सत्यमेव जयते

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

संख्या: उ.क्षे.वि.स./प्रचालन/106/01/2023/3891-3932 दिनांक: 12.04.2023

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 205वीं बैठक का कार्यवृत।

Subject: Minutes of 205th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 205वीं बैठक दिनांक 21.03.2023 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें।

205th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 21.03.2023. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक: यथोपरि

Santosh 12/4/23

(संतोष कुमार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

18-ए, शहीद जीतसिंह मार्ग, कटवरिया सराय, नई दिल्ली दूरभाष:011-26513265 ई-मेल: seo-nrpc@nic.in वेबसाईट: www.nrpc.gov.in
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e-mail: seo-nrpc@nic.in Website: www.nrpc.gov.in

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 205वीं बैठक का कार्यवृत्त

205th meeting of OCC of NRPC was held on 21.03.2023 through video conferencing.

खण्ड-क:उ.क्षे.वि.स. **PART-A:NRPC**

1. Confirmation of Minutes

Minutes of 204th OCC meeting was issued on 14.03.2023. OCC confirmed the minutes.

2. Review of Grid operations of February 2023

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

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

- **Delhi**

  Average maximum temperature in Delhi for February in 2023 was higher as compared to previous months. So demand was at lower side due to reduction in heating loads.

- **Himachal Pradesh**

  The Anticipation in Energy Requirement and Peak Demand in respect of Himachal Pradesh for the month of February 2023 came on the lower side due to the reason that HPSEBL has anticipated the energy requirement of the State including the Cement Plants (ACC, AmbujaRauri, & AmbujaSuli). However, these cement plants remained non-functional and resumed their operation on 24.02.2023 with partial load.

- **Punjab**

  It is intimated that actual maximum demand and actual energy requirement are more as compared to anticipated maximum demand and anticipated energy requirement respectively because of long dry spell, increase in overall demand of consumers, especially domestic consumers in the state of Punjab during the month of February 2023.

- **Uttar Pradesh**

  Due to pleasant weather in the month of February 2023, peak demand requirement (in MW) was less than anticipated peak demand.

3. Maintenance Programme of Generating units and Transmission Lines

The maintenance programme of generating units and transmission lines for the month of April 2023 was deliberated in the meeting on 20.03.2023.

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	160.0	340	No Revision submitted
	Requirement	154.0	330	
	Surplus / Shortfall	6.0	10	
	% Surplus / Shortfall	3.9%	3.0%	
DELHI	Availability	3380.0	6500	20-Mar-23
	Requirement	3440.0	6500	
	Surplus / Shortfall	-60.0	0	
	% Surplus / Shortfall	-1.7%	0.0%	
HARYANA	Availability	5113.0	9891	20-Mar-23
	Requirement	5210.0	9790	
	Surplus / Shortfall	-97.0	101	
	% Surplus / Shortfall	-1.9%	1.0%	
HIMACHAL PRADESH	Availability	973.5	1740	18-Mar-23
	Requirement	981.0	1769	
	Surplus / Shortfall	-7.5	-29	
	% Surplus / Shortfall	-0.8%	-1.6%	
J&K and LADAKH	Availability	1430.0	3530.0	No Revision submitted
	Requirement	1580.0	2710.0	
	Surplus / Shortfall	-150.0	820	
	% Surplus / Shortfall	-9.5%	30.3%	
PUNJAB	Availability	6130.0	12320	20-Mar-23
	Requirement	5310.0	10456	
	Surplus / Shortfall	820.0	1864	
	% Surplus / Shortfall	15.4%	17.8%	
RAJASTHAN	Availability	9810.0	19140	No Revision submitted
	Requirement	8980.0	14710	
	Surplus / Shortfall	830.0	4430	
	% Surplus / Shortfall	9.2%	30.1%	
UTTAR PRADESH	Availability	13950.0	23000	16-Mar-23
	Requirement	13800.0	25000	
	Surplus / Shortfall	150.0	-2000	
	% Surplus / Shortfall	1.1%	-8.0%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
UTTARAKHAND	Availability	1302.0	2270	10-Mar-23
	Requirement	1320.0	2330	
	Surplus / Shortfall	-18.0	-60	
	% Surplus / Shortfall	-1.4%	-2.6%	
NORTHERN REGION	Availability	42700.0	77300	
	Requirement	41160.0	65000	
	Surplus / Shortfall	1540.0	12300	
	% Surplus / Shortfall	3.7%	18.9%	

- MS, NRPC has advised SLDCs to share the figures with reason if deviation from CEA approved anticipated power supply position is there.

5. Submission of breakup of Energy Consumption by the states

5.1. The updated status on the submission of energy consumption breakup is presented below:

State / UT	From	To
Delhi	Apr-2018	Feb-2023
Haryana	Apr-2018	Jan-2023
Himachal Pradesh	Apr-2018	Feb-2023
Punjab	Apr-2018	Jan-2023
Rajasthan	Apr-2018	Feb-2023
Uttar Pradesh	Apr-2018	Jan-2023
Uttarakhand	Apr-2018	Dec-2022

5.2. OCC forum again expressed concern on non-submission of energy breakup data by UTs of J&K & Ladakh, and Chandigarh despite repeated reminders.

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

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

6.2. In 195thOCC, 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.

7. NR Islanding scheme

7.1. In the meeting (205th OCC), EE(SS) apprised forum that Delhi has revised the island load to 267.7 MW and has submitted a new list of designated feeders and df/dt settings for post islanding load-generation balancing.

7.2. In the meeting, DTL and Delhi SLDC representative were asked to do the modelling of the revised Delhi islanding scheme and thereafter present its result

in the meeting scheduled next week with the officials of NRPC, NRLDC and DTL.

7.3. Representative from UP apprised forum that with regard to Lucknow-Unchahar islanding scheme, UFR already available with them have been installed and for some of the UFR's and panel that have been procured their delivery is due in April and those would be installed by May. Further, he stated that integration work will be completed by May end.

7.4. Further, UP was also enquired about status of study by CPRI in Agra islanding scheme. UPSLDC informed that draft report has been submitted by CPRI. In the draft report, CPRI has submitted 18 different cases of load-generation scenario and same is under examination. Since Jawaharpur TPP is expected to be commissioned shortly, MS, NRPC asked the officials of NRPC, NRLDC and UPSLDC to explore the possibility of considering Jawaharpur generation in place of Lalitpur for this islanding scheme and thereby plan a meeting in the coming month to further deliberate on this issue.

7.5. Representative from Rajasthan apprised forum that with regard to Jodhpur-Barmer-Rajwest and Suratgarh islanding scheme preparation of DPR is under progress by STU.

7.6. EE(SS), NRPC enquired about the status of Pathankot-RSD islanding scheme as implementation date was 31.12.2022. Punjab SLDC informed that UFR's have been installed and testing of relays would be completed by next week.

7.7. Further, with regard to Patiala-Nabha Power Rajpura islanding scheme representative from Punjab informed that tendering in under progress.

7.8. With regard to Kullu-Manali islanding scheme representative form HPSLDC intimated that PFR testing of Malana is awaited and its schedule is expected to be finalized by end of March 2023.

7.9. Further, with regard to Shimla-Solan islanding scheme representative from HP apprised forum that two generators namely Sumez and Suryakanta generators have mentioned that as per OEM recommendation it will be difficult to take frequency setting below the design limits. MS, NRPC desired to have a separate meeting with the officials of NRPC, NRLDC, HPSLDC and OEM's of concerned generators to further deliberate the issue.

8. Coal Supply Position of Thermal Plants in Northern Region

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

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

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
ANPARA C TPS	1200	88.70	17	2.9
KOTA TPS	1240	94.93	26	2.9
SURATGARH TPS	1500	42.46	26	2.6
CHHABRA-I PH-1 TPP	500	76.57	26	2.5

8.3. In the meeting, above mentioned generating stations were requested to take adequate measures.

9. Procedure for Shifting of Transmission Lines involving in work by other Infrastructure Developers (Agenda by NRPC Sectt.)

9.1. NRPC representative apprised forum about the Standard Operating Procedure (SoP) issued by CEA regarding the Shifting of Transmission Lines by various infrastructure developers. Further, he mentioned that abovecited SoP is for the Compliance of all the stakeholders in addition to the existing regulatory provisions of CEA and other authorities such as Environment & Forest, Defence, Airport, NHAI, BRO, etc., to ensure smooth coordination between the infrastructure developing agencies and transmission licensees while developing infrastructure projects.

9.2. MS, NRPC asked all the transmission utilities of NR for strict compliance of abovecited SoP issued by CEA.

9.3. Further, MS NRPC stated that in case of any query with regard to abovecited SoP, stakeholders/constituents of northern region may mail their query to NRPC Sect.. at seo-nrpc@nic.in and same would be forwarded to PSE&TD division, CEA for clarification and in turn their response would be shared with all the stakeholders/constituents of northern region.

10. Energization check of +/- 600MVAR STATCOM (Make-SIEMENS) at 765/400/220kV Bhadla_II & Fatehgarh-II S/S) (Agenda by Powergrid/NR-1)

10.1. NRPC representative appraised forum that Powergrid, NR-1 vide its mail dated 14.03.2023 mentioned that commissioning activities of +/- 600MVAR STATCOM (Make-SIEMENS) at 765/400/220kV Bhadla_II & Fatehgarh-II S/S is in full swing and energisation test is expected to commence as per following schedule: -

1. Bhadla-II (+/- 600MVAR STATCOM) – From 26.03.2023 to 16.04.2023
2. Fatehgarh-II (+/- 600MVAR STATCOM) - From 15.04.2023 to 17.05.2023

10.2. NRLDC representative mentioned that approval of energisation test would be given by NRLDC during non-solar hours.

10.3. OCC forum agreed to NRLDC view.

11. Calibration and Testing of Interface Energy Meters installed at Generating Stations (Agenda by NHPC)

11.1. NHPC representative apprised forum that calibration and testing of Interface energy meters installed at their generating station was last carried in 2016 by Powergrid.

11.2. SE(O), NRPC in accordance to the decision taken in 197th OCC asked Powergrid to intimate forum whether the finalization of agency for carrying out the testing of Interface Energy Meters installed at Generating stations in Northern region has been completed and if agency for above cited work is finalized what is the time line to complete the work.

11.3. In this regard, Powergrid representative intimated that they will submit the details after discussing with their management.

12. Flexible/Zero Scheduling of Tehri HPP to facilitates river dredging/cleaning works of Tehri PSP and Planned Outages of Tehri HPP (Agenda by THDC)

12.1. THDC representative apprised forum that river dredging work of Tehri PSP is being undertaken by THDCIL, the work commenced from15-Feb -2023 and scheduled to be completed by 15-Jun 2023. As the work is being undertaken in TRC area of Tehri HPP, which is common for both Tehri HPP and PSP and water level is required to be kept below EL 606.00, hence, to provide requisite and safe working condition zero scheduling of Tehri HPP is primary requirement.

12.2. In this context, a brief presentation was given by THDCIL representative during the meeting. Considering the timely commissioning of project and providing safe and desired working conditions to facilitate the river dredging work, zero-scheduling of Tehri HPP was approved during night period (Non-peaking hours) till 31-Mar-2023, and it was agreed that existing methodology shall be reviewed in monthly OCC meeting and based on system conditions flexible/zero scheduling of next month shall be approved in the OCC meeting.

12.3. Further THDC representative mentioned that considering anticipated high demand in the Grid in month of April'23 and May'23, and taking cognizance of timely commissioning of Tehri PSP project, they have devised an Operating Philosophy which was presented to forum by them (copy of an Operating Philosophy is attached as Annexure-A.VI of agenda)

12.4. With regard to the operating methodology following has agreed by the OCC forum:

1. **If there is no Grid Contingency:** existing operating philosophy i.e. Zero Scheduling during night hours (non-peaking) shall be extended for month of April, or revised as per peaking hour of April.

2. **In case of Contingency:**

— **Scenario-I: Normal River Dredging Work**

if Grid operator requires to schedule the Tehri HPP then instruction shall be communicated 02:00 hrs. prior to scheduling of machine.

— **Scenario-II: River Dredging Work along with Construction/Concreting of Baffel Wall**

Prior instruction for scheduling of plant may be given atleast 4 days in advance so that construction activities may be align with Grid requirements or vice-versa concreting activities may be reschedule as per Grid Requirements.

13. Replacement/Installation of Interface Energy Meters at PGCIL Sub-Stations (Agenda by PSTCL)

13.1 NRPC representative apprised forum that PSTCL vide its mail dated 16.03.2023 has mentioned that they had installed EDMI(Wallaby) make meters at PGCIL Sub-Stations while executing boundary metering project in 2012-13. Now, PSTCL is replacing all existing boundary meters with latest interface energy meters and is also installing AMR equipment as a part of SAMAST project. List of existing boundary meters to be replaced/New meters to be installed at PGCIL Sub-Stations is enclosed as Annexure-A.VII of agenda.

13.2 Powergrid representative intimated forum that installation of new meters is not approved in any standing committee. While with regard to replacement of existing energy meters, Powergrid has no objections.

13.3 SE(O), NRPC desired that a separate meeting may be conveyed among the officials of NRPC, NRLDC and PSTCL in next week for further deliberation in this matter.

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

14. NR Grid Highlights for February 2023

NRLDC representative gave detailed presentation on the grid highlights of Feb 2023. Following are major grid highlights of Feb 2023:

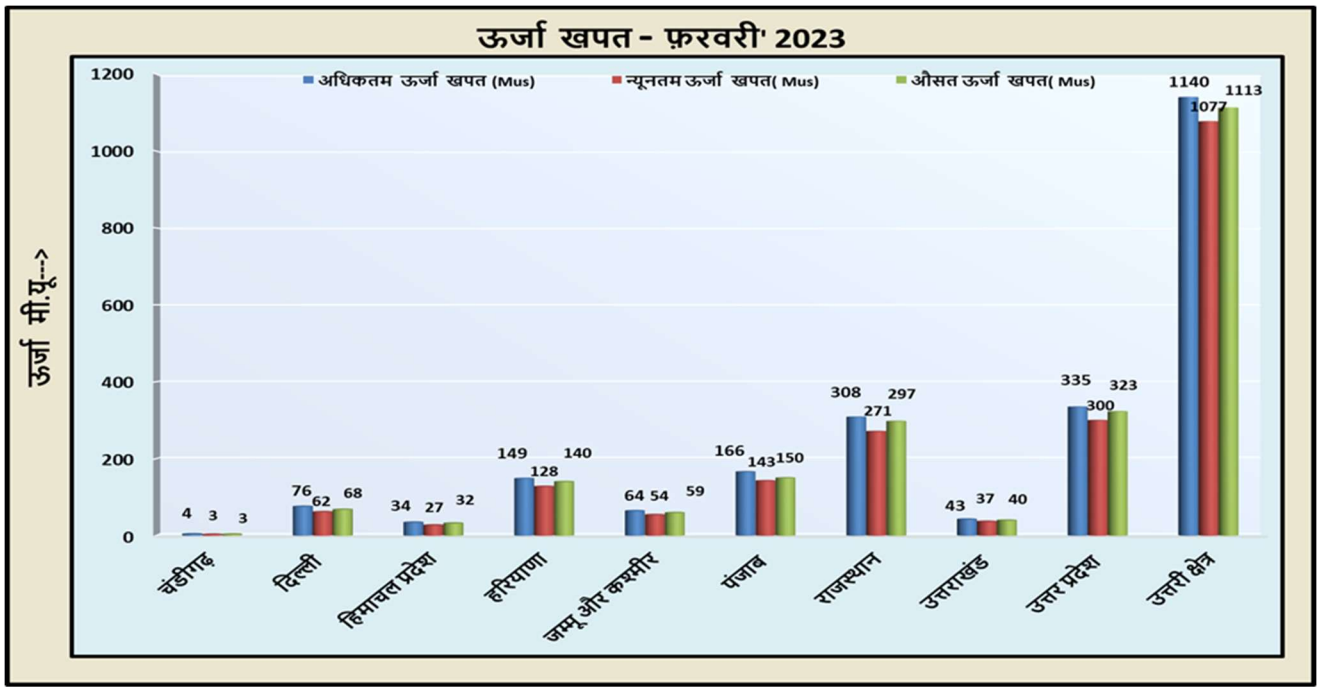
- Maximum energy consumption of Northern Region was **1140 Mus** on 17th February'23 and it was 6.1 % higher than February' 2022 (1075 Mus 02nd February'22)
- Average energy consumption per day of Northern Region was **1113 Mus** and it was 7.8 % higher than February'22 (1033 Mus per day)

- Maximum Demand met of Northern Region was **59,101MW** on 09th February'23 @11:00 hours (*based on data submitted by Constituents)* as compared to 54,996 MW on 04th February'22 @11:00 hours.

Northern Region all time high value recorded in February'23:

States	Max. Demand Met during the day (MW)		
	As per hourly data Submitted by States (MW)/Format28	As on date	As per SCADA instantaneous data
J&K(UT) and Ladakh (UT	3044	02-02-2023	3091
		20:00 hrs	01-02-2023

Energy Consumption:



- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the February'22 vs February'23**

क्षेत्र/राज्य	फ़रवरी - 2022	फ़रवरी - 2023	% अंतर
चंडीगढ़	3.5	3.5	0.5
दिल्ली	66.5	68.0	2.2
हिमाचल प्रदेश	33.4	32.2	-3.6

हरियाणा	124.3	140.3	12.9
जम्मू और कश्मीर	54.9	59.4	8.4
पंजाब	125.1	149.9	19.9
राजस्थान	277.3	297.3	7.2
उत्तराखंड	40.0	39.7	-0.9
उत्तर प्रदेश	307.9	322.6	4.8
उत्तरी क्षेत्र	**1032.8**	**1112.9**	**7.8**

Frequency Data

Month	**Avg. Freq. (Hz)**	**Max. Freq. (Hz)**	**Min. Freq. (Hz)**	**<49.90 (% time)**	**49.90 – 50.05 (% time)**	**>50.05 (% time)**
Feb'23	50.00	50.40	49.51	10.8	64.7	24.6
Feb'22	50.00	50.26	49.54	6.0	76.8	17.2

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

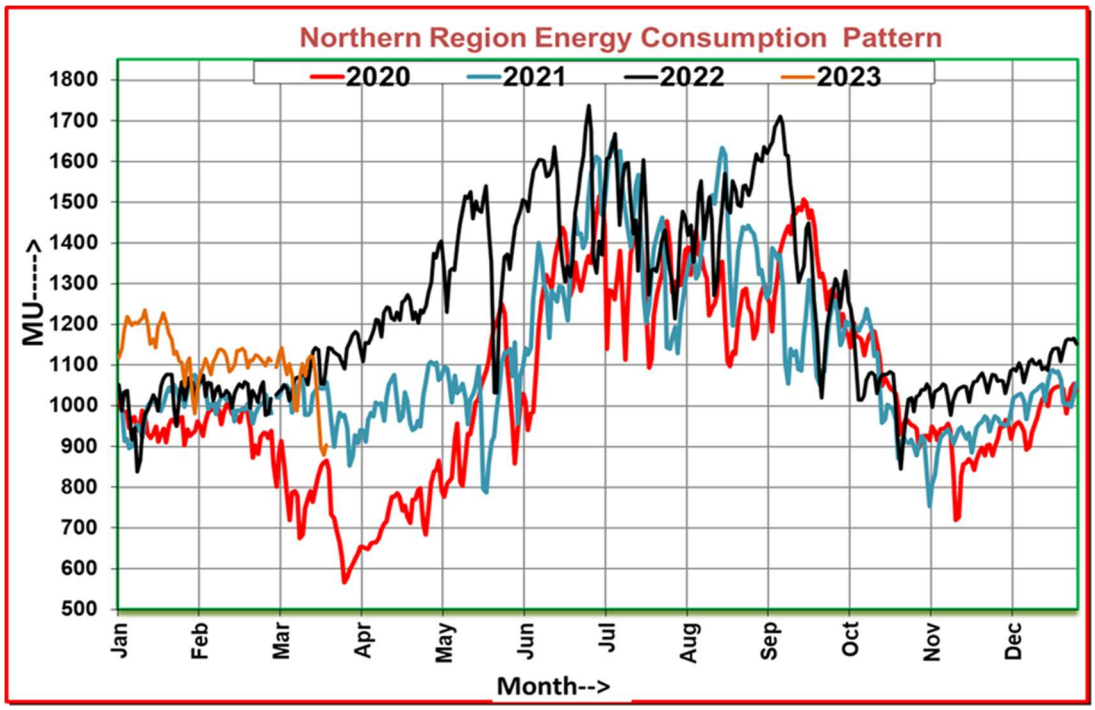
15. Summer Preparedness 2023: Actions for improvement in grid operation (Statewise):

NRLDC representative stated that most of the NR states recorded their maximum demand met and maximum energy consumption during the year 2022-23 during summer-monsoon months. State wise maximum demand and energy consumption as per data available with NRLDC is shown below:

State	Maximum demand (in MW)	Date/ Time	Maximum energy consumption (MU)	Date
Punjab	14295	22.08.22 at 14:45	334.45	29.06.22
Haryana	12768	28.06.22 at 11:56	266.15	07.07.21
Rajasthan	17206	18.01.23 at 14:30	328.86	09.09.22
Delhi	7695	29.06.22 at 15:10	153.52	28.06.22
Uttar Pradesh	26589	09.09.22 at 21:39	547.360	19.08.22

Uttarakhand	2594	14.06.22 at 21:00	54.27	15.06.22
Himachal Pradesh	2071	06.01.23 at 09:45	37.0	06.01.23
J&K and Ladakh (UT)	3044	02.02.23 at 20:00	64.6	20.01.23
Chandigarh	426	08.07.21 at 15:00	8.41	08.07.21
Northern region	77006	28.06.22 at 11:50	1737.09	28.06.22

It was mentioned that with the increase in temperature, demand of Northern Region starts increasing from March onwards every year. IMD (India Meteorological Department) has forecasted above normal heat during Apr-Jun months in upcoming summer months. The IMD has predicted **normal to above normal minimum temperatures** in most parts of the country, except for South Peninsular India, where normal to below normal minimum temperatures are on the cards. Summer of Northern region are typically hot and demand is also high during this time, therefore advance actions help in better grid operation.



