLAR ICR/BLOCK

S.No	Plant Name	Total Capacitycharged	Total Installed Capacity of Plant	Type of RE	Total No. of Solar ICR/Block Charged	Actual date charging
1	Azure Power Maple Private Limited (APMPL)	24 MW	300MW	Solar	28	01-Feb-2024
2	ADANI SOLAR ENRGY RJ TWO PRIVATE LIMITED	59.95 MW	165 MW	Solar	5	04-Feb-2024
3	ADEPT RENEWABLE TECHNOLOGY PVT LTD	110 MW	110 MW	Solar	10	06-Feb-2024
4	RENEW SURYA AAYAN PRIVATE LIMITED	193 MW	290 MW	Solar	24	08-Feb-2024
5	RENEW SURYA AAYAN PRIVATE LIMITED	48.25 MW	290 MW	Solar	6	08-Feb-2024
6	TRANSITION ENERGY SERVICES PRIVATE LIMITED	60 MW	84.4 MW	Solar	6	08-Feb-2024
7	TRANSITION ENERGY SERVICES PRIVATE LIMITED	24.4 MW	84.4 MW	Solar	3	08-Feb-2024
8	RENEW SURYA ROSHNI PRIVATE LIMITED	95 MW	380 MW	Hybrid(Solar + BESS)	12	19-Feb-2024
9	RENEW SURYA ROSHNI PRIVATE LIMITED	95 MW	380 MW	Hybrid(Solar + BESS)	12	20-Feb-2024
10	RENEW SURYA AAYAN PRIVATE LIMITED	48.75 MW	290 MW	Solar	6	22-Feb-2024
11	ADANI SOLAR ENERGY RJ TWO PRIVATE LIMITED	52.50 MW	165 MW	Solar	5	24-Feb-2024
12	RENEW SURYA ROSHNI PRIVATE LIMITED	95 MW	380 MW	Hybrid(Solar + BESS)	12	27-Feb-2024
13	**ADANI SOLAR ENERGY RJ TWO PRIVATE LIMITED**	**52.55 MW**	**165 MW**	**Solar**	**5**	29-Feb-2024

LILO Line Charging

S.No	Name of element	Voltage Level (in kV)	Name of Line to be LILOed	Line Length of New Line after LILO (In Km)	LILO Portion Line Length (In Km)	Conductor Type	Agency/Owner	Actual date charging
	220kV Abdullapur(PG)-Rampur(HV)-1(After LILO of 2nd Ckt of 220kV Abdullapur PG - DCRTPP line at 220kV Rampur Kamboyan)	**220kV**	**2nd Ckt of 220kV Abdullapur PG - DCRTPP line**	**31.7**	**19.683**	**ZEBRA**	**HVPNL**	**16-Feb-2024**


धन्यवाद