सत्यमेव जयते

भारतसरकार
Government of India
विद्युतमंत्रालय
Ministry of Power
उत्तरक्षेत्रीयविद्युतसमिति
Northern Regional Power Committee

संख्या: उ.क्षे.वि.स./प्रचालन/106/01/2023/2761-2802 दिनांक: 14.03.2023

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 204वीं बैठक का कार्यवृत।

Subject: Minutes of 204th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 204वीं बैठक दिनांक 17.02.2023 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।

204th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 17.02.2023. 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
14/03/23
(संतोष कुमार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

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उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 204वीं बैठक का कार्यवृत्त

204th meeting of OCC of NRPC was held on 17.02.2023 through video conferencing.

खण्ड-क:उ.क्षे.वि.स. **PART-A:NRPC**

1. Confirmation of Minutes

Minutes of 203rd OCC meeting was issued on 07.02.2023.

- With regard to Agenda No. 7 (Part-A) (NR Islanding Scheme), UPSLDC vide letter dated 10.02.2023 requested OCC forum that following statement may kindly be added:

"In the meeting, it was decided that UPPTCL will arrange and commission UFRs to be installed at substations of PGCIL. It was also decided that UPPTCL shall request PGCIL to give consent for testing and maintaining UFRs and related system at their substations."

- With regard to Agenda No. 14 (Part-A) (LC-oscillations/resonance in over-compensated 765kV transmission lines in Northern Region-1), NRLDC vide mail dated 17.02.2023 proposed to remove point 14.2 as it is not relevant with present issue and voltage and reactive power stability study are not related to LC oscillations/ resonance. Moreover, studies carried out by CTUIL in this regard were submitted in 8th CMETS and 56th NRPC meeting and not separately to NRLDC. The said study results are attached in agenda of 56 NRPC meeting (Page 76-91).

OCC confirmed the minutes with above modifications.

2. Review of Grid operations of January 2023

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

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

- **Himachal Pradesh**

The Anticipation in Energy Requirement and Peak Demand in respect of Himachal Pradesh for the month of January, 2023 came on the lower side due to the forced shutdown of two major cement industries in the State.

- **Haryana**

The increase in peak demand and energy consumption is due to severe cold condition in the month of Jan-23.

- **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 January 2023.

- **Rajasthan**

  The Energy consumption & Peak Demand increased by 5.2 % & 7.4 % respectively w.r.t. Anticipated Energy requirement & Anticipated Peak Demand for January' 2023. Variation in Energy requirement is due to increase in supply hours to agriculture load (From 5 hours to 6/7 hours) and increase in Peak demand is due to overlapping of agriculture blocks in Solar hours.

- **Uttar Pradesh**

  Generally normal growth of the states lies within 6 to 7%, but due to severe winter this year in the month of January in comparison to the last year, actual energy consumption was higher than anticipated.

3. Maintenance Programme of Generating units and Transmission Lines

The maintenance programme of generating units and transmission lines for the month of March 2023 was deliberated in the meeting on 16.02.2023.

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	130	290	No Revision submitted
	Requirement	110	250	
	Surplus / Shortfall	20	40	
	% Surplus / Shortfall	18.2%	16.0%	
DELHI	Availability	3019	4700	15-Feb-23
	Requirement	2125	4700	
	Surplus / Shortfall	894	0	
	% Surplus / Shortfall	42.1%	0.0%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
HARYANA	Availability	4590	10560	14-Feb-23
	Requirement	4400	8400	
	Surplus / Shortfall	190	2160	
	% Surplus / Shortfall	4.3%	25.7%	
HIMACHAL PRADESH	Availability	1023	1970	13-Feb-23
	Requirement	1029	1954	
	Surplus / Shortfall	-6	16	
	% Surplus / Shortfall	-0.5%	0.8%	
J&K and LADAKH	Availability	1150	1400	26-Dec-22
	Requirement	1790	2900	
	Surplus / Shortfall	-640	-1500	
	% Surplus / Shortfall	-35.8%	-51.7%	
PUNJAB	Availability	5890	11720	16-Feb-23
	Requirement	4950	9100	
	Surplus / Shortfall	940	2620	
	% Surplus / Shortfall	19.0%	28.8%	
RAJASTHAN	Availability	8960	19000	16-Feb-23
	Requirement	8990	16140	
	Surplus / Shortfall	-30	2860	
	% Surplus / Shortfall	-0.3%	17.7%	
UTTAR PRADESH	Availability	11780	21000	15-Feb-23
	Requirement	11470	21000	
	Surplus / Shortfall	310	0	
	% Surplus / Shortfall	2.7%	0.0%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
UTTARAKHAND	Availability	1228	2110	06-Feb-23
	Requirement	1240	2190	
	Surplus / Shortfall	-12	-80	
	% Surplus / Shortfall	-0.9%	-3.7%	
NORTHERN REGION	Availability	37771	68500	
	Requirement	36104	62700	
	Surplus / Shortfall	1667	5800	
	% Surplus / Shortfall	4.6%	9.3%	