There has been continuous growth over the years. This year already Northern region energy consumption has been higher by 15% & 8% in January & February respectively compared to previous year. With this growth, this year maximum demand met and energy consumption of Northern region is expected to break previous records.

During the upcoming high demand season, SLDCs need to ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits

assessed by SLDC and NRLDC. SLDCs need to ensure this during real-time operation.

SLDCs need to make sure that loading of 220kV and below voltage level intrastate lines remain within safe limits during the high demand season.

MS NRPC also asked states to take proactive measures as highlighted so as to meet maximum demand during summer months ensuring system security and reliability. It was also mentioned that there has been decrease in demand during Mar due to change in weather conditions. Therefore, states need to gear up themselves for the increase in demand from April onwards. MS NRPC stated that CEA has also uploaded load generation balance for 2023-24 and is available @ https://cea.nic.in/wp-content/uploads/l_g_b_r_reports/2022/LGBR_2023_24.pdf.

It was also mentioned that since normal to above normal minimum temperature in Northern region is likely, then it is likely that there would be higher energy consumption but the increase in demand may not be that high during summer months.

State-wise actions that are required to avoid transmission related issues that were encountered during last high demand season and would help in meeting higher demand this year are listed below:

Punjab:

Following actions were requested pertaining to Punjab:

- ICT Capacity augmentation at Nakodar from 2*315MVA to 2*500MVA ICTs
- Expediting commissioning of 400kV Dhanansu Substation with connectivity both at 400kV and 220kV.
- ICT Capacity augmentation at 400/220kV Ludhiana(PG)
- Minimising outages of Talwandi Saboo thermal generating units
- Avoiding/ Minimising outages of generating units on coal shortage.
- Expediting ADMS implementation

In the meeting, Punjab SLDC informed following:

- 1*500MVA ICT would be commissioned replacing 315MVA ICT at Nakodar by May 2023
- Commissioning of 220kV Dhanansu S/s is expected shortly. Line works at 400kV are nearing completion, however ICT at 400/220kV Dhanansu is expected by end of May 2023.
- Capacity augmentation at 315MVA ICT to 500MVA ICT at Ludhiana and 250MVA ICT to 500MVA ICT at Moga(PG) is expected by May 2023.
- Revised ATC/TTC limits are being discussed with NRLDC based on above expected transmission system.

- Matter is being taken up with TSPL to minimise outages during paddy season. Also being taken up by PSPCL.

Haryana:

Following actions were requested pertaining to Haryana:

- Plan to mitigate severe N-1 non-compliance issue at 400/220kV Deepalpur and Panipat(BBMB) during summer/monsoon 2023
- Expediting commissioning of new 500MVA ICT at 400/220kV Kurukshetra (PG)
- Expediting revival of 400/220kV Bhiwani(BBMB) ICT under long outage.
- Reconductoring of 220kV Hisar (PG) - Hisar (IA) to be taken up for approval.
- Ensuring availability of Faridabad Gas generating station during high demand season.
- Avoiding too much dependence on exchange for power procurement and plan to meet the deficit as discussed in meeting held with NRPC, NRLDC on 10.03.2023.
- Expediting ADMS implementation
- SPS mock testing to be carried out at 400/220kV Deepalpur S/s.

NRLDC representative stated that following transmission elements would help increase import capability of Haryana:

- 220kV Sec 32 Panchkula and 220kV lines to Panchkula (PG)
- 400/220kV 3rd 500MVA ICT at Kurukshetra_PG
- LILO of 220kV Samalkha-Mohana at Sonepat (PG)
- 220kV Rai Substation and 220kV lines to Sonepat (PG))
- 400/220kV Bhiwani(BBMB) ICT

*Sonepat(PG) & Panchkula(PG) have capacity of 1130MVA and margins available

In the meeting, Haryana SLDC informed following:

- 220kV lines to Panchkula (PG) from Sec32 Panchkula expected by Jun 2023.
- 400/220kV 3rd 500MVA ICT at Kurukshetra_PG expected by Jun 2023.
- LILO of 220kV Samalkha-Mohana at Sonepat (PG) not expected during paddy 2023.
- 220kV Rai Substation is pending while 220kV lines conncectivity to Rai are commissioned.

- 400/220kV Bhiwani(BBMB) ICT: BBMB representative stated that one single phase unit is being shifted from Panipat to Bhiwani and expected to be charged by May 2023.
- Communication has been sent to Power procurement cell regarding feasibility of running Faridabad Gas generation.

Rajasthan:

Following actions were requested pertaining to Rajasthan:

- Improving the power factor and reducing the MVAr drawls in State substations at transmission as well as distribution level especially Western Rajasthan. After capacitor installation at low voltage level for improving voltage profile, as per the present load pattern and voltage profile of Rajasthan, it may be required that there has to be daily operation of capacitor banks for voltage control. It also needs to be duly considered.
- Expediting ICT augmentation at non-compliant 400/220kV RVPN substations such as Ajmer, Merta, Chittorgarh, Jodhpur, Bikaner, Hindaun, Bhilwara etc.
- Measures for severe low voltages in Hindaun & Alwar area and RE rich Western Rajasthan substations
- For 01-Dec-2022 to 10-Mar-2023, every two days 3 Machine outages were reported in Rajasthan. Measures need to be taken to avoid such frequent machine outages and ensuring sufficient coal stock.
- Identifying sufficient number of radial feeders so as to control overdrawl in case of message from NRLDC (presently identified feeders have two sources)
- Expediting implementation of ADMS scheme

NRPC representative stated that they have received letter from RVPN side regarding the transmission constraints and overloading issues being observed in Rajasthan. Letter attached as **Annexure-B.II**. MS, NRPC stated that RVPN should also provide concrete timelines for the works mentioned in the letter.

Following was informed by SE (P&P), RVPN during the meeting:

- After creation of 400kV Dholpur S/s, voltage would improve in the complex by 5-10kV. This would also improve over loading issue of 220kV Hindaun-Hindaun which is designed for 400kV but presently charged at 220kV.
- Other works are being planned as mentioned in letter attached as Annexure-B.II.
- 400kV Bharatpur is under internal approval with LILO of 400kV Agra-Sikar.
- STATCOM are under approval from CEA.
- Capacitor at DISCOM are under finalisation.

NRLDC and NRPC representative stated that one column may also be added in right side in letter attached as Annexure-B.II to highlight the works submitted by

RVPN. SE (P&P), RVPN agreed for the same. NRLDC representative stated that RVPN needs to expedite approval of transmission schemes and also execute them timely so as to avoid issues in real-time operation.

NRLDC representative stated that in real-time capacitors may be required to switch on/off on diurnal basis based on load profile in Rajasthan. SE (P&P), RVPN assured that as per requirement capacitors would be switched on/off even on diurnal basis.

Uttar Pradesh:

Following actions were requested pertaining to UP:

- Although SPS implemented at number of 400/220kV substations such as Azamgarh, Obra, Sarnath, Nehtaur, Gorakhpur etc. Plan to enhance capacity may also be taken up as per forecasted load growth
- Commissioning of 400/220kV Jaunpur S/S & 400/220kV Sahupuri S/S along with underlying network to be expedited.
- Expediting revival of 765kV AnparaD – Obra – Unnao line out for more than one year now.
- Avoiding/ Minimising outages of generating units on coal shortage.
- Expediting revival of generating unit such as Anpara TPS Unit 3 & Unit 4 which are out since 05-01-2023 & 01-11-2022 for overhauling works.
- Expediting ADMS implementation

In the meeting, UP SLDC informed following:

- 400/220kV Jaunpur S/S has been charged and supplying load.
- 765kV AnparaD-Unnao line is expected by first week of April 2023.
- Commissioning of Sahupuri S/S will take time (not expected this summer)
- New ICT at Nehtaur is also expected to be charged by April 2023.
- UPRVUN representative stated that Unit 4 is expected to be on bar by 15.04.2023 & Unit 3 is also expected by 16.04.2023.
- NRLDC and NRPC representative expressed concern on the delay in making units available by UPRVUN and stated that units need to be revived at the earliest.
- MS NRPC stated that as per direction of MoP, all utilities need to take top priority for revival of generating units well before April 2023. If any issues are being observed by utility in revival of generating unit, the matter may be further intimated to NRPC & CEA for expediting actions.

- UPRVUN representative stated that next year onwards all planned maintenance of generating units would be carried out from Oct-Feb to avoid any spill-over to Mar-Apr months.

Delhi:

Following actions were requested pertaining to Delhi:

- After bus -split due to high fault level at Bawana, 2*315 MVA ICTs N-1 non-compliant. Additional ICT/ load shifting to other station to be planned. Delhi SLDC to make sure that essential loads such as hospitals, DMRC, other important loads have alternate supply available so as to avoid load loss in case of N-1 contingency. As requested in earlier OCC meetings, DTL to explore SPS implementation at Bawana (2 ICTs section)
- New ICT/ Capacity augmentation at 400/220kV Mundka to be planned by DTL. One ICT under prolonged outage may be revived. One ICT already being diverted from Ludhiana(PG).
- Implementation of ADMS scheme to be taken up with DISCOMS (manual actions required as per last intimation from Delhi side)

In the meeting, Delhi SLDC informed following:

- SPS logic would be presented in next OCC meeting for further discussion and same would be implemented thereafter.
- 315MVA ICT replacement at Mundka is expected to be completed by Apr 2023

NRLDC representative stated that there was N-1 non-compliance at 400/220kV Mundka with 3*315MVA ICT last year whereas presently one of these three ICTs is under outage. DTL needs to expedite replacement works of ICT at Mundka & plan for further drawl of power. It was requested that Delhi SLDC submits their latest ATC/TTC assessment with NRLDC at the earliest. Delhi SLDC agreed for the same.

Uttarakhand:

Following actions were requested pertaining to Uttarakhand:

- Although, SPS implemented at 400/220kV Kashipur, additional ICT to be commissioned as per anticipated load growth and to improve reliability.
- To manage high loading of 220kV CBGanj-Pantnagar and 220kV Roorkee-Roorkee lines, additional connectivity/ conductor upgradation to be planned by PTCUL
- Status of 400kV Landhora S/S to be furnished

In the meeting, Uttarakhand SLDC informed following:

- No bidders are coming for new transformer at Kashipur although bids are being received for bay construction.

- 400kV Landhora S/S is proposed by LILO of 400kV Kashipur-Roorkee line (expected in 2026).
- 400kV Pantnagar is under study to relieve loading of 220kV CBGanj-Pantnagar
- UPCL has agreed for running Shravanti & Gamma Infra @ Rs 14/- from 01.04.2023-30.06.2023.

NRLDC representative expressed concern on non-receipt of bids for Kashipur ICTs and asked PTCUL to take necessary actions.

Himachal Pradesh:

Following actions were requested pertaining to HP:

- New ICT/ Capacity augmentation to be proposed by HPPTCL/ PSTCL at 400/220kV Nallagarh. New lines or additional supply may be provided. CT ratio at Nallagarh end to be uprated for utilising full line capacity. POWERGRID informed work to be done under next shutdown of line. Update to be provided.
- HP representative stated that line shutdown is proposed on 17-18 Apr 2023 for changing CT ratio at Nallagarh end of 220kV Nallagarh-Upernangal D/C line. POWERGRID agreed to carry out work during the shutdown.

J&K and Ladakh U/T:

- Revival of 220kV Kishenpur-Mirbazar line out under tower collapse for more than one year now.
- Capacity augmentation at 400/220kV Amargarh to be expedited. As per latest discussion held in 16 CMETS held on 28.02.2023, new ICT to be implemented in next 21 months.
- Additional planned 220kV and low voltage lines to be expedited to manage drawl from Amargarh.
- Actions to manage severe low voltages in J&K control area. SVC at New Wanpoh being fully utilised (no margin for dynamic support) and outage of SVC leads to low voltage.
- Sharing of ATC/TTC assessment with NRLDC to be done. Training imparted to J&K SLDC officials by NRLDC in online mode on 20th & 21st Feb 2023 & 10th Mar 2023.

J&K has also procured PSSe software & NRLDC has imparted them training sessions in Feb-Mar 2023 in online mode. It is expected that shortly J&K would also be performing load flow studies and sharing their import capability assessments with NRLDC/ NRPC. It is appreciable that now all the NR states except J&K and Ladakh and Chandigarh U/Ts have started assessing import transfer capability of their control area and sharing with NRLDC/ NRPC.

Apart from above, following are some of the key actions which were once again reiterated in OCC meeting for ensuring safe and secure grid operation during summer 2023:

- 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 neighbour states or hydro rich states and utilization of real-time market etc. to bridge the load-generation gap in real time.
- Regular monitoring of weather websites for weather forecast information and plan load generation balance accordingly. In case of forecasted thunderstorm or wind storm, generation may be timely backed down so as to avoid any under drawl, high frequency operation of the grid and wastage of precious fuel.
- In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states to maximize their internal generation to avoid low frequency/low voltage operation or other related issues.
- SLDCs to arrange for 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.
- Some states continue to connect/ disconnect large quantum of load at hourly boundaries resulting in frequency spikes and instantaneous over voltages. Such actions to be avoided especially during high demand season.
- States to take actions to ensure backing down of thermal generation as per latest regulations issued by CEA regarding thermal plants flexible operation.
- Utilities to update & share coal stock position of thermal plants at least a week in advance as agreed earlier in TCC/NRPC meeting, especially in case of anticipation of low coal stock.
- 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.
- Latest status regarding availability of ERS to be submitted by all transmission utilities to NRPC/ NRLDC.
- Take all necessary precautions to avoid any issues arising due to low voltages during summer months.
- All state control area/Users shall ensure before start of summer that their protection and defence system are in working conditions and settings are as per the recommendations of NRPC. It is also suggested to carry out mock

testing exercise of important SPS in Northern region including under state control area.

- All utilities to ensure the telemetry of all analog & digital points of all stations at respective control centers.

Regarding feeders for physical regulation attached as Annexure of MoM of 203 OCC meeting, SLDCs 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
- Telemetry is to be ensured for all such feeders for monitoring in real time by SLDC/ NRLDC

OCC asked all utilities to take necessary measures as discussed above.

16. RE related Issues in Northern region

Presently around 11900MW 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.

All the past major generation loss events of Northern Region can be broadly classified in two category as follows;

(i) Due to transient over voltage during switching operation, Non-desirable reduction in RE generation in Renewable Energy Zone (REZ) of NR. (5 nos. of events since Jan'22). (Past events, last occurred on 11th Feb'22).

(ii) In case of fault in the vicinity of RE complex, (10 nos. of events since Jan'22, last occurred on 15th Oct'22).

a) Reduction in RE generation due to dip in voltage. RE plants failed to recover 90% of pre-fault MW within 1sec of clearance of fault as specified in CEA Connectivity Standards.

b) After clearance of fault, as RE plants are not recovering its full MW in due time (slow active power ramp rate/ recovering only partial pre-fault MW), leading to over voltage.

c) Due to inadequate absorption of MVAR during high voltage and further reduction in generation due to probable inverters tripping leading to further high voltage and aggravating the situation.

Other major RE issues observed include observance of oscillations and low voltage in RE complex:

(i) Low frequency voltage oscillations in RE complex of NR.

(ii) Low voltage issues in RE pooling stations due to MVAr drawl/inadequate MVAr support by RE plants (During peak RE generation period).

Majority of the issues with regard to LVRT/ HVRT non-compliance of RE plants observed are listed below:

(i) Tests of sample inverter/WTG are carried out in a factory/lab environment to demonstrate the compliance of the equipment against specified CEA standards. Based on the results of these type characteristics tests, single unit simulation model is prepared which is then used to develop complete plant model. In the pre-commissioning phase, type test and simulation response are the only proof for LVRT & HVRT compliance.

(ii) Both unit level and plant simulation models submitted by the RE developers suggest LVRT/HVRT compliance of plants. However, the compliance is not being observed in real-time operation.

(iii) There is a major challenge to obtain the compliance study report of each inverter (owing to high population) and the inverters within a plant are susceptible to witness different voltages. This is main issue in deviation of plant behavior from simulation results. Performance during grid event is presently the only way to check LVRT/HVRT compliance at Point of Interconnection (PoI).

(iv) Inverters have been tested in lab for LVRT/HVRT compliances but, presently there is no recording and archiving of data at inverter level in millisecond time interval, in the commissioned plants.

(v) Inverter logs can only show the inverter mode of operation in case of tripping but not in case of fault-ride through.

(vi) CEA Regulations define the LVRT/HVRT setting philosophy at PoI. However, inverter terminal voltage decides the LVRT/HVRT mode of inverters. The Inverter terminal voltage remains slightly different than PoI voltage due to drop in internal collector system and cables.

(vii) Once inverter senses VT (Inverter terminal voltage) < 0.9 pu, it goes into LVRT mode and PPC gets bypassed. After the fault gets cleared and inverter senses normal voltage at terminal, it will respond as per its previous set point (Set point is the command given by PPC) till the inverters do not get the next command from PPC.

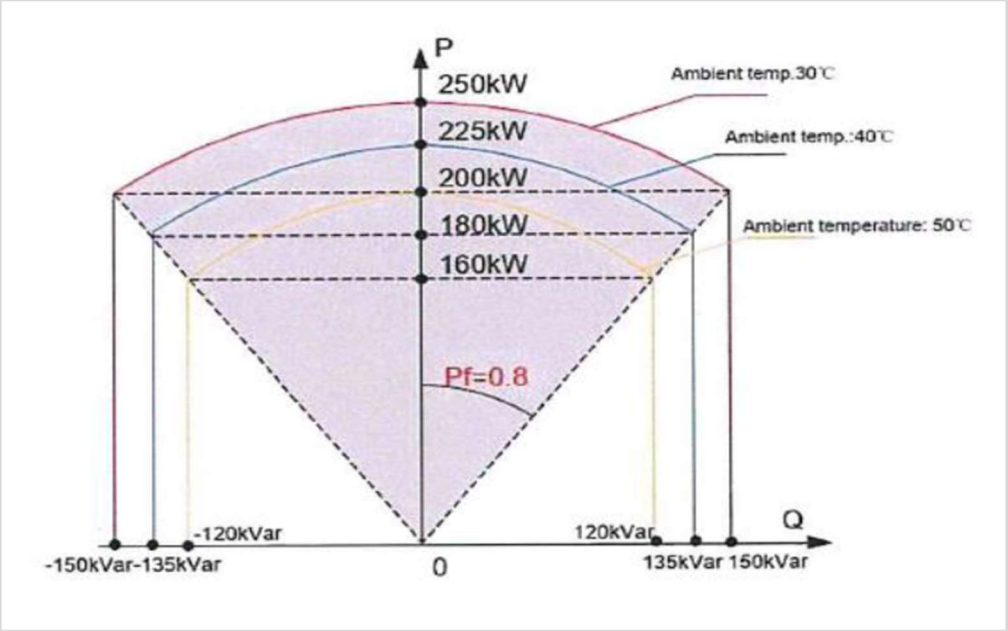
(viii) Communication time of PPC with inverters is usually 200~250 milliseconds, so inverter continues to respond as per previous command and if inverters were injecting MVAR at prefault condition it would continue to inject MVAR till it does not get the next command from PPC. However, in case inverters continue to inject MVAR, it might be possible that before going under the control of PPC, inverters would go in HVRT mode and the inverter gets tripped out on HVRT Stage-2 if voltage at inverter terminal exceeds the settings.

(ix) As overall execution time for PPC is around 1 second, so after 1 second of fault clearance the plant should get controlled by PPC. However, from PMU plots it has been observed that despite sustained high voltage for 2 to 4 seconds, RE plants are not absorbing MVAR. This voltage rise in RE complex leads to tripping of EHV lines on overvoltage, which further reduces evacuation path and more tripping of solar generators has been seen in past events.

Apart from above issues related to MVAr capability of RE plant especially at high ambient temperature are also being observed. As per CEA connectivity standards, RE plant shall have the capability to inject/absorb MVAR (reactive power) up to 33% of MW (active power generation)

In order to inject/absorb 33% reactive power (MVAR) along with delivering rated active power (MW), the MVA capacity of the RE plant shall be higher than the rated MW capacity of the plant i.e. MVA Capacity > MW Capacity

With rise in ambient temperature beyond a certain point, there is degradation in Inverter/WTG's rated MVA Capacity



RE Developers are designing their plants for low ambient temperature operation i.e. the plants have the margin to deliver/absorb reactive power at low ambient temperatures (<40°C) but become non-compliant at higher ambient temperatures (>50°C) as no margin is left. Temperatures dependent ratings are limiting active power and in such scenario obtaining reactive support may be difficult.

Following major non-compliances are being observed:

- **Low Voltage Ride Through - Non - Compliance**
  - Reactive Power

- Sharp dip in active power (MW) once inverters enter in LVRT mode without commensurate reactive power injection during fault

- Active Power

- Delayed Active Power Recovery observed in most of the cases leading to high voltage and subsequent tripping due to the same

- **High Voltage Ride Through - Non – Compliance**
  - Tripping of inverters / WTGs observed even when the POI voltage was below HVRT threshold
  - No Reactive Power support during HVRT mode of operation

- Compliance of CEA Connectivity Standards is required at Point of Interconnection (POI)
- The voltage at POI differs with that of inverter/WTG terminal voltage due to drop in intermediate transmission elements
- Therefore, implementation of coordinated settings at inverter/WTG terminals is required for proper compliance
- Margin to be kept in inverter/WTG level settings has already been taken up by Grid-India with RE Developers. Revised settings implemented in 32 plants in NR out of 44.
- **This aspect also needs to be taken care of during the design stage itself so that the equipment is designed with the desired withstand capability**
  - **Currently, design and testing of Inverters/WTG is being carried out for the withstand voltage defined for POI**

Moreover, as per discussions taken by NRLDC with RE developers, it emerged that there is lack of Coordination between multiple agencies involved i.e. RE Developer and Inverter /WTG /PPC OEMs at most of the RE plants. Further, lack of awareness observed among RE Developers about implemented protection and control settings at respective RE plants. Over-dependency on OEMs in this aspect has also been observed. Restricted access provided to RE Developers to download/modify the implemented inverter/WTG level settings (activity usually carried out by inverter/WTG OEM at present).

Northern regional Grid has been experiencing voltage oscillations during peak solar hours. Oscillations that are coming are of varied frequencies and magnitude. Oscillatory modes of frequency around 2.7 Hz (3-4 kV P-P at 765 kV Fateh2), 0.1 Hz (30-40 kV P-P at 765 kV Fateh2), 0.6 Hz (40-50 kV P-P at 765 kV Fateh2), Notch of 60-70 kV without any defined periodicity are being seen commonly.

Based on Short circuit ratio (grid strength) and remoteness of RE plants, control modes of few of the plants were changed and performance of RE plants and oscillations in the RE complex were observed. Changing control mode to Fixed reactive power injection has effectively damped oscillations in the solar complex to

a great extent. This solution was resorted to at selected plants at various Pooling stations to mitigate the problem of oscillations. However, it brings other challenges such as that plant goes on injecting VARS irrespective of voltage and MW and once evening comes, the plant has to be resorted back to voltage control to prevent overvoltage. Moreover, the performance of plant in case of nearby fault may not be as desired. Operating different plants in optimal control modes is being investigated at NRLDC end. However, other planned devices such as STATCOMs at Bhadla-II and Fatehgarh-II need to be commissioned at the earliest along with POD functionality.

Inverter Based Resources have operation very much different from conventional generation resources. To assess the possible reasons for such non-compliance by RE plants and issues being observed at RE plants, team of representatives from Grid India, CTUIL and CEA visited different RE plants in Western Rajasthan in first week of March 2023. The major findings of the committee are being compiled and would be shared with NRPC forum.

OCC appreciated the efforts made by NRLDC (Grid-India) and stated that suggestions of team visiting different RE plants in Western Rajasthan would be helpful in mitigating the issues being observed with non-compliance of RE plants.

17. TTC/ATC of state control areas for summer 2023

Most of the NR states except J&K, Ladakh and Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

Based on feedbacks received till date, SLDCs were requested to go through the tentative ATC/TTC limits for April 2023 as shown below and provide comments. If no comments are received, these limits will be assumed confirmed and uploaded on NLDC website. SLDCs were also requested to upload these limits in their respective websites. States were also requested to regularly provide update regarding the upcoming transmission elements which would improve import capability of respective state control area.

STATE	PRESENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
Haryana	TTC: 9100MW RM: 600MW	N-1 Contingency of 2*315 MVA ICT at Deepalpur	New 500MVA ICT approved in 4 NRPCTP held on 05.10.2021. SPS commissioned as immediate measure. ICT commissioning delayed to PPP substation model issues as informed by HVPN. In 204 OCC meeting, it was informed by Indigrid representative that talks are

			underway between Indigrid and HVPN to resolve issues for commissioning of new ICT at Deepalpur. No progress reported in 205 OCC meeting.
		N-1 Contingency of 3*150+500 MVA ICT at Panipat BBMB	Proposal for new ICT to be given by HVPN/DTL. Drawl to be planned from other nearby stations. Lack of space at Panipat as informed by BBMB in OCC meeting. Other options to be explored by HVPN.
	ATC: 8500MW	N-1 Contingency of 2*500 MVA ICT at Kurukshetra (PG)	New 500MVA ICT approved in 4 NRPCTP held on 05.10.2021. Expected before paddy 2023.
		High loading of 220kV Hissar (PG)-Hissar (IA)	Reconductoring of 220kV Hisar (PG)-Hisar (IA) to be taken up for approval. As informed by CTUIL in 62 NRPC (31.01.2023), HVPN has written letter to CEA in this regard, however, proposal from HVPN side to be discussed at CEA level.
Punjab	TTC: 9000MW	N-1 Contingency of 2*500 MVA ICT at Patran	New 500MVA ICT approved in 11 CMETS held on 30.09.2022. (Expected May'2024)
		N-1 Contingency of 2*315 MVA ICT at Nakodar	ICT capacity at Nakodar would be augmented from 315MVA to 500MVA by July 2023 (1st ICT) and Sep 2023 (2nd ICT). One 315MVA ICT damaged, to be borrowed from POWERGRID. (Expected by May'23)
	RM: 500MW	N-1 Contingency of 2*500+1*250+1*315 MVA ICT at	One 250MVA ICT to be replaced by 500MVA ICT. Bay equipment of higher ratings to be used. Approved in 11 CMETS held on 30.09.2022 (Expected by May'23)

		Moga	
	ATC: 8500MW	N-1 Contingency of 2*315+2*500 MVA ICT at Ludhiana	One 315MVA ICT to be replaced by 500MVA ICT (expected May 2023). Approved in 11 CMETS held on 30.09.2022. (Expected by May'23)
Rajasthan	TTC: 7600MW RM: 600MW ATC: 7000MW	N-1 Contingency of 2*315 MVA ICT at Chittorgarh	Rajasthan STU has planned and implemented SPS at these locations. (except Bhilwara & Hindaun) New 1*500MVA ICT under bidding/ implementation at these S/s by RVPNL. Capacity augmentation at Chittorgarh expected by July 2023, for all other substations after next winter season.
		N-1 Contingency of 2*315 MVA ICT at Jodhpur	
		N-1 Contingency of 2*315 MVA ICT at Ajmer	
		N-1 Contingency of 2*315 MVA ICT at Bikaner	
		N-1 Contingency of 2*315 MVA ICT at Merta	
		N-1 Contingency of 2*315 MVA ICT at Hindaun	
		N-1 Contingency of 1*315+1*500 MVA ICT	

		at Bhilwara	
	(Issues observed with load >14500MW)	Low voltage issues at Hindaun, Alwar.	New 400/220kV Dholpur S/s likely to provide some relief, however approved by CEA on 27Jan 2023, so issue likely to persist for next 1-2 winter seasons. Other immediate measures required by RVPN.
			Severe issues observed during Dec 2022-Jan 2023 months.
		Low voltage issues in RE generation pockets	Additional reactive power support devices for maintaining grid voltages within IEGC prescribed limits to be planned. Intrastate RE generators to support the grid by operating in voltage control mode.
		N-1 contingency of 400kV Barmer-Bhinmal D/C (under high wind gen.)	Commissioning of 765kV Jodhpur (Kankani) to be expedited. Additional transmission system requirement to be assessed by RVPN
		Huge MVAR drawl at RVPN during winter months (even below 0.8 at number of 400/220kV ICTs)	As intimated by RVPN, Capacitor banks to be installed after PSDF funding. Capacitor planning & implementation to be done in expeditious manner at transmission & distribution level.
Uttar Pradesh	TTC: 15100MW	N-1 Contingency of 2*500 MVA ICT at Azamgarh	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS implemented. Commissioning of 400/220kV Jaunpur S/S likely to provide relief (commissioned).
		N-1 Contingency	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS implemented.

		of 3*315+1*500 MVA ICT at Sarnath	Commissioning of 400/220kV Sahupuri S/S likely to provide relief (Oct'2023)
	RM: 600MW ATC: 14500MW	N-1 Contingency of 2*315+1*240 MVA ICT at Obra	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS has been implementation by UPPTCL as confirmed in meeting.
		N-1 Contingency of 3*315 MVA ICT at Allahabad	New ICT/ Capacity augmentation may be proposed by UPPTCL. Commissioning of 400/220kV Jaunpur S/S likely to provide relief (commissioned).
		N-1 Contingency of 2*315 MVA ICT at Sohawal(PG)	New 500MVA ICT approved in 3 NRPCTP held on 19.02.2021. New ICT expected before summer 2023.
		N-1 Contingency of 2*200 MVA ICT at Nehtaur	New ICT/ Capacity augmentation expected before summer 2023. SPS implemented.
		N-1 Contingency of 1*240+1*315+1*500 MVA ICT at Gorakhpur (UP)	Capacity augmentation at Gorakhpur (UP) from 1055MVA to 1315MVA to be expedited. SPS implemented.
Delhi	TTC: 7100MW RM: 300MW	N-1 contingency of 2*315 MVA ICT at Bawana	After bus -split due to high fault level at Bawana, ICTs N-1 non-compliant. Additional ICT/ load shifting to other station to be planned. Delhi SLDC to make sure that essential loads such as hospitals, DMRC, other important loads have alternate supply available so as to avoid load loss in case of N-1

	ATC: 6800MW		contingency. As requested in earlier OCC meetings, DTL to explore SPS implementation at Bawana (2 ICTs section)
		N-1 Contingency of 3*315 MVA ICT at Mundka	New ICT/ Capacity augmentation to be planned by DTL. One ICT under prolonged outage to be revived (to be borrowed from Ludhiana(PG)). SPS implemented
Himachal Pradesh	TTC: 1400MW RM: 100MW ATC: 1300MW (lean hydro) No major transmission issues during summer/ monsoon	N-1 Contingency of 3*315 MVA ICT at Nallagarh	New ICT/ Capacity augmentation to be proposed by HPPTCL/ PSTCL, based on future load growth. Drawl by Punjab, Chandigarh & HP from 400/220kV Nallagarh
Uttarakhand	T TC: 1700MW RM: 100MW ATC: 1600MW	N-1 Contingency of 2*315 MVA ICT at Kashipur	New ICT/ Capacity augmentation to be planned by PTCUL. SPS implemented at Kashipur. Bid opening shortly for new 315MVA ICT at Kashipur
		High loading of 220kV CB Ganj-Pantnagar	Additional connectivity/ conductor upgradation to be planned by PTCUL
		High loading of 220kV lines from Roorkee	Additional connectivity/ conductor upgradation to be planned by PTCUL (400kV Landhora S/S under discussion).

		(PG)	Under discussion with CTUIL and CEA.
J&K	TTC: 2200MW RM: 100MW ATC: 2100MW (lean hydro) No major transmission issues during summer/ monsoon	N-1 Contingency of 2*315 MVA ICT at Amargarh	New ICT/ Capacity augmentation may be expedited by NRSSXXIX (planned for Mar'2026). Additional planned 220kV and low voltage lines to be expedited to manage drawl from Amargarh. As per latest discussion held in 16 CMETS held on 28.02.2023, new ICT to be implemented in next 21 months .
		High loading of 220kV lines from Wagoora(PG)	Additional connectivity to be planned and already approved schemes to be expedited by JKPTCL
		Low voltage issues during winter season	Large dependency on SVC at New Wanpoh for MVAR support. Capacitor installation at low voltage level to be expedited.

J&K

Loading of 400/220kV Amagarh ICTs was above N-1 contingency limits for last 30 days. 220kV Amargarh-Ziankote D/C lines are also N-1 non-compliant for most of the time during winter months.

Apart from above, there are issues related to huge MVAR drawl by J&K control area during winter season.

Not assessing its ATC. J&K representatives had intimated during 47th TCC and 49th NRPC meeting that they would be sharing ATC/TTC assessment with NRLDC from October 2021, however the same is still awaited.

J&K and Ladakh U/Ts are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC. ***NRLDC had taken online training sessions for J&K representative on 20th & 21st Feb 2023 and 9th March 2023.***

It was again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources,

states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC. NRLDC is continuously sending emails in real-time for ensuring N-1 compliances as well as restricting schedule till ATC limit and maximizing internal generation. SLDCs need to ensure this during real-time operation.

NRLDC representative informed that Punjab, Haryana, HP & UP are communicating with NRLDC regularly regarding ATC/TTC assessment for summer/monsoon 2023. However, other states such as Delhi, Rajasthan, Uttarakhand and J&K are yet to provide their ATC/TTC assessments for summer/monsoon 2023.

As discussed in 62 NRPC meeting, all states were requested to assess ATC/TTC limits of their respective state control area for summer 2023 and share with NRLDC/ NRPC at the earliest.

18. Grid Operation related issues

a) Issues related to Rajasthan state control area

In 59, 60 and 62 NRPC meetings and 202 and 203 OCC meeting, NRLDC representative had highlighted various issues related to Rajasthan state control area. As per latest discussion held in 62 NRPC meeting, following actions were requested from RVPN side:

- In the reply submitted by RVPN, actions being taken at their end have been included, but timeline for implementation of these works is not clear. It was requested that timelines for these proposals are also submitted at the earliest. It was also requested to confirm whether these issues would be attended before winter 2023-24.
- Issues regarding N-1 violation of 400/220kV ICTs is being discussed in every OCC meeting every year, so RVPN should have timely planned and executed ICT capacity augmentation so that such situation could have been avoided.
- Loading of 400/220kV ICTs is very high and it is likely that SPS relief will not be able to bring ICT loading within safe limits under N-1 contingency of one ICT. This issue was also highlighted by NRLDC in 202nd and 203rd OCC meetings.
- RVPN to submit action plan on managing higher demand during winter 2023-24 with same ICT capacity.
- RVPN to submit actions being taken at their end to make sure that such poor factor and low voltages are not observed during next winter season. It was also requested to take actions to minimize this high MVAR drawl and low voltage for remaining high demand season.
- Since the commissioning of 400/220 kV Dholpur substation would take time, short term actions also need to be taken by RVPN to make sure that low voltage issues at 400kV Hindaun/Alwar is minimized
- PMUs are under commissioning at 400kV Akal, Ramgarh, Bhadla, Bikaner, Kankani and are expected to be reporting to SLDC shortly. Apart from above 25

PMUs would also be implemented at 220kV feeders at number of different RVPN substations. Reporting of PMUs at SLDC and status of reporting to NRLDC to be updated.

- DISCOMs has started disconnecting 1-phase agricultural feeders drawing load beyond certain limit. Matter has been taken up with DISCOMs and the sudden demand disconnection is likely to reduce further. SLDC to provide update.

In 204 OCC meeting, Rajasthan SLDC informed the following:

- Issues would be discussed with RVPN (planning) representative and consolidated reply would be submitted.
- Capacity augmentation at 400/220kV Chittorgarh would be completed by Jun/July 2023.
- Cybersecurity related issues due to which PMU reporting at SLDC not completed. Once PMUs report at SLDC, then same would be shared with NRLDC.
- Matter is being taken up with DISCOMs to minimise sudden load disconnection.
- Some of the RE generators connected at Bhadla (RVPN) are changing mode of operation around 10:00hrs and drawing high MVAr from HV network.

OCC forum asked RVPN to submit their reply on the issues highlighted at the earliest especially their plan to meet higher demand during 2023 summer and 2023-24 winter. NRLDC representative asked Rajasthan SLDC to take up the matter with RE generators on immediate basis.

Regarding sharing of newly commissioned PMU data with NRLDC & SLDC, RVPN representative stated that some low risk vulnerabilities are pending and report is expected by month end from third party and decision will be taken accordingly.

***The agenda was also discussed in previous agenda (*Summer Preparedness 2023: Actions for improvement in grid operation (Statewise))*.**

b) Long outage of transmission elements

List of elements under long outage in Northern region is attached as Annexure-B.I of agenda**.**

Some of the key elements need to be revived at the earliest:

- 400/220 kV 240 MVA ICT 2 at Orai(UP)
- 400/220 kV 315 MVA ICT 2 at Mundka(DV)
- 400/220 kV 500 MVA ICT 1 at Bhiwani(BB)
- 400KV Bus 1 at Vishnuprayag(JP)
- 400KV Bus 2 at Parbati_2(NH)

- 400KV Bus 2 at Parbati_3(NH)
- 765 KV ANPARA_D-UNNAO (UP) CKT-1

It was requested to expedite restoration of the above-mentioned Grid elements at the earliest and also provide an update regarding their expected restoration date/time.