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	Nov-2022
Haryana	Apr-2018	Dec-2022
Himachal Pradesh	Apr-2018	Dec-2022
Punjab	Apr-2018	Dec-2022
Rajasthan	Apr-2018	Jan-2023
Uttar Pradesh	Apr-2018	Jan-2023
Uttarakhand	Apr-2018	Nov-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 (204th OCC), AEE(SS) apprised the forum that a meeting was held on 11th January 2023 with Himachal Pradesh and Delhi, regarding implementation of islanding schemes in these states.

7.2. In the meeting held on 11.01.2023, setting received from generators involved in Kullu-Manali islanding scheme was deliberated and it was found that their under frequency protection setting can be set below 47.9 Hz.

7.3. However, with regard to Shimla-Solan islanding scheme some HEPs were requested to intimate there under frequency protection setting within one week.

7.4. Representative from HP apprised the forum that they had consulted with the concerned OEM Department and the latter had informed that the generator is designed for +-3% and it will be difficult to take frequency setting below the design limits.He also asked NRPC Secretariat to plan a meeting in the coming months to further deliberate on this issue.

7.5. No comments were received from Delhi Representative regarding the cited subject.

7.6. AEE(P), NRPC enquired about the status of Pathankot-RSD IS as implementation date was 31.12.2022. Punjab informed that RSD IS is expected to be commissioned by 25.02.2023.

7.7. Further, UP was also enquired about status of study by CPRI in Agra islanding scheme. UPSLDC informed that interim report has been submitted by CPRI, however issues were observed in few cases which is communicated to CPRI. He stated that final report is expected at the earliest.

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 10thFebruary 2023).

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

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
GH TPS (LEH.MOH.)	920	64.10	26	2.6
KOTA TPS	1240	69.49	26	3.2
SURATGARH TPS	1500	51.70	26	2.3
CHHABRA-I PH-1 TPP	500	78.82	26	0.9
KALISINDH TPS	1200	80.57	26	2.3
SURATGARH STPS	1320	0.00	26	1.4

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
CHHABRA-I PH-2 TPP	500	68.97	26	2.2
CHHABRA-II TPP	1320	57.28	26	1.4

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

9. Draft guidelines on manpower adequacy for SLDCs (Agenda by NRPC Sectt.)

9.1. NRPC representative apprised forum that cited agenda was deliberated in 61st NRPC meeting wherein GM division, CEA informed that a meeting was taken by Secretary(Power) with CEA and Grid Controller of India to discuss draft guidelines on manpower adequacy for SLDC's.

9.2. In the meeting, NRPC representative apprised forum about the discussions held on the cited matter in the 61st NRPC meeting. (Copy of MoM of meeting is attached as Annexure-A.IV of agenda) wherein It was decided that this agenda may also be discussed in OCC meeting.

9.3. During discussion, it emerged that system operators at NRLDC get performance linked incentives. Henceforth, MS NRPC stated that as work of SLDC's are similar to NRLDC, a mechanism may be devised that system operators at SLDC's also have performance based incentive as it will surely boost their morale.

9.4. OCC forum opined that lecture series of eminent speakers in power sector may be created by NRLDC and shared with all the SLDC's for updation and enhancement of their knowledge skill set.

9.5. MS, NRPC opined that a mechanism be devised that once an employee at SLDC are certified for deployment as system operator then retention for three years shall be mandatory for that official.

9.6. MS, NRPC asked all the concerned SLDC's of States/UT's of Norther Region that they may send their views on the draft guidelines to NRPC Sectt.. by 28th February 2023, so that consolidated views can be communicated to GM division, CEA for further deliberation in NPC forum as the matter pertains to all RPC's. Further, if no inputs are received from SLDC's by 28th February 2023, then their input shall be treated as NIL on the cited matter.

10. Expeditious revival of thermal (coal) units by Mar-23 (i.e. 31.03.2023) and ensure maximum capacity on bar during anticipated crunch period (from 01st April to 15th May-23) (Agenda by NRPC Sectt.)