19. Frequent forced outages of transmission elements in the month of February'23:

The following transmission elements were frequently under forced outages during

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Hissar(BB)-Chirawa(RS) (BB) Ckt-1	3	BBMB/Rajasthan
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	7	NPCIL/Rajasthan
3	400 KV Bareilly-Unnao (UP) Ckt-1	4	UP
4	400 KV Rajwest(RW)-Jodhpur (RS) Ckt-1	3	Rajasthan

the month of **February 23**:

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

Discussion during the meeting:

- **220 KV Hissar(BB)-Chirawa(RS) (BB) Ckt-1:** *BBMB representative informed that tripping on 06th February occurred due to operation of UFR relay, relay has been checked and it is working correctly. Tripping on 12th February occurred due to CT, CVT burst at Hissar_IA(Har) end and on 14th February occurred due to maloperation of LBB protection, relay has been set right. NRLDC representative asked to review the UFR relay setting as frequency was in operational range.*
- **220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2:** *Rajasthan representative informed that all the faults were of transient nature. NRLDC representative raised concerned over frequent faults in line. He further asked the reason of occurrence of frequent fault, whether patrolling of the line has been done or not? NRLDC representative emphasized to identify the reason of occurrence of frequent fault and take remedial actions to avoid the frequent tripping of line in future.*
- **400 KV Bareilly-Unnao (UP) Ckt-1:** *UP representative informed that A/R is operational at both the ends, successful A/R operation is observed on 28th February. Tripping on 16th February occurred due to over voltage protection*

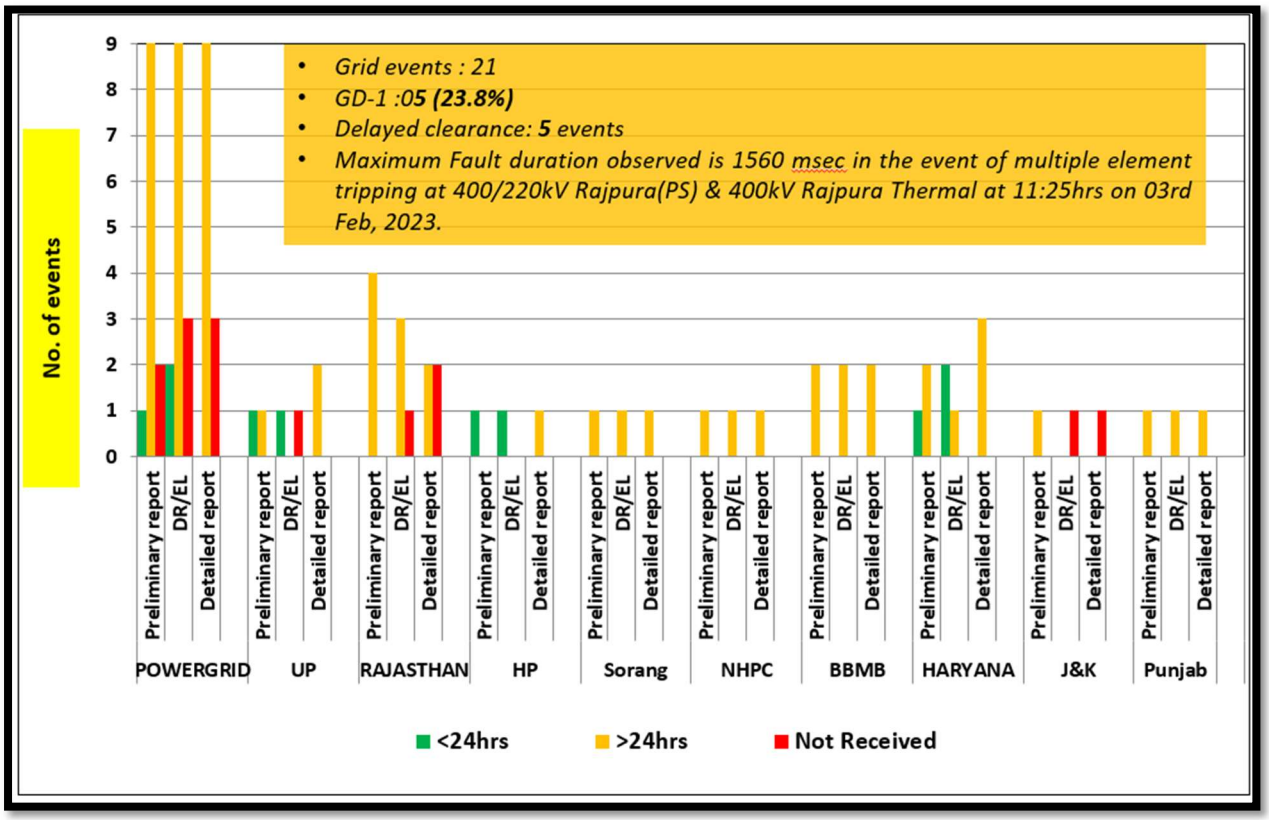
operation at Unnao end. NRLDC representative stated that as per DR of Bareilly end, in two (no.) trippings, A/R started but got blocked within 20-30msec, reason of the same need to be identified and corrective actions to be taken to ensure the proper operation of A/R at Bareilly end.

- **400 KV Rajwest(RW)-Jodhpur (RS) Ckt-1:** *NRLDC representative stated that details of Rajwest end not received yet and as per DR (Disturbance recorder) of Jodhpur end, A/R is in blocked state and time in DR is also not synced. It was further requested to Rajasthan representative to take follow-up actions and ensure A/R operation and time syncing of DR at Jodhpur end. Rajasthan representative said that they will take follow-up actions on the issues and submit the details of both the ends.*

NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. He further 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 and reducing the reliability of the grid. All the utilities shall endeavor to keep auto re-closer in service and in healthy condition for 220 kV and above voltage level transmission line.

Frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are once again requested to look into such frequent outages and share the remedial measures taken/being taken in this respect

20. Multiple element tripping events in Northern region in the month of February '23:



A total of 21 grid events occurred in the month of February'23 of which **5** are of GD-1 category, **12** are of GI-2 Category & 04 is of GI-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.III** of agenda.

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

Maximum Fault duration observed is 1560 msec in the event of multiple element tripping at 400/220kV Rajpura(PS) & 400kV Rajpura Thermal at 11:25hrs on 03rd Feb, 2023. During the event, bus bar protection at 220kV side operated and both 220kV Bus-1&2 tripped. Hence, 220kV side of 400/220kV Rajpura(PS) became dead.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 5 events out of **21** grid events occurred in the month. The other events with delayed clearance of faults are as follows:

i. Multiple element tripping at 400/220kV Rajpura(PS) & 400kV Rajpura Thermal at 11:25hrs on 03rd Feb, 2023, fault clearance time of 1560ms:

NRLDC representative highlighted the issues related to non-submission of tripping details (DR, EL & tripping report) and healthiness of SCADA data. Representative from Punjab were not present in the meeting.

ii. Multiple elements tripping at 220kV Hissar_IA(Har), 220kV Hissar(BB) & Hissar(PG) at 15:11hrs on 12th February 2023 and at 11:19hrs on 14th February 2023. Fault clearance time was of 1320ms and 840ms on 12th & 14th Feb respectively:

BBMB representative informed that in both the events, fault was at Hissar_IA side due to bursting of CT & CVT. He further informed that on 14th Feb, maloperation of LBB protection occurred. Relay has been checked and set right. Haryana representative informed that there was issues related to DC supply and isolator status due to which line didn't trip at their end on bus bar protection operation and therefore, fault cleared after tripping of lines from remote end. He further informed that direction has been given for remedial actions at site and report from the site will be shared. NRLDC representative further asked the status of work implementation work of differential protection in 220kV Hissar_IA-Hissar(BB) D/C. BBMB representative informed that line is having distance protection as of now, its setting has been changed to avoid wrong tripping and follow-up has been taken up with Haryana regarding switching to differential protection.

iii. Multiple elements tripping at 220kV Bhinmal(PG) & 220 kV Bhinmal(RS) at 14:37hrs on 17th February, 2023, fault clearance time of 880ms:

NRLDC representative stated that as per details received from POWERGRID end, it seems that fault was at Rajasthan end and delayed clearance of fault indicates non-operation of main protection at Rajasthan end. He further informed that DR, EL & tripping report from Rajasthan end not received yet. Rajasthan representative stated that lines didn't trip from their end. They will analyse the event and upload to the details on NR tripping portal.

iv. Multiple elements tripping at 220/132kV Modipuram(UP) at 05:29hrs on 19th February, 2023, fault clearance time of 320ms:

UP representative informed that LBB protection operated due to non-opening of breaker of 220kV Meerut-Modipuram ckt after tripping command. LBB protection operated correctly and issue with the breaker was checked and corrected. NRLDC representative further raised concern over time syncing issue at Modipuram S/s also. UP representative said that they will take follow-up action to ensure the time syncing of recording devices

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

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken by respective utilities in OCC & PSC forum. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events to RLDC in line with the regulations.

OCC 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.) at substation of their respective control area. Members agreed to take action in this regard.

21. Details of tripping of Inter-Regional lines from Northern Region for February' 23:

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Brief Reason (As reported)	# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Remarks
			Date	Time					
1	132 KV Rihand(UP)-Garwa(JS) (UP) Ckt-1	UPPTCL	3-Feb-23	10:18	Heavy jerk on ICT 3 feeder of Rihand(UP) - Obra ckt.	NA	yes	yes	DR, EL not received
2	132 KV Rihand(UP)-Nagar Untari(JS) (UP) Ckt-1	UPPTCL	3-Feb-23	10:18	Heavy jerk on ICT 3 feeder of Rihand(UP) - Obra ckt.	NA	yes (After 24 hrs)	yes (After 24 hrs)	DR, EL not received
3	70 KV Vindhyachal(PG) Pole-2	POWERGRID	3-Feb-23	10:13	Tripped due to CWC AC power supply fault. Tripped due to voltage dip in only available Auxiliary feeder B2LB, as the redundant feeder B2LA is already under shut down by NTPC.	NA	yes (After 24 hrs)	yes (After 24 hrs)	
4	132 KV Rihand(UP)-Nagar Untari(JS) (UP) Ckt-1	UPPTCL	7-Feb-23	13:06	B-N fault, Zone-1, Dist. 39km, Fault current 2.016kA from Rihand(UP).	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per DR, B-N fault, Z-1 from Rihand end.

A total of 4 inter-regional lines tripping occurred in the month of February'23. The list is attached at **Annexure-B.IV** of Agenda**.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

NRLDC representative asked the reason of frequent tripping at Rihand(UP). As line is inter regional, healthiness of protection of the line need to be ensured on priority to avoid unwanted tripping of the line. UP representative agreed to look into the issue and take necessary remedial actions.

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

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

The status of receipt of DR/EL and tripping report of utilities for the month of February'2023 is attached at **Annexure-B.V** of Agenda**.** It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has been improved from POWERGRID (NR-2, NR-3), UP, Haryana, HP & Uttarakhand in February'2023 compared to the previous month.

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
1	ACME	1	1	100	1	0	100	1	0	100	1	0	100
2	ADANI	1	1	100	1	0	100	1	0	100	1	0	100
3	AHEJ4L	3	1	33	1	1	50	1	1	50	1	1	50
4	APFOL	1	1	100	1	0	100	1	0	100	1	0	100
5	APL	2	0	0	0	1	0	0	0	0	0	0	0
6	APMPL	1	1	100	1	0	100	1	0	100	1	0	100
7	AREPRL	4	0	0	0	3	0	0	3	0	0	2	0
8	ASEJOL	1	1	100	1	0	100	1	0	100	1	0	100
9	AVAADA RJHN	1	0	0	0	1	0	0	1	0	0	1	0
10	BBMB	29	3	10	3	3	12	3	5	13	5	5	21
11	CPCC1	61	23	38	30	0	49	36	0	59	41	0	67
12	CPCC2	19	2	11	2	0	11	3	0	16	3	0	16
13	CPCC3	17	0	0	0	3	0	0	3	0	4	0	24
14	DADRI-NT	1	0	0	0	0	0	0	0	0	0	0	0
15	EDEN (ERCPL)	3	0	0	0	0	0	0	0	0	0	0	0
16	ESUCRL	2	2	100	2	0	100	2	0	100	2	0	100
17	FBTL	1	0	0	0	0	0	0	0	0	0	0	0
18	JHAJJAR	1	0	0	0	0	0	0	0	0	1	0	100
19	KOLDAM-NT	1	0	0	0	0	0	0	0	0	1	0	100
20	PKTSL	1	1	100	1	0	100	1	0	100	1	0	100
21	RAPPA	10	2	20	10	0	100	10	0	100	7	0	70
22	RENEW SUN WAVES(RSWPL)	1	0	0	0	0	0	0	0	0	0	0	0
23	RSEJ3PL	1	1	100	1	0	100	1	0	100	1	0	100

24		SAURYA	1	1	100	1	0	100	1	0	100	1	0	100
25		SBSRPC-11	1	1	100	1	0	100	1	0	100	1	0	100
26		SEWA-2-NH	1	0	0	0	0	0	0	0	0	0	0	0
27		SINGRAULI-NT	1	0	0	1	0	100	1	0	100	1	0	100
28		SLDC-CHD	1	1	100	1	0	100	1	0	100	1	0	100
29		SLDC-DV	4	0	0	3	1	100	3	1	100	3	0	75
30		SLDC-HP	2	0	0	0	0	0	0	0	0	0	0	0
31		SLDC-HR	21	4	19	7	1	35	7	1	35	6	0	29
32		SLDC-JK	7	0	0	7	0	100	7	0	100	5	0	71
33		SLDC-PS	25	3	12	10	4	48	9	2	39	16	0	64
34		SLDC-RS	48	0	0	7	0	15	7	0	15	18	0	38
35		SLDC-UK	3	0	0	0	1	0	0	1	0	0	0	0
36		SLDC-UP	49	8	16	7	13	19	9	15	26	8	0	16
37		SORANG	1	0	0	0	0	0	0	0	0	0	0	0
38		STERLITE	3	0	0	0	0	0	0	1	0	0	1	0
39		TANAKPUR-NH	4	0	0	0	0	0	0	0	0	0	0	0
40		TANDA-NT	1	0	0	0	1	0	0	0	0	0	0	0
41		UNCHAHAR-NT	2	0	0	0	0	0	0	0	0	0	0	0

NRLDC representative stated that status of POWERGRID (NR-1), Punjab, Delhi, J&K, and Rajasthan & RE stations is not satisfactory and needs improvement.

Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the trippings shall be uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx" within 24 hours of the events as per IEGC clause 5.2.r and clause 15.3 of CEA grid standard. Apart from prints of DR outputs, the corresponding COMTRADE files may please also be submitted in tripping portal / through email.

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

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

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

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

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

PSS tuning of 600MW Kalisindh TPS Unit-1&2 (Rajasthan) conducted on 03rd Feb2023 and of Chhabra 4*250MW (Rajasthan) on 28th Feb2023.

Members were requested to update about their future plan for PSS tuning as there is no significant progress despite including this agenda in every OCC meeting and a separate meeting may be called for detail discussion on this matter.

NRLDC representative informed that all the units who have done Step response test before 2018 were requested to plan the exciter step-response test as soon as possible and submit the tentative schedule of step-response test on the units with NRPC/ NRLDC. He further informed that till date Schedule has been received from Rajasthan and UP Control area. He further requested that members may kindly accord due priority in this regard and update about their future plan for PSS tuning as there is little progress despite including this agenda in every OCC meeting.

24. Frequency response characteristic:

Three FRC based event occurred in the month of **February-2023**. Description of the event is as given below:

Table:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	09-Feb-23	11:45hrs	On 9th February, 2023 at 11:45hrs, line reactor at Bhadla end of 765kV Bhadla-Bikaner ckt-1 opened. As per PMU at Fatehgarh2 (PG), voltage increased from 745kV to 775kV with the opening of line reactor. At the same time, reduction in RE generation connected at ISTS RE pooling stations occurred which led to further increase in voltage followed by further reduction in RE generation. As per SCADA, total reduction in RE generation of approx. 4590MW is observed. Hence, generation loss of 4590MW has been	50.00	49.54	0.46

			considered for FRC calculation.			
2	09-Feb-23	12:30hrs	On 9th February, 2023, at 12:30 hrs, Reduction in RE generation connected at ISTS RE pooling stations occurred. As per SCADA, total reduction in RE generation of approx. 3510MW is observed. At the same time, 400kV Fatehgarh2-Fatehgarh1 Pooling ckt-1&2 tripped on over voltage. Hence, generation loss of 3510MW has been considered for FRC calculation.	50.06	49.71	0.35

Status of Data received till date:

Status of Field Data received of FRC of Grid event occurred at RE complex in Rajasthan at 11:45 Hrs & at 12:30 Hrs on 09.02.2023			
Data Received from		**Data Not Received from**	
Koteshwar HEP	UP	Uttarakhand	APCPL Jhajjar
HP	Dadri NTPC	Haryana	Singrauli NTPC
		Punjab	Unchhahar NTPC
		Delhi	NHPC
		BBMB	Rihand NTPC
		Rajasthan	

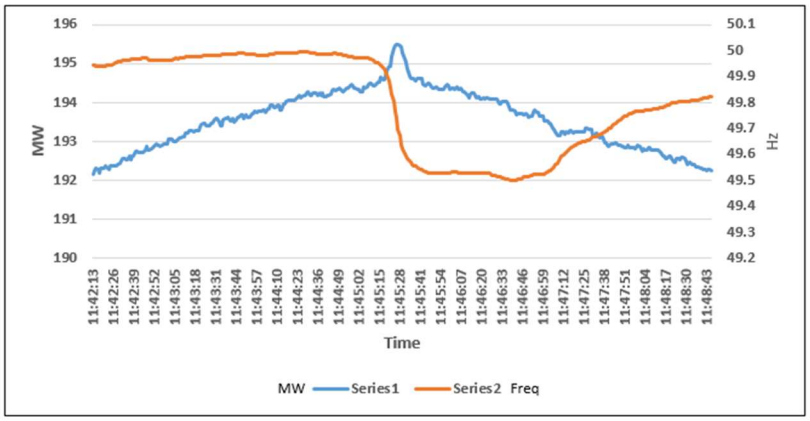
FRC of ISGS generators:

Generator	09-Feb-23 event	Generator	09-Feb-23 event
Singrauli TPS	6%	Salal HEP	1%
Rihand-1 TPS	3%	Tanakpur HEP	-6%
Rihand-2 TPS	2%	Uri-1 HEP	36%
Rihand-3 TPS	9%	Uri-2 HEP	0%
Dadri-1 TPS	10%	Dhauliganga HEP	No generation
Dadri -2 TPS	15%	Dulhasti HEP	No generation
Unchahar TPS	-4%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	11%	Parbati-3 HEP	No generation
Jhajjar TPS	-4%	Jhakri HEP	No generation
Dadri GPS	No generation	Rampur HEP	No generation
Anta GPS	No generation	Tehri HEP	No generation
Auraiya GPS	No generation	Koteswar HEP	No generation
Narora APS	7%	Karcham HEP	No generation
RAPS-B	11%	Malana-2 HEP	No generation
RAPS-C	9%	Budhil HEP	No generation
Chamera-1 HEP	No generation	Bhakra HEP	-1%
Chamera-2 HEP	No generation	Dehar HEP	1%
Chamera-3 HEP	No generation	Pong HEP	1%
Bairasiul HEP	No generation	Koldam HEP	No generation
		AD Hydro HEP	No generation

FRC of State generators:

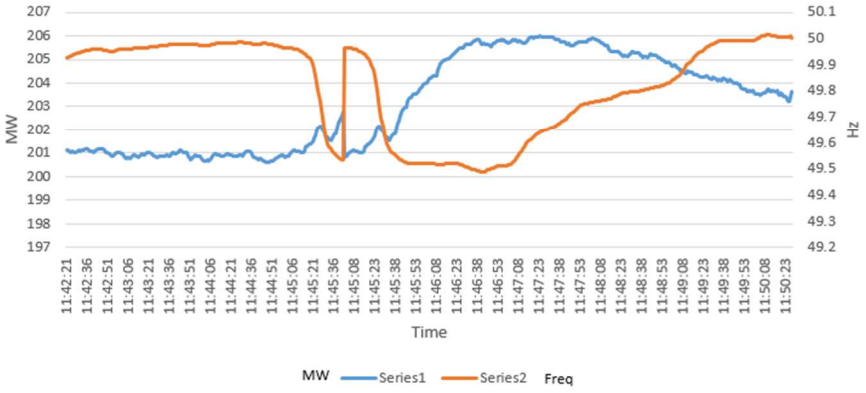
Generator	09-Feb-23 event	Generator	09-Feb-23 event
PUNJAB		UP	
Ropar TPS	-2%	Obra TPS	1%
L.Mohabbat TPS	13%	Harduaganj TPS	-1%
Rajpura TPS	0%	Paricha TPS	0%
T.Sabo TPS	2%	Rosa TPS	1%
Goindwal Sahib TPS	12%	Anpara TPS	0%
Ranjit Sagar HEP	20%	Anpara C TPS	3%
Anandpur Sahib HEP	-1%	Anpara D TPS	-1%
HARYANA		Bara TPS	14%
Panipat TPS	7%	Lalitpur TPS	0%
Khedar TPS	2%	Meja TPS	6%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	-3%
CLP Jhajjar TPS	7%	Alaknanda HEP	-1%
Faridabad GPS	No generation	Rihand HEP	2%
RAJASTHAN		Obra HEP	-1%
Kota TPS	1%	UTTARAKHAND	
Suratgarh TPS	0%	Gamma Infra GPS	No generation
Kalisindh TPS	-1%	Shravanti GPS	No generation
Chhabra TPS	No generation	Ramganga HEP	2%
Chhabra stg-2 TPS	10%	Chibra HEP	No generation
Kawai TPS	0%	Khodri HEP	No generation
Dholpur GPS	No generation	Chilla HEP	-3%
Mahi-1 HEP	1%	HP	
Mahi-2 HEP	No generation	Baspa HEP	1%
RPS HEP	0%	Malana HEP	No generation
JS HEP	6%	Sainj HEP	No generation
DELHI		Larji HEP	0%
Bawana GPS	29%	Bhabha HEP	0%
Pragati GPS	No generation	Giri HEP	0%
		J&K	
		Baglihar-1&2 HEP	No generation
		Lower Jhelum HEP	No generation

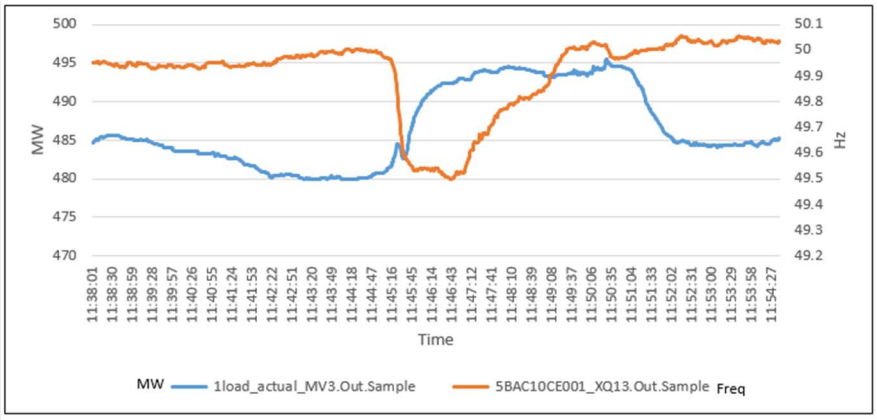
FRC of Dadri Stage-1&2 units, based on the field data are as follows:



Dadri Stage-1 Unit-1:
Early die out of response (in 45secs)

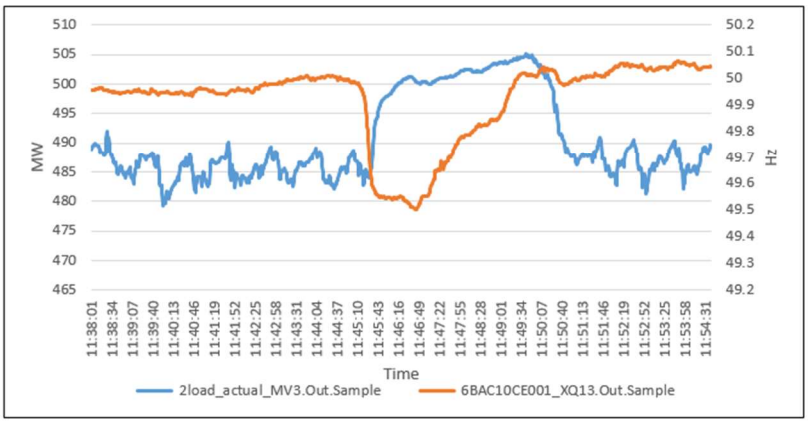
Dadri Stage-1 Unit-2:
PFR: ~50% of ideal response





Dadri Stage-2 Unit-1:
PFR: ~56% of ideal response

Dadri Stage-2 Unit-2:
PFR: ~72% of ideal response



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

25. Mock black start exercises in NR:

As per Indian Electricity Grid Code (IEGC) clause 5.8(b)

"*Detailed plans and procedures for restoration after partial/total blackout of each user's/STU/CTU system within a Region, will be finalized by the concerned user's/STU/CTU in coordination with the RLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year. Mock trial runs of the procedure for different subsystems shall be carried out by the users/CTU/STU at least once every six months under intimation to the RLDC*".

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

The summary of last conducted mock black start exercise of ISGS hydro & gas stations during 2020-21 & 2021-22 is tabulated below:

Hydro Power Stations:

Name of stations	**Last conducted exercise date**	**Remark**
Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	_	
Dhauliganga	28th Dec 2021	Exercise carried out successfully
Bairasiul	04th Dec 2020	
Sewa-2	29th May 2022	
N. Jhakri and Rampur	17th Dec 2019	
Karcham and Baspa	29th Dec 2021	Exercise was partially successful
Budhil	_	
Parbati-3 and Sainj	22nd Dec 2020	Black start of only Parbati-3 was carried out successfully. Sainj to explore blackstart

		capability.
Salal	-	
Chamera-3	-	
Kishenganga	-	
Koteshwar	19th Jan 2022	Exercise carried out successfully
Chamera-1 and Chamera-2	08th Dec 2020	
Malana-2, AD Hydro and Phozal	08th Jan 2021	
Tehri	12th Jan 2022	
Koldam	22nd Jan 2021	Partially successful.

Gas Power Stations:

Name of stations	**Last conducted exercise date**	**Remark**
Anta GPS	09th Feb 2021 (with load) 01st Feb 2022 (without load)	Exercise carried out successfully
Auraiya GPS	-	
Dadri GPS	28th Jan 2022 (without load)	Exercise carried out successfully

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

Hydro Power Stations:

Name of stations	**Tentative Date for Mock Black start exercise (Proposed by power plants)**
*Uri-I, II HEP, Lower Jhelum HEP, Upper	**31st Jan 2023**

Sindh and Kishenganga	
Dhauliganga	**28th Feb 2023**
*Bairasiul	**Conducted successfully on 30th Nov 2022**
Sewa-2	**12th Jan 2023**
*N. Jhakri and Rampur	**Conducted successfully on 09th Dec 2022**
Karcham and Baspa	
*Budhil	
*Parbati-3 and Sainj	**09th Nov 2022(to be rescheduled)**
*Salal	**15th Dec 2022**
*Chamera-3	**27th Jan 2023**
*Kishenganga	
Koteshwar	**Conducted successfully on 07th Dec 2022**
*Chamera-1 and Chamera-2	**Conducted successfully on 02nd Dec 2022**
*Malana-2, AD Hydro and Phozal	**Conducted on 27th Jan 2022 (island synchronization was unsuccessful)**
Tehri	**Conducted successfully on 14th Dec 2022**
*Koldam	**Conducted successfully on 11th Nov 2022**

*Mock Black start exercise not carried out during Year 2021-22

Gas Power Stations:

Name of stations	**Tentative Date for Mock Black start exercise (proposed by power plants)**
Anta GPS	**Conducted on 03rd Mar 2023 (unsuccessful, Anta Unit couldn't able to charge the dead bus)**
*Auraiya GPS	Mar 2023
Dadri GPS	Jan 2023

*Mock Black start exercise not carried out during Year 2021-22

NRLDC representative requested other constituents also to share their schedule for mock black start exercise of Hydro/Gas units.

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

S. NO.	Utility	Hydro Power Station	Installed Capacity(MW)
1	J&K	Baglihar	3x150
2		Baglihar stage-2	3x150
3		Lower Jhelum	3x35
4		Upper Sindh	2x11+3x35
5		Larji	3x42
6		Bhabha	3x40
7		Malana -I	2x43
8		Baspa	3x100
9	Punjab	Anandpur Sahib	4x33.5
10		Ranjit Sagar	4x150
11	Rajasthan	Mahi-I&II	2x25+2x45
12		Rana Pratap Sagar	4x43
13		Jawahar Sagar	3x33
14		Gandhi Sagar	5x23
15		Dholpur GPS	3x110
16		Ramgarh GPS	1x35.5+2x37.5+1x110
17	UP	Rihand	6x50
18		Obra	3x33
19		Vishnuprayag	4x100
20		Srinagar (Alaknanda)	4x82.5
21	Uttarakhand	Gamma Infra	2x76+1x73
22		Shravanti	6x75
23		Ramganga	3x66
24		Chibro	4x60

25		Khodri	4x30
26		Chilla	4x36
27		Maneri Bhali-I&II	3x30+4x76
28	Delhi	IP Extn GTs	6x30+3x30
29		Pragati GPS	2x104.6+1x121.2
30		Rithala	3x36
31	Haryana	Faridabad GPS	2x137.75+1x156.07

Rajasthan representative stated that RGTPP has requested to defer the mock black start exercise of RGTPP considering healthiness of machine & hardware. Further, it was informed that they are making procedure and following up with the ALDCs to conduct the mock black start exercise of Rana Pratap sagar (RPS) HEP.

NRLDC requested all the states to explore the possibility of conducting mock black start exercise of Hydro & Gas power stations of their control area. He further emphasized that states should start preparing procedure for the same, so that mock black start exercise of Hydro & Gas power stations where mock drill haven't conducted yet since commissioning may be explored.

Uttarakhand & HP representatives said that they will initiate internal discussion regarding preparation of mock black start exercise procedure of Hydro plant in their 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.

26. Frequent event of blackout of 400kV Noida Sec 148 GIS (UP)

Frequent events of blackout of 400kV Noida Sec 148 GIS(UP) has been observed in recent past i.e., 06th Mar23, 08th Mar23 & 09th Mar23. In all the three events bus bar protection had operated and both the 400kV bus tripped which led to the complete outage of S/s. Out of three events, in only one event there was fault at 400kV Bus. (Details of the events are attached as Annexure-B.VII)

As per the analysis of the event and details received as of now, there is an issue related to arrangements of contacts of DC source that whenever DC source is not available then it raises flag as gas detector stage-3 (GD-3) which further initiates bus bar tripping which shows that there is an issue with bus bar protection logic which need to be reviewed and corrected.

It is also to be mentioned that similar event was reported in Apr22.The issues related to battery charger and logic of initiation of Bus bar tripping during DC source

changeover had already been discussed in 45PSC meeting (held in Jun22). Remedial actions were recommended and agreed to complete it within 30days. However, observing recent frequent tripping triggered due to similar issue, it is suspected that corrective actions haven't been taken yet. It is requested to share the status of corrective actions taken as of now and to expedite the corrective/remedial actions to avoid such further trippings.

UP representative informed that after April 2022 event, battery charger problem was resolved, communication cards were changed and hence, issue was resolved temporarily. Recent events occurred due to issue in DC source and its changeover arrangement. Issues with the battery charges have been resolved and both the DC source are now operational. However, DC source changeover arrangement is same as earlier. Internal discussions have been done and instructions regarding actions to be taken are yet to be come from design/planning wing. NRLDC requested SLDC-UP to take follow-ups with design and planning wing to initiate the remedial actions on priority.

27. Status of Bus bar protection:

Clause - 4 in schedule - V of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 reads as

"Bus bar protection and local breaker backup protection shall be provided in 220kV and higher voltage interconnecting sub- stations as well as in all generating station switchyards".

During analysis of many grid incidents/disturbances, it has been found that the Busbar protection at the affected substation was **not present or non-operational** which resulted in considerably increasing both the number of affected elements and fault clearance time. Accordingly, it becomes critical to monitor and keep Busbar protection at all the 220 kV and above voltage level substations healthy and operational.

Constituents were requested vide NRLDC letter dated 28th Dec 2022 to furnish status of Busbar protection in the following format in your control area positively by **15 January 2023.**

As of now details are received from POWERGRID(NR-1 & NR-2), Haryana, NTPC, BBMB, Uttarakhand, HP and UP.

NRLDC representative requested members who haven't shared the data yet, to share the status of Bus bar protection of their respective control area to NRLDC/NRPC at the earliest. It was further requested to initiate the actions to ensure the availability as well as healthiness of bus bar protection at each and every 220kV and higher voltage interconnecting sub- stations as well as in all generating station switchyards in their respective control area.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
<table><tr><td>◎</td><td>CHANDIGARH</td><td>Sep-2019</td></tr><tr><td>◎</td><td>DELHI</td><td>Jan-2023</td></tr><tr><td>◎</td><td>HARYANA</td><td>Dec-2022</td></tr><tr><td>◎</td><td>HP</td><td>Jan-2023</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Available</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jul-2022</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Feb-2023</td></tr><tr><td>◎</td><td>UP</td><td>Jan-2023</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Feb-2023</td></tr></table>All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">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:
<table><tr><td>◎</td><td>CHANDIGARH</td><td>Not Available</td></tr><tr><td>◎</td><td>DELHI</td><td>Dec-2022</td></tr><tr><td>◎</td><td>HARYANA</td><td>Dec-2022</td></tr><tr><td>◎</td><td>HP</td><td>Feb-2023</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Available</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jun-2022</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Dec-2022</td></tr><tr><td>◎</td><td>UP</td><td>Dec-2022</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Dec-2022</td></tr><tr><td>◎</td><td>BBMB</td><td>Dec-2022</td></tr></table>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>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:
<table><tr><td>◎</td><td>CHANDIGARH</td><td>Not Available</td></tr><tr><td>◎</td><td>DELHI</td><td>Increased</td></tr><tr><td>◎</td><td>HARYANA</td><td>Increased</td></tr><tr><td>◎</td><td>HP</td><td>Increased</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not increased</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Increased</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Increased</td></tr><tr><td>◎</td><td>UP</td><td>Increased</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Increased</td></tr><tr><td>◎</td><td>BBMB</td><td>Increased</td></tr></table></td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td colspan="3">J&K and LADAKH were requested to update status for increasing settings of UFRs.</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 colspan="3">Status of the information submission (month) from states / utilities is as under:
◎ HARYANA — Sep-2022
◎ PUNJAB — Mar-2023
◎ RAJASTHAN — Mar-2023
◎ UP — Feb-2023
◎ NTPC — Feb-2023
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>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 colspan="3">All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>6</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 colspan="3">Status:
◎ DELHI — Fully implemented
◎ HARYANA — Scheme not implemented
◎ HP — Scheme not implemented
◎ PUNJAB — Scheme not implemented
◎ RAJASTHAN — Under implementation. Likely completion schedule is 30.06.2023.
◎ UP — Scheme implemented by NPCIL only</td></tr>
</table>

7	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: May'23
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. 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 - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA. Commsioned 27th Jan'23
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February' 2023.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Price bid has been opened and is under evaluation. Retendered in Jan'23
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	Main bus shutdown is required for commissioning of 1x25 MVAR reactor at Bikaner, same is expected upto March’ 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November’ 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months.

Annexure-A-I.I

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Mar'23	02 No. of bays shall be utilized for LILO-II of 220kV Hiranagar Bishnah Transmission Line, the work of which is under progress and shall be completed by March'2023. Updated in 204th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	End of 2023	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. The work is in progress and expected to be commission by the end of 2023. Updated in 204th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Jul'24	Updated in 205th OCC by HVPNL
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	Apr'23	Updated in 205th OCC by UPPTCL
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	Commissioned	Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Jun'23	Issue related to ROW as intimated in 202nd OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad	Commissioned: 6 Under Implementation: 4	Utilized: 6 Unutilized: 0	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
	GIS	Total: 10	Under Implementation:4	• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Jun'23	Updated in 205th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Dec'23	Forest approval is pending for 220 KV Pali - Sector 56 D/C line. Updated in 205th OCC by HVPNL
				• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	Dec'23	Updated in 205th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	Jun'23	Updated in 197th 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 Total: 8	Utilized: 4 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	05.10.2023	Updated in 205th OCC by HVPNL
				• Sonepat - HSIISC Rai 220kV D/c line	-	Updated in 205th OCC by HVPNL. **Status:** Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
		Total: 8	Implementation:2	• Sonepat - Kharkhoda Pocket A 220kV D/c line	31.07.2024	Updated in 205th OCC by HVPNL. **Status:** The Possession of land for construction of 220KV S/Stn. Pocket-A i.e 6.33 Acres and for Pocket-B is 5.55 Acres has been taken over by HVPNL. Work order yet to be issued by O/o CE/PD&C, Panchkula for construction of 2 no. 220KV GIS S/Stn Pocket-A & Pocket-B.
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work order is finalized as updated in 201st OCC by RVPNL. 5 months from layout finalization.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line comiisioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Jun'23	• Lucknow -Kanduni, 220 kV D/C line expected energization date Jun'23 updated by UPPTCL in 205th OCC due to sub-station commissioning delay _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Apr'23	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date is 15.04.2023 updated by UPPCL in 205th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Jul'23	SCDA System work pending at 220 KV S/stn. Rajokheri Updated in 205th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Sep'23	Updated in 205th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Sep'23	Updated in 205th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Jul'24	Updated in 205th OCC by HVPNL
		Commissioned:7	Utilized: 6	• Amritsar – Patti 220kV S/c line	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
26	400/220kV Amritsar S/s	Approved in 50th NRPC- 1 no. Total: 8	Unutilized: 1 Approved in 50th NRPC- 1 no.	• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th 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 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL	31.03.2024	Updated in 205th OCC by HVPNL. **Status:** Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	31.03.2024	Updated in 205th OCC by HVPNL. **Status:** Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	31.07.2024	
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 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	Mar'23	Saharanpur(PG)-Devband D/c line expected energization date last week of March'23 updated by UPPTCL in 205th 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	May'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by May 2023.Updated in 205th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is not ready.Updated in 198th OCC by HPPTCL
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

2. Establishment of new 400/220kV substations in Northern Region:

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule		Downstream connectivity by States
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Mar'22		DTL to update the status
2	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Apr'22		Chandigarh to update the status.
3	400/220kV Jauljivi GIS Out of these 8 nos. 220kV Line Bays, 4 nos. (Pithoragath-2, & Dhauliganga-2) would be used by the lines being constructed by POWERGRID and balance 4 nos. bays would be used by the lines being constructed by PTCUL.	2x315	Feb'22		• 220kV Almora-Jauljibi line • 220kV Brammah-Jauljibi line PTCUL to update the status of lines.