10.1. NRPC representative highlighted that Grid Controller of India vide letter dated 10.02.2023 (copy of letter enclosed as **Annexure-A.II**) has

highlighted that in view of high forecasted demand and likely resource adequacy issues in the upcoming summer months (especially from 01st April'23 to 15th May'23), MoP has directed to defer all planned outages from 01st April'23 to 15th May'23 to ensure maximum thermal units remain on bar during the above mentioned high demand period.

10.2. Grid Controller of India vide the aforesaid letter has also requested all RPC's to kindly advise all the utilities of their region to make all efforts in regarding the following:

- Expeditious revival of all thermal (coal) units which are under planned outage so as to be available by March end.
- Ensure adequate fuel stocks at all plants so as to maintain required generation levels during the high demand period.
- All the states to maintain the appropriate reserves on bar at all times to accommodate to any unforeseen demand variation and/or variability in RE generation/contingency.
- Review of the shutdown of other elements (bus, ICT/transmission line/HVDC etc.) to avoid any transmission bottleneck.
- All defense mechanisms viz; UFR, df/dt, ADMS etc. should be ensured to be in service and healthy.

10.3. Further, NRPC representative apprised forum that vide the aforesaid letter Grid Controller of India has enclosed the daily outage report (as on 00:00 hrs. of 08th February 2023) highlighting units which are under outage for more than 30 days and units which are under outage for less than 30 days.

10.4. In this regard, MS NRPC asked all the generating utilities of NR for strict compliance of MoP directions to ensure that all thermal units remain on bar during the anticipated crunch period (from 01st April to 15th May-23).

11. Guidelines/ Procedure for Certification of Open Cycle Operation of Combined Cycle Gas Based Generating Stations (Agenda by NRPC Sectt.)

11.1. Agenda withdrawn by NRPC Sectt.

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

12. NR Grid Highlights for December 2022

NRLDC representative presented major grid highlights of Jan 2023:

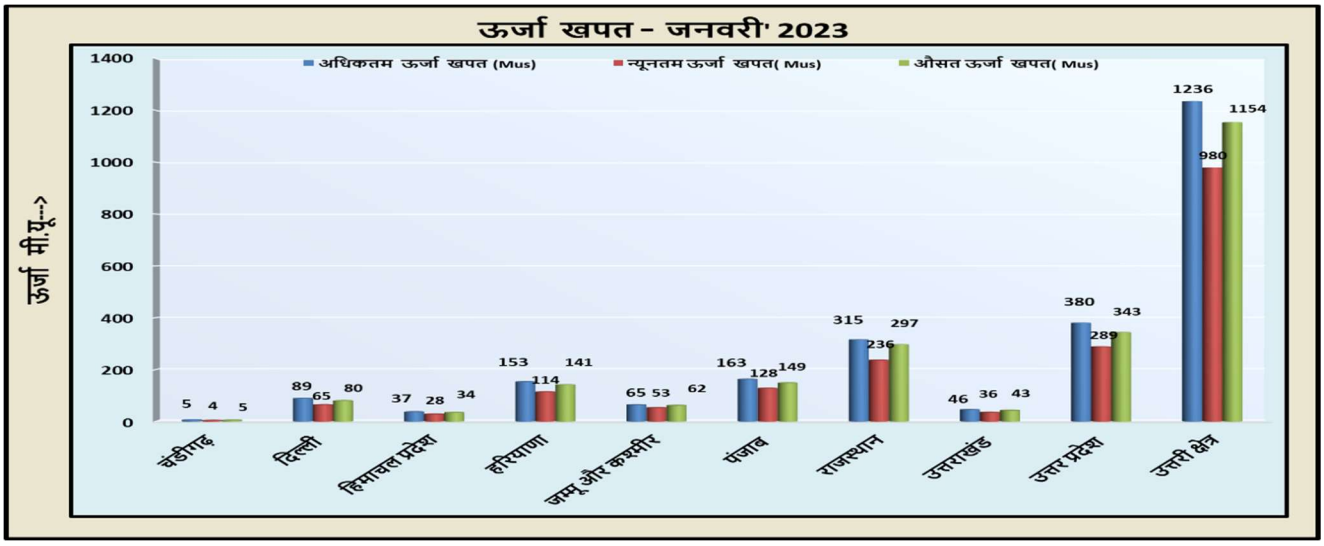
- Maximum energy consumption of Northern Region was **1236 Mus** on 11th January'23 and it was 14.8 % higher than January' 2022 (1077 Mus 19th January'22)

- Average energy consumption per day of Northern Region was **1154 Mus** and it was 14.6 % higher than January'22 (1007 Mus per day)
- Maximum Demand met of Northern Region was **63236MW** on 11th January'23 @13:00 hours (*based on data submitted by Constituents)* as compared to 56213 MW on 28th January'22 @11:00 hours.