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 (15.02.2023)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (16.02.2023)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (16.03.2023)
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)

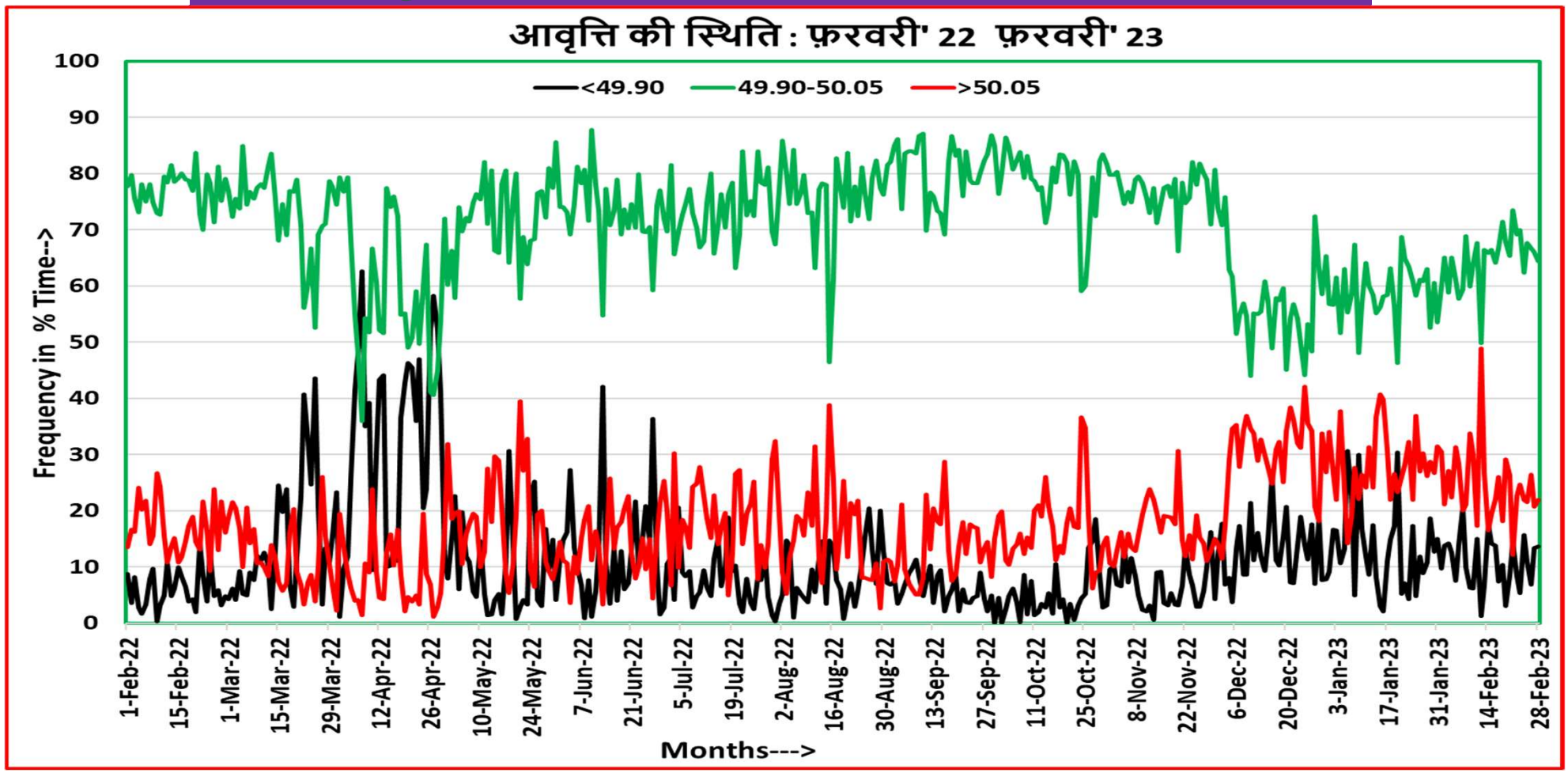
Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH 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)

प्रचालन समन्वय उपसमिति की बैठक
फ़रवरी - 2023

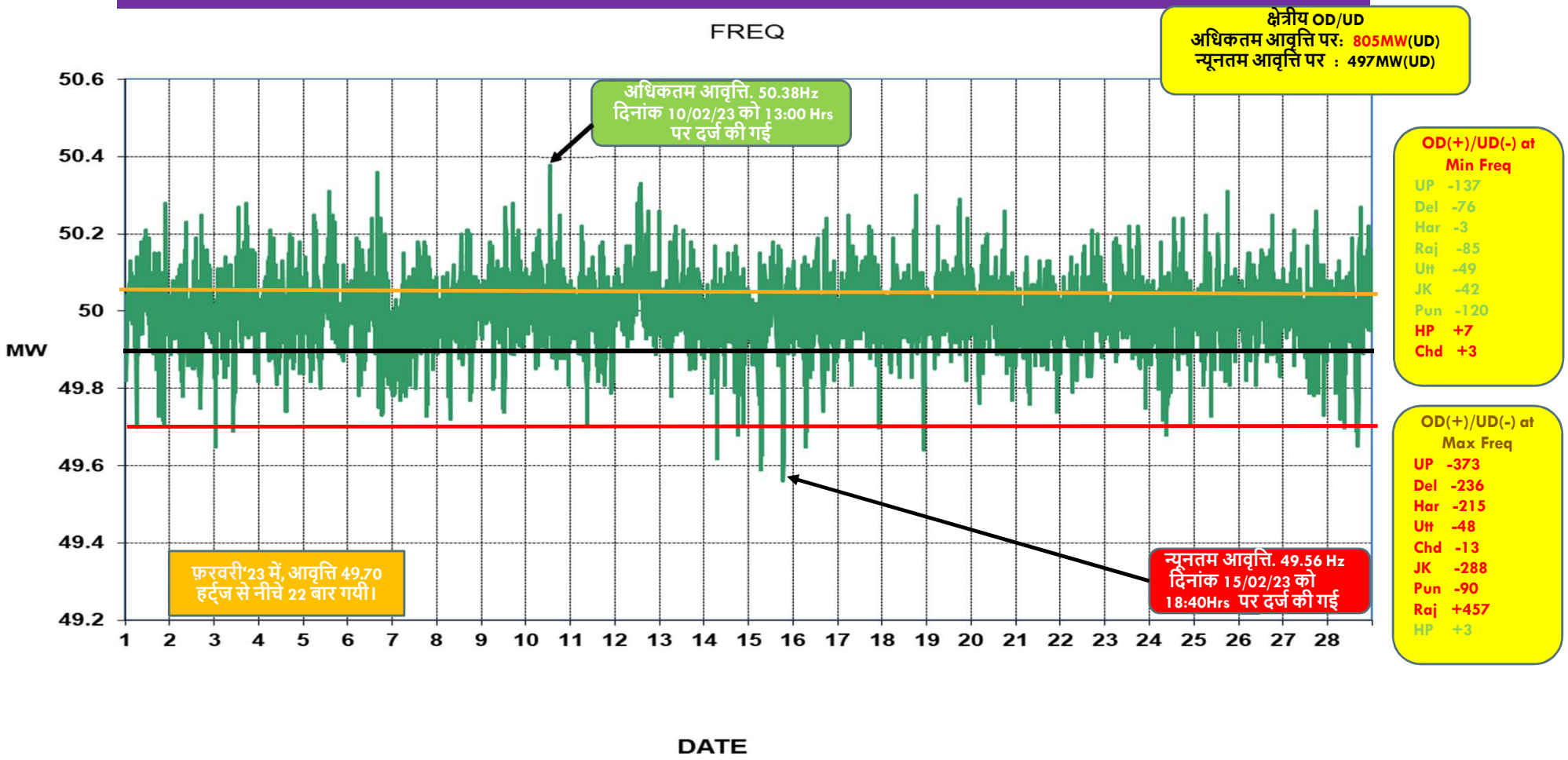
पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	फ़रवरी 2022	मार्च 2022	अप्रैल 2022	मई 2022	जून 2022	जुलाई 2022	अगस्त 2022	सितम्बर 2022	अक्टूबर 2022	नवम्बर 2022	दिसंबर 2022	जनवरी 2023	फ़रवरी 2023
< 49.7 Hz(%)	0.08	0.46	4.94	0.27	0.42	0.42	0.49	0.17	0.04	0.13	1.11	1.25	0.32
<49.8 Hz(%)	0.55	2.92	13.60	1.94	2.41	1.78	2.02	0.91	0.46	0.76	3.96	3.60	1.95
<49.9 Hz(%)	5.99	14.50	31.98	9.83	12.45	7.82	8.77	5.94	4.88	6.70	12.78	13.30	10.75
49.90-50.05 Hz(%)	**77.06**	**73.42**	**59.30**	**72.23**	**73.38**	**73.45**	**75.77**	**80.77**	**78.27**	**77.00**	**57.39**	**58.70**	**64.68**
50.05-50.10 Hz(%)	14.36	10.28	7.35	12.95	11.46	14.84	11.99	11.55	14.04	13.88	11.99	15.26	14.59
>50.10 Hz(%)	2.51	1.72	1.35	4.11	2.43	3.58	3.00	1.65	2.63	2.30	17.84	12.34	8.49
>50.20 Hz(%)	0.08	0.08	0.08	0.88	0.28	0.31	0.47	0.08	0.18	0.12	4.07	1.83	1.49
औसत आवृत्ति	50.00	49.98	49.93	50.00	49.99	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00

आवृत्ति की स्थिति: फ़रवरी -2022 से 2023



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



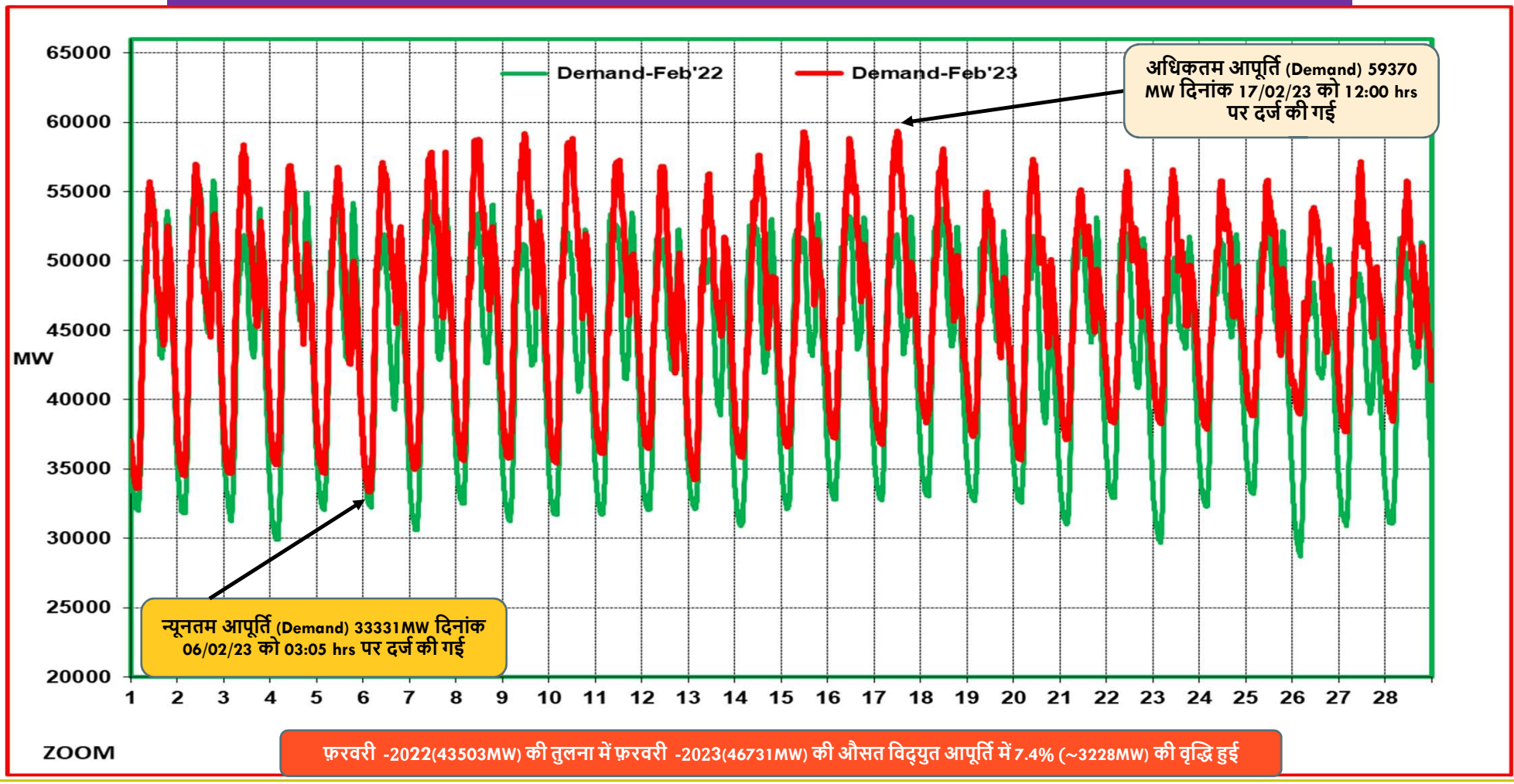
फ़रवरी-2023 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

ग्रिड-इंडिया GRID-INDIA

राज्य	अधिकतम मांग (MW) (in Jan'23)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Dec'22)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Jan'23)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Dec'22)	दिनांक
पंजाब	8864	16.02.23 at 11:30	14295	22.08.22 को 14:45 बजे	165.9	18.02.23	334.45	29.06.22
हरियाणा	8570	09.02.23 at 09:45	12768	28.06.22 को 11:56 बजे	148.6	08.02.23	266.15	07.07.21
राजस्थान	16754	12.02.23 at 10:00	17206	18.01.23 को 14:30 बजे	308.5	18.02.23	328.86	09.09.22
दिल्ली	4667	01.02.23 at 09:59	7695	29.06.22 को 15:10 बजे	75.9	01.02.23	153.52	28.06.22
उत्तर प्रदेश	18602	13.02.23 at 19:12	26589	09.09.22 को 21:39 बजे	334.7	28.02.23	547.360	19.08.22
उत्तराखंड	2218	03.02.23 at 09:00	2594	14.06.22 को 21:00 बजे	42.5	03.02.23	54.27	15.06.22
हिमाचल प्रदेश	1977	03.02.23 at 08:30	2071	06.01.23 को 09:45 बजे	34.5	08.02.23	37.0	06.01.23
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	3044	02.02.23 at 20:00	3019	18.01.23 को 21:00 बजे	64.4	03.02.23	64.6	20.01.23
चंडीगढ़	295	01.02.23 at 08:30	426	08.07.21 को 15:00 बजे	4.0	01.02.23	8.41	08.07.21
उत्तरी क्षेत्र #	59370	17.02.23 at 12:00	77006	28.06.22 को 11:50 बजे	1140.5	17.02.23	1737.09	28.06.22

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

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

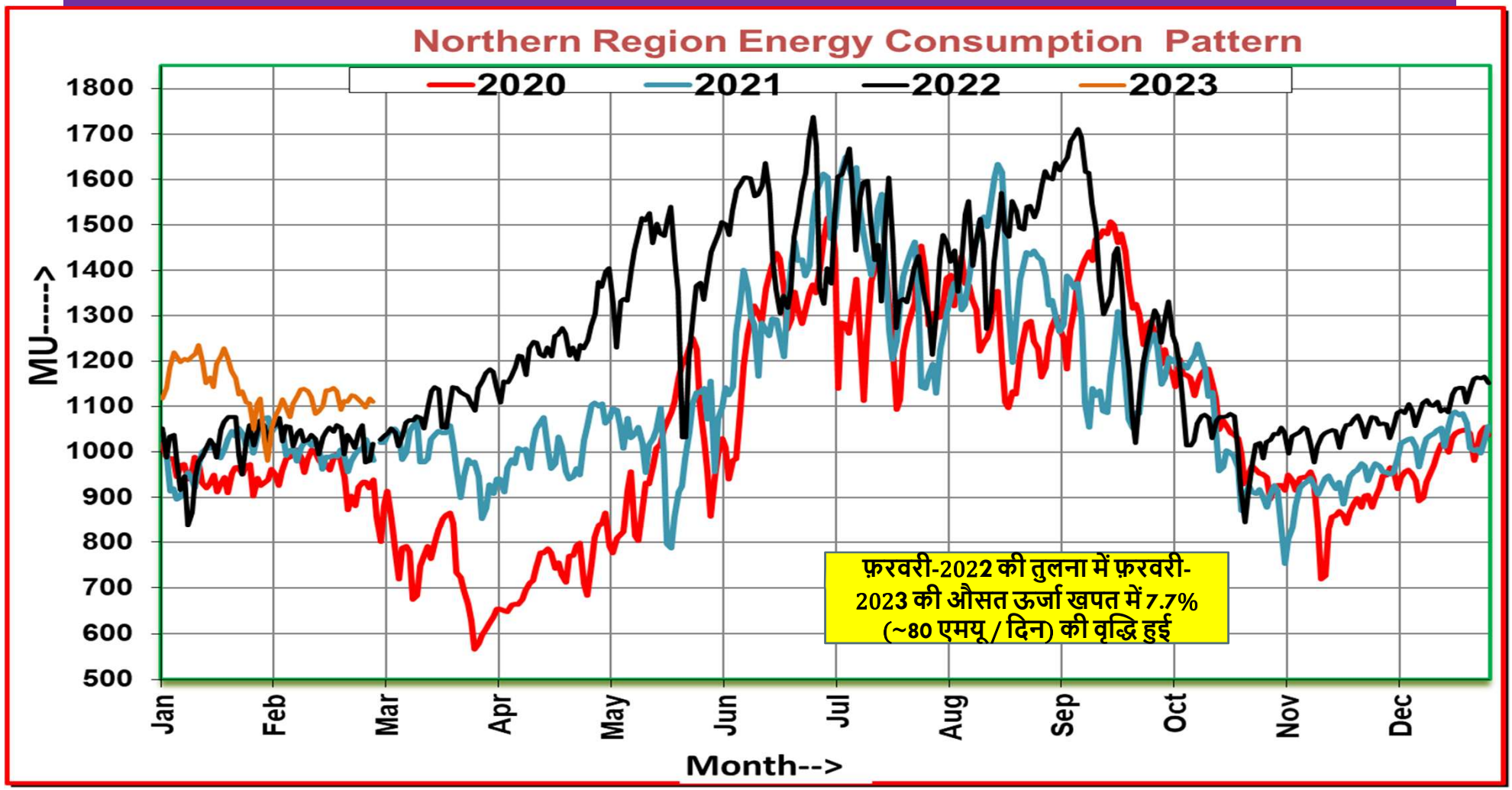


फ़रवरी -2022(43503MW) की तुलना में फ़रवरी -2023(46731MW) की औसत विद्युत आपूर्ति में 7.4% (~3228MW) की वृद्धि हुई

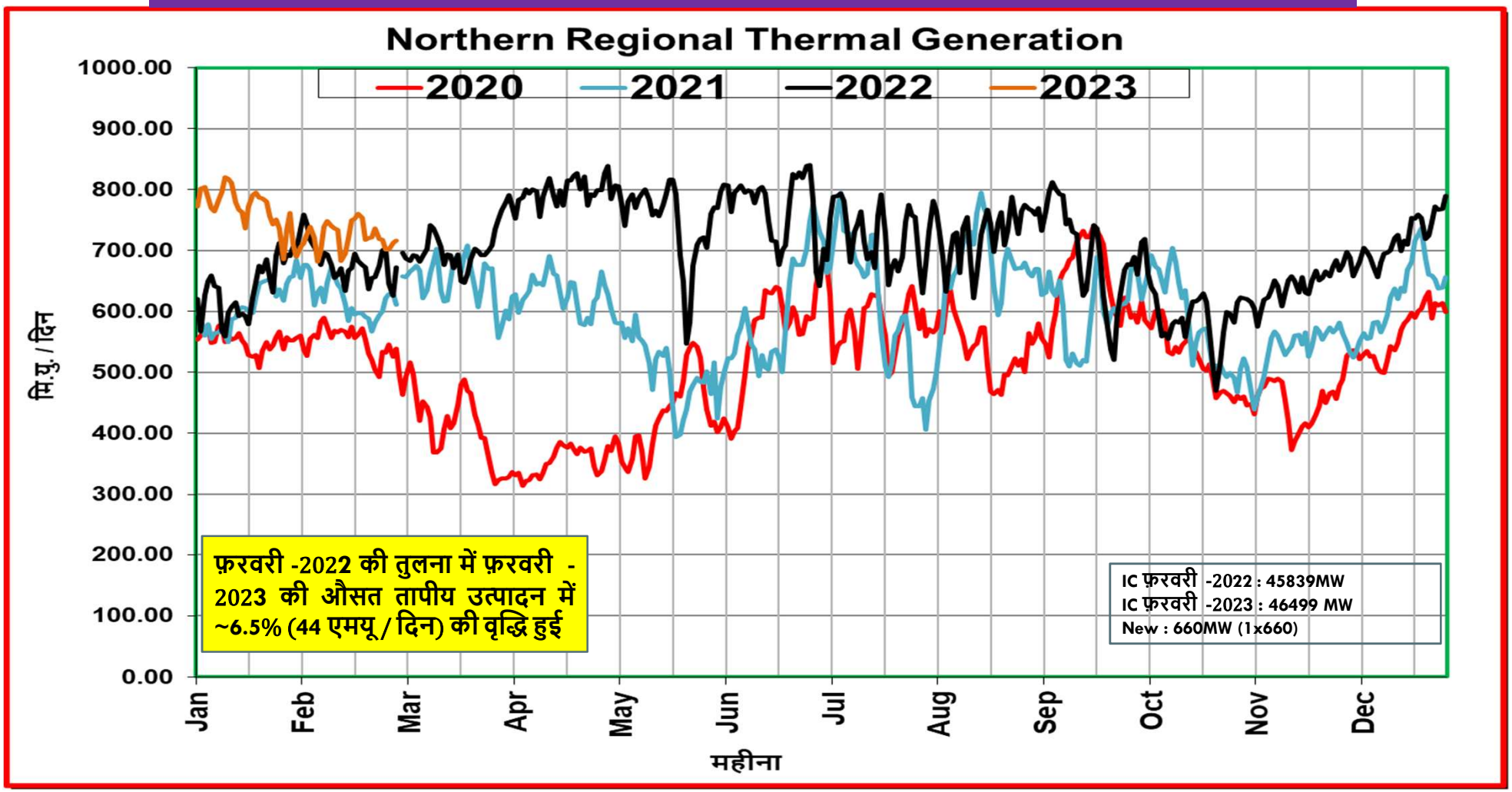
उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) फ़रवरी-2023/ फ़रवरी-2022 / फ़रवरी-2021

राज्य	फ़रवरी -2021	फ़रवरी -2022	फ़रवरी -2023	% वृद्धि (फ़रवरी -2022 vs फ़रवरी -2021)	% वृद्धि (फ़रवरी -2023 vs फ़रवरी -2022)
पंजाब	128.96	125.08	149.73	-3.01%	19.70%
हरियाणा	132.66	124.27	140.31	-6.32%	12.90%
राजस्थान	264.12	277.32	297.33	5.00%	7.22%
दिल्ली	63.84	66.50	67.96	4.17%	2.19%
उत्तर प्रदेश	290.10	307.86	322.59	6.12%	4.79%
उत्तराखंड	39.02	40.05	39.68	2.64%	-0.92%
चंडीगढ़	3.39	3.46	3.48	2.16%	0.50%
हिमाचल प्रदेश	31.47	33.42	32.22	6.20%	-3.59%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	51.21	54.86	59.45	7.13%	8.36%
उत्तरी क्षेत्र	1004.64	1032.82	1112.73	2.81%	7.74%

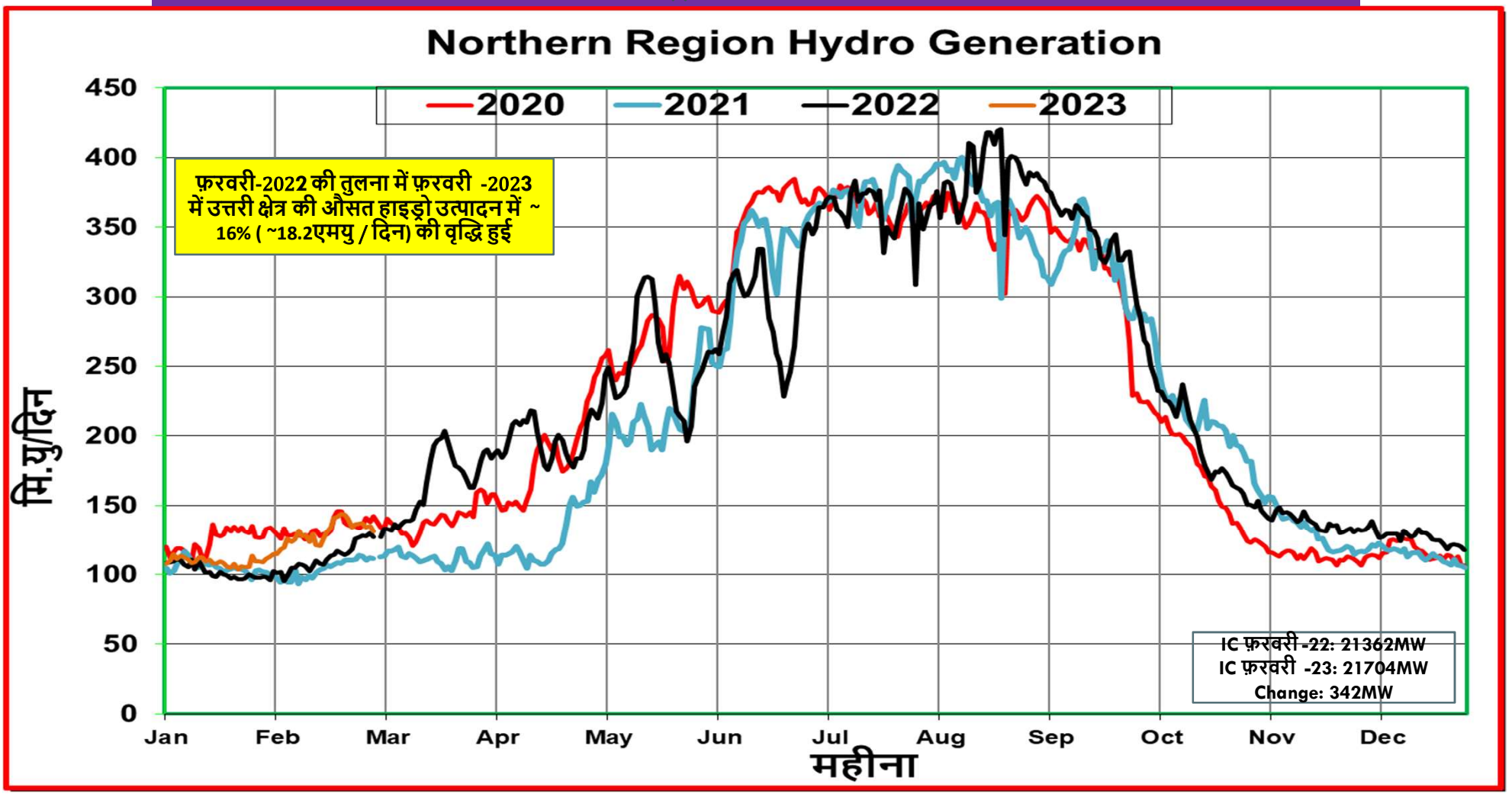
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



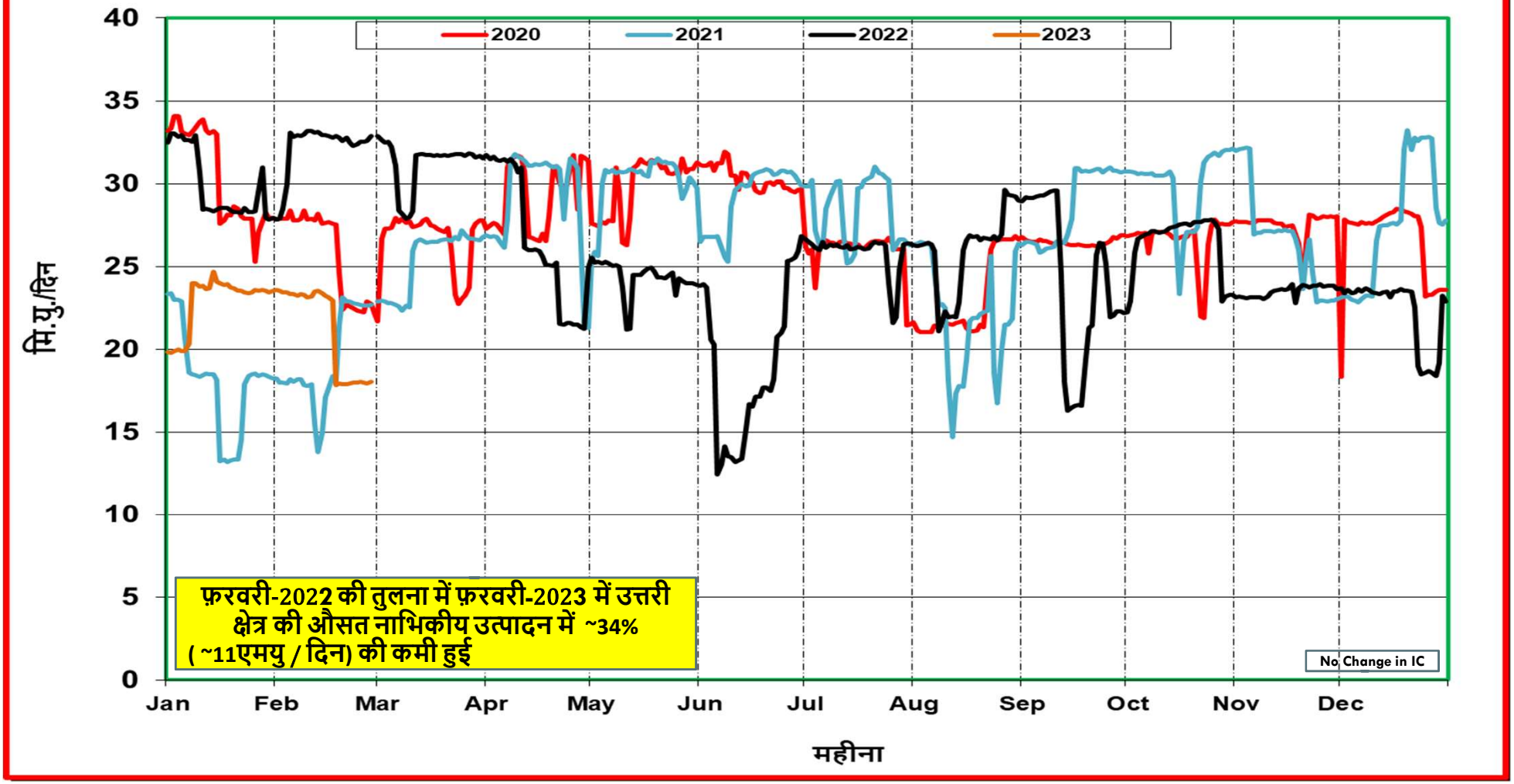
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



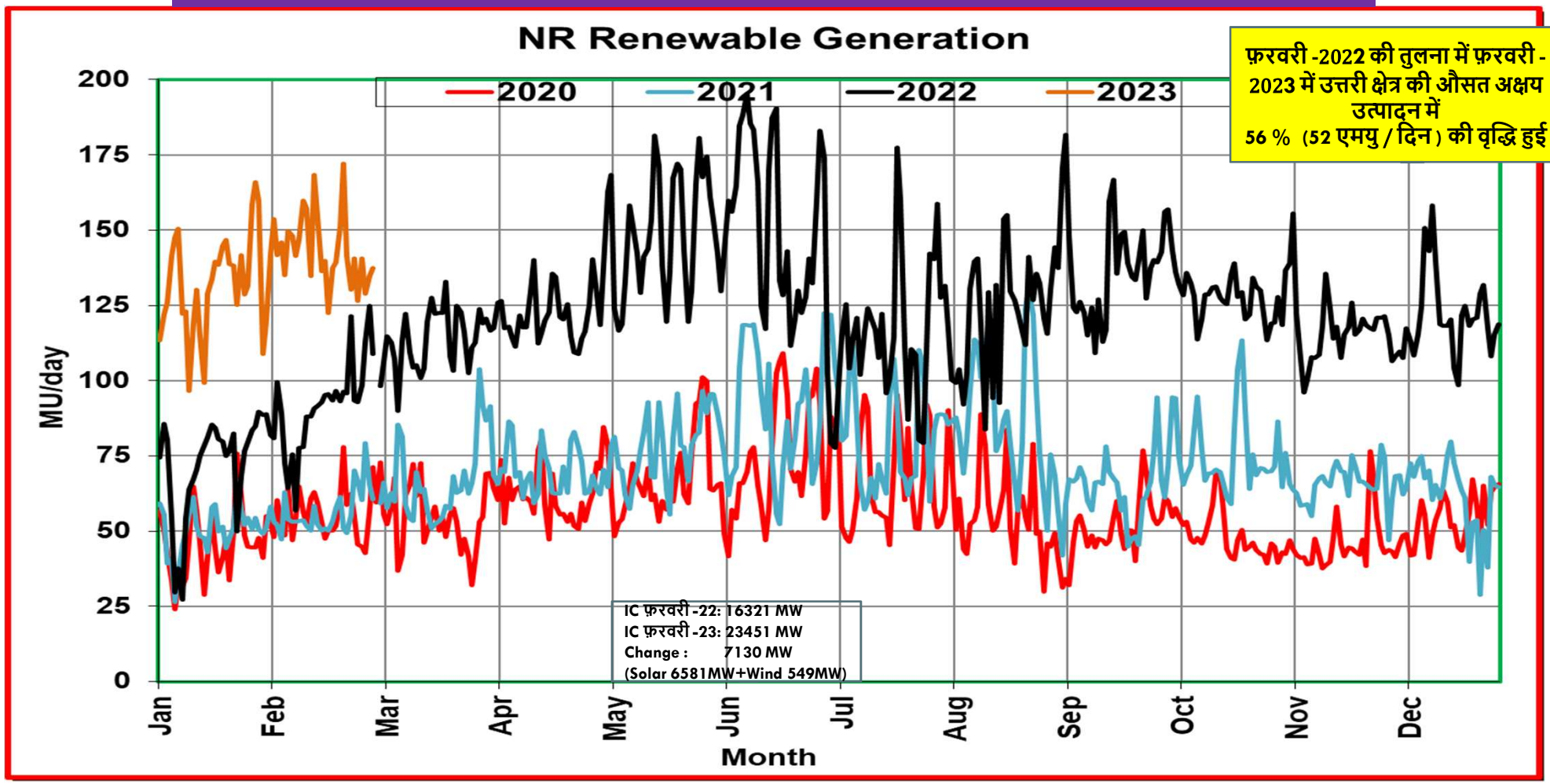
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



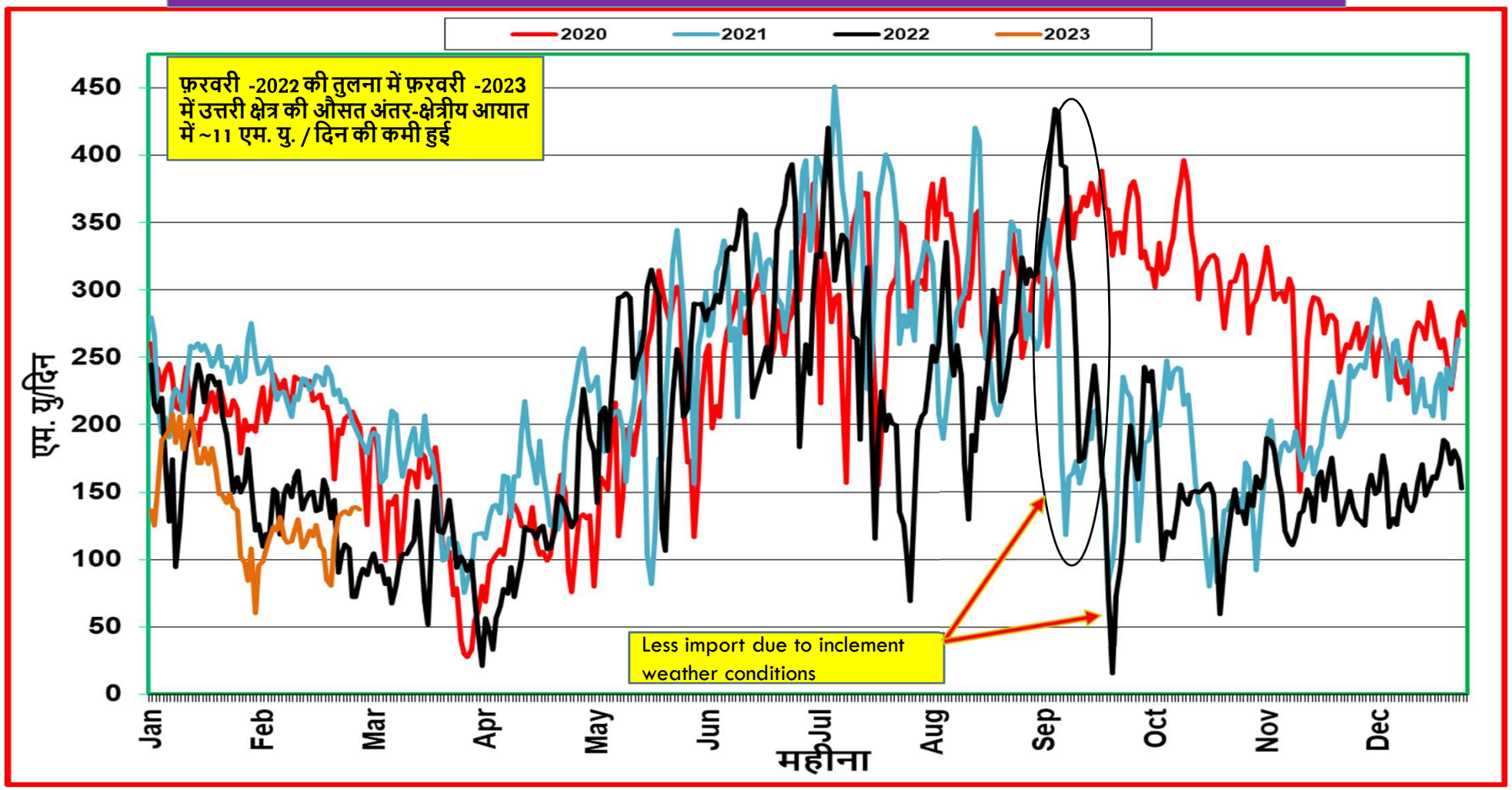
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



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



अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



वास्तविक सारांश -
फ़रवरी-2021 बनाम फ़रवरी-2022

	फ़रवरी -2022 (मि.यु. /दिन)	फ़रवरी -2023 (मि.यु. /दिन)	फ़रवरी माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	679.35	723.53	44.18
जलीय (Hydro) उत्पादन	112.22	130.46	18.24
नाभिकीय (Nuclear) उत्पादन	32.21	21.21	-11.00
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	129.50	118.77	-10.74
अक्षय (Renewable) उत्पादन	91.589	143.458	51.87
कुल	**1044.87**	**1137.43**	**92.55**

RE Penetration

	Maximum Daily MU Penetration			
	February '2023		Record upto January '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	4.48	13-02-2023	12.28	01-04-2020
Rajasthan	19.58	09-02-2023	36.47	22-10-2021
UP	4.44	13-02-2023	4.07	30-10-2021
NR	15.54	12-02-2023	15.90	25-10-2022

	Maximum Instantaneous Penetration in MW			
	February '2023		Record upto January '2023	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	8.24	03-02-2023	26.87	22-04-2020
Rajasthan	31.30	09-02-2023	68.38	31-03-2020
UP	17.78	13-02-2023	15.13	01-04-2021
NR	37.18	12-02-2023	42.96	25-10-2022

B.20

Outage Summary For February 2023									
CONSTITUENTS	PLANNED (A)	FORCED OUTAGES (B=C+D)	EMERGENCY SHUTDOWNS (C)	TRIPPING (D)	% PLANNED SHUTDOWNS (A/(A+C))	% EMERGENCY SHUTDOWNS(C/(A+C)	% ESD SHUTDOWNS(C/B)	% TRIPPING (D/B)	TOTAL OUTAGES (A+B)
POWERGRID	398	150	104	46	79.3%	20.7%	69.3%	30.7%	548
UPPTCL	87	75	33	42	72.5%	27.5%	44.0%	56.0%	162
RRVPNL	55	83	51	32	51.9%	48.1%	61.4%	38.6%	138
BBMB	58	28	10	18	85.3%	14.7%	35.7%	64.3%	86
HVPNL	62	22	8	14	88.6%	11.4%	36.4%	63.6%	84
PSTCL	67	17	3	14	95.7%	4.3%	17.6%	82.4%	84
ADHPL	49	0	0	0	100.0%	0.0%	0.0%	0.0%	49
Adani Solar	31	6	0	6	100.0%	0.0%	0.0%	100.0%	37
Renew Power	15	6	2	4	88.2%	11.8%	33.3%	66.7%	21
HPPTCL	11	7	4	3	73.3%	26.7%	57.1%	42.9%	18
DTL	9	7	3	4	75.0%	25.0%	42.9%	57.1%	16
PDD JK	11	2	0	2	100.0%	0.0%	0.0%	100.0%	13
NTPC Solar	11	1	0	1	100.0%	0.0%	0.0%	100.0%	12
Azure	9	2	0	2	100.0%	0.0%	0.0%	100.0%	11
PKTSL	6	5	1	4	85.7%	14.3%	20.0%	80.0%	11
PTCUL	9	2	0	2	100.0%	0.0%	0.0%	100.0%	11
Tata Solar	10	0	0	0	100.0%	0.0%	0.0%	0.0%	10
Adani	1	8	6	2	14.3%	85.7%	75.0%	25.0%	9
ACME	5	3	2	1	71.4%	28.6%	66.7%	33.3%	8
NTPC	7	1	0	1	100.0%	0.0%	0.0%	100.0%	8
PKTCL	4	3	2	1	66.7%	33.3%	66.7%	33.3%	7
SBSRPC-11	5	1	0	1	100.0%	0.0%	0.0%	100.0%	6
EDEN	0	4	1	3	0.0%	100.0%	25.0%	75.0%	4
AEPL	3	1	1	0	75.0%	25.0%	100.0%	0.0%	4
Cleansolar_Jodhpur	4	0	0	0	100.0%	0.0%	0.0%	0.0%	4
PKATL,HPPTCL,JPL	2	2	0	2	100.0%	0.0%	0.0%	100.0%	4
THAR SURYA1	4	0	0	0	100.0%	0.0%	0.0%	0.0%	4
Saurya Urja	0	4	0	4	0.0%	0.0%	0.0%	100.0%	4
HPPTCL,JPL,Greenko	3	0	0	0	100.0%	0.0%	0.0%	0.0%	3
NHPC	1	2	2	0	33.3%	66.7%	100.0%	0.0%	3
PFTL	1	2	0	2	100.0%	0.0%	0.0%	100.0%	3
NRSS XXIX	0	3	1	2	0.0%	100.0%	33.3%	66.7%	3
POWERLINK	0	3	2	1	0.0%	100.0%	66.7%	33.3%	3
GPTL	0	2	0	2	0.0%	0.0%	0.0%	100.0%	2
FBTL	0	2	0	2	0.0%	0.0%	0.0%	100.0%	2
THDC	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
PTCL	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
SJVNL	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
TOTAL	**939**	**456**	**238**	**218**	**79.8%**	**20.2%**	**52.2%**	**47.8%**	**1395**