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

States	Max. Demand Met during the day (MW)		As per SCADA instantaneous data	Energy Consumption (MU)	
	As per hourly data Submitted by States (MW)/Format28	As on date		As per PSP (Mus)	As on date
Rajasthan	17206	18-01-2023	17097	-	-
		14:30 hrs	23-01-23		
J&K(UT) and Ladakh (UT	3019	18-01-2023	3019	65.39	20.01.23
		21:00 hrs	18-01-2023		
Himachal Pradesh	2071	06-01-2023	2071		
		09:45 hrs	06-01-2023		

Energy Consumption:



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

State/ U/T	**January - 2022**	**January - 2023**	**% Diff**
Chandigarh	4.0	4.6	13.8
Delhi	72.5	80.0	10.4
HP	34.2	34.5	0.8
Haryana	118.3	141.5	19.6
Jammu & Kashmir	55.9	61.9	10.7
Punjab	120.2	148.8	23.8
Rajasthan	248.5	296.7	19.4
Uttarakhand	41.8	42.7	2.1
Uttar Pradesh	311.9	343.4	10.1
Northern Region	**1007.3**	**1154.1**	**14.6**

Frequency Data

Month	**Avg. Freq. (Hz)**	**Max. Freq. (Hz)**	**Min. Freq. (Hz)**	**<49.90 (% time)**	**49.90 – 50.05 (% time)**	**>50.05 (% time)**
Jan'23	50.00	50.49	49.42	13.30	58.70	28.00
Jan'22	50.00	50.28	49.65	5.84	75.66	18.50

NRLDC representative informed that due to various amendments in DSM regulations, there was change in behavior of drawl by utilities and frequency profile was very poor i.e. frequency was within band only for small percentage of time. It was also informed that emergency shutdown as percentage of total shutdown have increased from Dec'22 to 33%.

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

13. Grid Operation related issues

a) Central Electricity Authority (Flexible Operation of Coal based Thermal Power Generating Units) Regulations, 2023

NRLDC representative stated that on 25.01.2023, Central Electricity Authority has recently notified regulations on Flexible operation of coal fired generating units. It is available @*https://cea.nic.in/wp-content/uploads/notification/2023/01/Gazette_Flexible_operation-4.pdf*

Extract from notified regulations are mentioned below:

Applicability- *These regulations shall apply to all coal based thermal power generating units owned or under control of the Central Government, State Governments or owned by any private company, connected with the grid and to the load despatch centers*

General requirements. - *(1) The coal based thermal power generating units shall be designed or suitably retrofitted, if required, to comply with these regulations for full range of ambient and environmental conditions prevailing at the site.*

(2) All equipment and systems installed shall comply with the provisions of statutes, regulations and safety codes, as applicable.

Flexible operation of coal based thermal power generating units- *(1) The coal based thermal power generating units shall be capable of providing the flexible operation as per these regulations.*

(2) The implementation of flexible operation of the coal based thermal power generating units shall be as per the phasing plan specified by the Authority from time to time.

(3) All load despatch centers shall schedule the coal based thermal power generating units, under their jurisdiction, considering the flexible operation capabilities as specified in these regulations.

Minimum power level capabilities of coal based thermal power generating units for flexible operation- *The coal based thermal power generating units shall have flexible operation capability with minimum power level of forty percent.*

Provided that the generating units which are not capable of achieving minimum power level of fifty-five percent, shall achieve the same within one year of the notification of these regulations.

Provided further that the generating units which are not capable of achieving minimum power level of forty percent, shall achieve the same as per phasing plan mentioned in the sub-regulation (2) of regulation 5 of these regulations.

Ramp rates capabilities of coal based thermal power generating units for flexible operation- *(1) The coal based thermal power generating units shall have*

ramp rate capability of minimum three percent per minute for their operation between seventy percent to hundred percent of maximum continuous power rating and shall have ramp rate capability of minimum two percent per minute for their operation between fifty-five percent to seventy percent of maximum continuous power rating.

Provided that the generating units which are not capable to comply with this regulation, shall comply with the same within one year of the notification of these regulations.

(2) The coal based thermal power generating units shall achieve ramp rate capability of minimum one percent per minute for their operation between forty percent to fifty-five percent of maximum continuous power rating as per phasing plan mentioned in the sub-regulation (2) of regulation 5 of these regulations.

***Relaxation of regulations**. - The Authority may, by an order and for the reasons to be recorded in writing, relax any provision of these regulations in respect of the matter referred to the Authority, on case to case basis.*

MS NRPC stated that these new regulations would help in integrating more and more renewable generation in the grid and advised all utilities to take actions as per the new regulations.