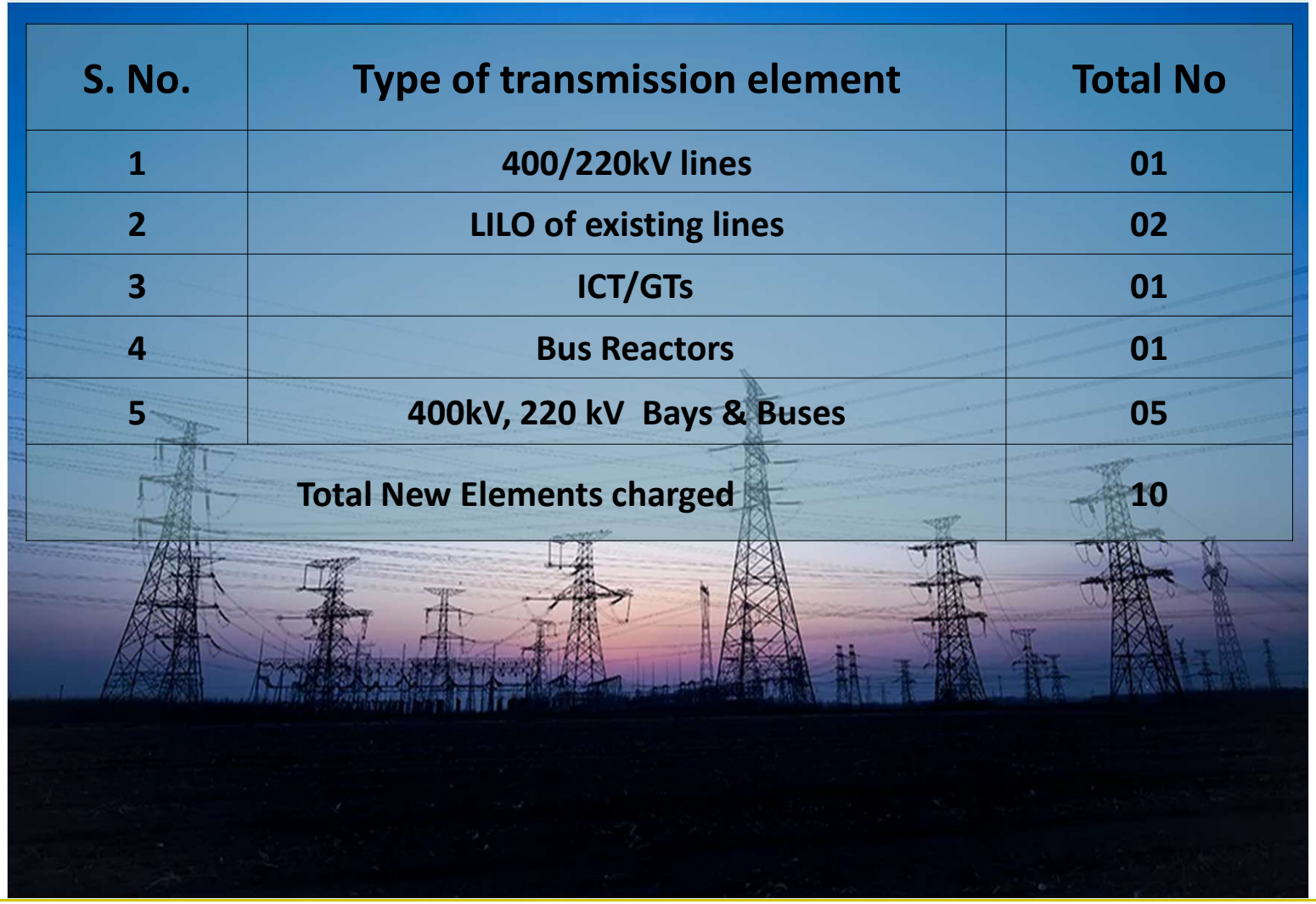
B.20

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))	
November-22	1072	476	254	222	80.8%	19.2%	1548
December-22	933	731	351	380	72.7%	27.3%	1664
January-23	761	826	370	456	67.3%	32.7%	1587
February-23	**939**	**456**	**238**	**218**	**79.8%**	**20.2%**	**1395**

B.20

New Elements First Time Charged During February 2023

S. No.	Type of transmission element	Total No
1	400/220kV lines	01
2	LILO of existing lines	02
3	ICT/GTs	01
4	Bus Reactors	01
5	400kV, 220 kV Bays & Buses	05
Total New Elements charged		10



B.20

TRANSMISSION LINES						
S.NO.	**Agency/Owner**	**LINE NAME**	**Length (KM)**	**Conductor Type**	**DATE**	**Remarks**
1	POWERGRID	400kV Dadri(NT)-Ballabhgarh(PG)-1	115.1	Twin ACAR	23-Feb-2023	After bypassing of Dadri-Maharanibagh-Ballabgarh line at Maharanibagh.

LILO OF EXISTING TRANSMISSION LINES						
S.NO.	**Agency/Owner**	**LINE NAME**	**Length (KM)**	**Conductor Type**	**DATE**	**Remarks**
1	HPPTCL/POWERGRID	400kV Gumma (HP)-Panchkula(PG)-1 (After LILO of 400 kV Jhakri-Panchkula Ckt-1 at 400/220 kV Gumma)	111.5	Tripple Snowbird	28-Feb-2023	1.508
2	UPPTCL/POWERGRID	400kV Bareilly (PG)-Rampur_PRSTL (UP)-1 (After LILO of 400 KV BAREILLY(PG)- MORADABAD(UPPTCL) CIRCUIT-II at RAMPUR(PRSTL))	40.149	Twin Moose	28-Feb-2023	2.705

ICTs/ GTs / STs							
S.NO.	**Agency/Owner**	**SUB-STATION**	**ICT NO**	**Voltage Level (kV)**	**CAPACITY (MVA)**	**DATE**	**Remarks**
1	UPPTCL	Lalitpur(LPG)	2	765/21	275	25-Feb-23	

BRs/LRs							
S.NO.	**Agency/Owner**	**SUB-STATION**	**BR NO**	**Voltage Level (kV)**	**CAPACITY (MVA)**	**DATE**	**Remarks**
1	POWERGRID	Chamba (PG)	2	400	80	04-Feb-23	

B.20

GENERATING UNITS							
SL. NO.	**Location**	**OWNER/UNIT NAME**	**Unit No/Source**	**Capacity added (MW)**	**Total/Installed Capacity (MW)**	**DATE**	**Remarks**
1	Rajasthan	NTPC Nokhra_Bhadla_2 (PG)	Solar	50	300	14.02.2023	
		Total Solar Generation addition		**50**			


धन्यवाद

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LIMITED
[Corporate Identity Number (CIN): U40109RJ2000SGC016485]
Regd. Office: Vidyut Bhawan, Janpath, Jyoti Nagar, Jaipur-302005

RVPN
An ISO 9001:2015 Certified Company

OFFICE OF THE CHIEF ENGINEER (LD)
New Prasaran Bhawan, TCC Building, Heerapura, Jaipur Tel No.0141-2948293
E-mail: ce.ld@rvpn.co.in website: www.http://energy.rajasthan.gov.in/rvpnl

No. RVPN/CE (LD)/SE(SOLD)/ F. /D. Dated:-

295
20/3/23

The Chief Engineer (PP&D)
RVPN, Vidyut Bhawan, Jaipur

Sub :-Transmission constraints and over loading in the state transmission network.

Ref.:- 1.This office letter No. 760 dated 14.12.2022
2. Your office letter No. 1760 dated 22.12.2022

On the aforesaid subject please refer this office letter dated 14.12.2022 under reference vide which following transmission constraints and over loading in the state transmission network were intimated. In order to resolve the transmission constraints / over loading issues, some augmentation schemes have been approved as intimated vide your office letter dated 22.12.2022 the same have been mentioned against each constraints:

S.N.	Constraints of Lines / GSS	Action proposed by SE (SOLD)	Action taken by SE (P&P) *and reply of LD*
1.	**Overloading of inter-connecting lines**		
a.	220 kV Kota (s) – KTPS (4 Ckts)	Since the length of inter connecting lines is very short, therefore, overloading on these inter connecting lines are observed frequently, hence replacing existing conductor with HTLS / AL-59 conductor will help to resolve the issue.	SE (P&P) comments:-Under Examination. *LD View:-The LD shall manage the load during replacement of conductor as and when plan*
b.	220 kV Hindaun – Hindaun (400 kV) (1 Ckt)		A&FS for construction of 400 kV GSS Dholpur is issued on 13.06.2022, hence uprating of conductor will not be required.
c.	220 kV Bhilwara-Bhilwara(400 kV) (2 Ckts)		SE (P&P) comments:- Under Examination. *LD View:-The LD shall manage the load during replacement of conductor as and when plan. No major relief might be seen by proposed LILO of Dausa-SWM line at Jaipur(S) as SWM & Lalsot load is contributed by Bassi (PG), Kota(s) and RAPP-C*
d.	220 kV Ratangarh – Ratangarh (400 kV) (2 Ckts)	LILO of one ckt of 220 kV D/C Ratangarh (400 kV)- 400 kV Sikar (PG) at 220 kV GSS Ratangarh to avoid overloading of interconnector between 400	SE (P&P) comments:- Alternate proposal has been sought from field as there is ROW issue in proposed LILO &Feasibility of conductor replacement shall be assessed after clearance from field.

Signature valid
Digitally signed by Satish Chandra Sharma
Designation : Chief Engineer
Date: 2023.03.09 16:44:49 IST
Reason: Approved

RajKaj Ref No. : 3339775

SE
20/3

Pl take this as table A
Agenda in OCC

EE(O)
For n.a. Pls on 'A'
21/3

S.N.	Constraints of Lines / GSS	Action proposed by SE (SOLD)	Action taken by SE (P&P) *and reply of LD*
		kV GSS Ratangarh and 220 kV GSS Ratangarh may be planned otherwise existing conductor of interconnectors may be replaced with HTLS/ AL-59 conductor.	*LD View:-The LD shall manage the load during replacement of conductor as and when plan*
e.	220 kV RGTPP – Ramgarh (220kV) (1 Ckt)	LILO of 220 kV Amarsagar- 220 kV RGTPP at 220 kV GSS Ramgarh or 400 kV GSS Ramgarh to avoid overloading of 220 kV RGTPP- Ramgarh may be planned otherwise existing conductor of interconnector may be replaced with HTLS/ AL-59 conductor.	SE (P&P) comments:-Work involved in proposed LILO is more &Feasibility of conductor replacement shall be assessed after clearance from field. *LD View:-The LD shall manage the load during replacement of conductor as and when plan*
2	**Low voltage issue, which is below the IEGC band i.e. 360 kV**		
a.	400kV GSS Alwar (PPP)	Since LILO of one ckt of 400 kV D/C Sikar (PG) – Agra (PG) line at 400 kV GSS Alwar is technically viable, hence the execution of associated works may be discussed with M/s Adani or alternatively taken up by RVPN on urgent basis.	SE (P&P) comments in 204th OCC Meeting:- 400 kV D/C line from 765/400 kV GSS Ajarka (Alwar) [Newly Proposed RVPN GSS] to 400 kV GSS Alwar (PPP) is technically approved & under process for Administrative & Financial Sanction *LD View:-Early execution is required, as NRLDC / NRPC is time and again requested for addressing the issue of low voltage at Alwar and nearby area.*
3.	**Over loaded transmission lines**		
a.	220kV Dausa – Bassi line – I & II	LILO of 220 kV Dausa – Sawaimadhopur line at 400 kV GSS Jaipur South (PG) is urgently required.	A&FS for LILO of 220 kV Dausa – Sawaimadhopur line at 400 kV GSS Jaipur South (PG) is issued on 22.07.2022. *LD View:-Early execution of work may please be ensured.*
4.	**Non flexibility of operation between KTPS main Bus No. 3&5 due non availability of Circuit breaker**		
a.	220kV Switchyard at KTPS	220 kV Circuit breaker needs to be commissioned with coordination of RVUNL urgently to avoid boxing up units no. 6&7 of KTPS during switch yard maintenance. This was also discussed/ decided in the Technical Committee meeting held in 2020-21.	SE (P&P) comments:-Details of correspondences made between KTPS & RVPN has been mentioned. *LD View:-Issue not resolved yet. Pursuance with higher authorities of RVUN is needed for early execution.*
5.	**Non compliance of N-1 contingency due to overloading of 400/220 kV ICTs**		
a. b. c. d. e. f. g. h.	400 kV GSS Ajmer 400 kV GSS Bikaner 400 kV GSS Bhadla 400 kV GSS Chittorgarh 400 kV GSS Hindaun 400 kV GSS Merta 400 kV GSS Ratangarh 400 kV GSS Jodhpur	Early procurement / installation of approved additional 400/220 kV ICTs at existing 400 kV GSS is required for meeting the increased load demand of the area and also for evacuation of RE power.	SE (P&P) comments:- A&FS issued for Ajmer, Merta, Jodhpur & Bikaner on 26.04.2022, Bhadla on 08.08.2022, Chittorgarh on 16.06.2021, Hindaun on 20.004.2021 for commissioning of new ICTs and for Ratangarh is under examination. *LD View:-Early commissioning is required to overcome overloading issues of ICTs and NRLDC / NRPC is time and again*

Signature valid

Digitally signed by Satish Chandra Sharma
Designation : Chief Engineer
Date: 2023.03.09 16:44:49 IST
Reason: Approved

S.N.	Constraints of Lines / GSS	Action proposed by SE (SOLD)	Action taken by SE (P&P) *and reply of LD*
			requested for addressing the N-1 contingency issue at above GSSs.
6.	**Reactive power management**		
	Severe Low voltage issue and oscillations are observed when high wind generation comes along with solar generation at the time of high demand and high voltages are observed at the time of low demand at night hours at 220 kV GSS Phalodi, Dechu, Amarsagar, Bap, Badisid, Ramgarh, Bhadla, Khinvsar, Bikaner, Aau, Baithwasia and 400 kV GSS Akal, Bhadla, Kankani, Jodhpur	Early commissioning of approved STATCOMs and Capacitor Banks in the affected areas is required to curb the voltage variation/oscillations in real time. Also conversion of all installed fixed line reactors to switchable line reactors is required.	SE (P&P) comments:-A&FS issued on 08.08.2022 for STATCOMs at 400 kV GSS Bhadla, 220 kV Phalodi & Tinwari along with static reactors at many location to solve the high voltage issue. *LD View:-Early commissioning may please be ensured.* *LD View*:-Being STU, *feasibility of conversion of all installed fixed line reactors to switchable line reactors may please be accessed at your end.*
7.	**Power evacuation system of 2x660 MW Suratgarh super critical thermal power stations.**		
a	400 kV D/C SSCTPS – Babai line	Execution of under construction 400 kV D/C SSCTPS – Babai line may be expedited for N-1 compliance in power evacuation system of 2*660 MW Suratgarh super critical thermal power station.	*LD View:-Execution of under construction 400 kV D/C SSCTPS – Babai line may please be expedited at your end and Early commissioning may please be ensured.*
b	400kV GSS Hanumangarh along with associated 400kV & 220kV transmission lines.	Early execution of this approved 400kV GSS would obviate overloading of 2*315 MVA, 400/220kV ICTs at STPS.	SE (P&P) comments:-Revised A&FS issued on 13.04.2022 for construction of 400 kV GSS Hanumangarh. *LD View:-Early commissioning may please be ensured.*
8.	**Early commissioning of approved 400 kV and 220 kV GSS are required to maintain un-interrupted power supply in state.**		
a	400kV GSS Sangod and Dholpur along with associated 400kV & 220kV transmission lines.		SE (P&P) comments:-A&FS issued on 11.09.2020 for construction of 400 kV GSS Sangod. A&FS issued on 13.06.2022 for construction of 400 kV GSS Dholpur. *LD View:-Early commissioning may please be ensured.*
b	220 kV GSS along with associated transmission lines at Sheo, Sikri, Sawa, Lakhini, Jhajhawar, Reodar, Birloka and Kelwara.		SE (P&P) comments:-A&FS issued on 17.06.2022 for construction of 220 kV GSS Birloka, on 14.06.2022 for Lakhni, on 27.06.2022 for Kelwara & Sheo, on 11.03.2022 for Sikri, on 14.09.2022 for Jhajhawar. *LD View:-Early commissioning may please be ensured.*

Further, the early commissioning of Power flow control device (PCD) may please be planned as soon as possible to resolve the low voltage issue at 220 kV GSS Bhadla and nearby area.

Signature valid

Digitally signed by Satish Chandra Sharma
Designation : Chief Engineer
Date: 2023.03.09 16:44:49 IST
Reason: Approved

RajKaj Ref No. : 3339775

The commissioning of ICTs under augmentation will be required at the earliest to get enhance ATC / TTC of state transmission system, as NRLDC drawl (ISGS allocation / Inter-state LTA / short term Bilateral/Collective) could be restricted up to ATC / TTC of state transmission system. Here is pertinent to mention that Discom (s) would not be able to draw ISGS allocation / Inter-state LTA / short term Bilateral/Collective power beyond ATC / TTC whenever GNA regulation would be fully in-forced. As per the GNA regulation, the total quantum of GNA and T-GNA / NRLDC Drawl must not be greater than ATC / TTC. At present, the ATC / TTC of the state transmission network is 7000 MW / 7600 MW. However the NRLDC drawl depends upon agriculture supply block approved by the RUVNL. The NRLDC Drawl would be increased, if the gap between state own generation and Discom (s) demand is increased.

The approved augmentation schemes / new 400 kV GSS are needed to be implemented as early as possible to resolve the transmission constraints looking to the over lapping of two block supply in day hours by Discom (s) and anticipated increased state load demand and more integration of solar plant in upcoming years.

(S.C.Sharma)
Chief Engineer (LD)
RVPN, Heerapura, Jaipur

Copy submitted / forwarded to the following for information and necessary action:-

1. The Director (Technical / Operation), RVPN, Jaipur.
2. The Superintending Engineer (TA to CMD) / (SOLD), RVPN, Jaipur
3. The Superintending Engineer (Opr.), NRPC, 18A, ShaheedJeet Singh Marg, Katwariasaria, New Delhi-110016.
4. The General Manager, NRLDC,18A, ShaheedJeet Singh Marg, Katwariasaria,New Delhi-110016.

Chief Engineer (LD)
RVPN, Heerapura, Jaipur

Signature valid

Digitally signed by Satish Chandra Sharma
Designation : Chief Engineer
Date: 2023.03.09 16:44:49 IST
Reason: Approved

RajKaj Ref No. : 3339775