Several representatives in OCC forum raised queries on implementation timeline of this flexible operation. It was mentioned in OCC forum that the implementation of flexible operation of the coal based thermal power generating units shall be as per the phasing plan specified by the Authority from time to time.

RVUNL representative stated that they had earlier presented a case for carrying out modifications in their generating stations for reducing technical minimum of thermal stations to 55% which was not approved by SERC. OCC forum opined that since the flexible operation guidelines issued by CEA are applicable to both interstate as well as intrastate thermal generators, it was mentioned that RVUN may once again approach their state regulator.

All utilities were requested to carry out actions at their end to provide flexible operation of thermal plants as mandated by the regulations in timeline specified.

CERC vide their order dated 06.02.2023 has amended DSM regulations. Details available @https://cercind.gov.in/2023/orders/1-SM-2023.pdf. *Detailed presentation as delivered by NRLDC representative on the above amendment*

is attached as Annexure-B.II. OCC forum appreciated the presentation delivered by NRLDC team.

b) Non-availability of Tehri and Koteshwar generation due to proposed river dredging work of Tehri Pump Storage Plant

THDC representative informed regarding non-availability of Tehri and Koteshwar generation from 15th Feb to 15th June 2023 due to proposed river dredging work of Tehri Pump Storage Plant (Communication from Tehri is attached as Annexure B.II of agenda).

The generation pattern of Tehri HEP vis-à-vis frequency for the period Feb-2022 to June-2022 is attached at Annexure B.II of agenda. From the generation pattern of Tehri HEP, it is observed that:

(1) During the month of Feb-2022, max. generation was 820MW during the period 09:00Hrs to 16:30Hrs. Also, Frequency was within band for 75.2 percent of the time (sample day-27th Feb-2022).

(2) During the month of March-2022, max. generation was 200MW during the period 09:00Hrs to 16:30Hrs. Also, Frequency was within band for 52.5 percent of the time (sample day-25th March-2022). Moreover, low frequency operation was observed in March-2022 with abnormal high temperatures reaching 40°C reaching in March itself, which was highest recorded temperature in last 122 years in the country.

(3) During the month of April-2022, max. generation was 500MW during the period 09:00Hrs to 16:30Hrs. Also, Frequency was within band for 50.8 percent of the time (sample day-21st April-2022). Again, low frequency operation was observed in April month also. Delhi witnessed temperature of 45°C, which was also the highest for past 72 years.

(4) During the month of May-2022, max. generation was 400MW during the period 09:00Hrs to 16:30Hrs. Also, Frequency was within band for 68.3 percent of the time (sample day-25th May-2022). Moreover, there was continuous generation (round the clock) at Tehri HEP from 18th to 22nd May and 25th to 27th May (Max. Gen. 400 MW and Min. Gen. 120 MW).

(5) During the month of June-2022, max. generation was 375MW during the period 09:00Hrs to 16:30Hrs. Also, Frequency was within band for 54.7 percent of the time (sample day-13th June-2022). Moreover, there was

continuous generation (round the clock) at Tehri from 11th to 13th June (Max. Gen. 375 MW and Min. Gen. 250 MW).

From the above data, it is observed that generating units at Tehri HEP were running for extended hours due to high demand period in summer season, as well as due to low head at Tehri.

NRLDC representative stated that due high RE integration, variability in the grid has increased. So, availability of hydro generating units could be required during contingency. From the profile of Tehri generation vis-à-vis frequency for the period Feb-2022 to June-2022 (for sample days, attached at Annexure B.II of agenda), it can be seen that non-availability of Tehri generation could have adverse impact on frequency profile particularly during the months of March and April.

Further, as per Office Memorandum, MoP dtd. 25.11.2022 enclosing Minutes of the meeting taken by Secretary (Power), as per point no. 4 it was requested to minimise outages in the month of April'23 and other peak demand months.(also discussed in 203 OCC meeting)

THDC representative informed that the works would only be carried out during non-peak hours such as day time or night time. Moreover, in case of requirement of generation at these stations, same may be informed 2-3 hours before actual generation requirement so that men working downstream could be intimated providing them sufficient time for clearing the downstream area.

No concern was raised by beneficiaries of THDC.

MS NRPC stated that taking every point into perspective, it would be feasible to allow the works to be carried out till March 2023. As no planned shutdowns are being allowed in the month of Apr-May 2023, the decision on THDC for April-May 2023 would be taken based on assessing the situation during next month OCC or a separate meeting may be called for above matter. However, since THDC generation would be available during peak hours in Feb-Mar 2023, the works may be carried out by THDC in Feb-Mar 2023.

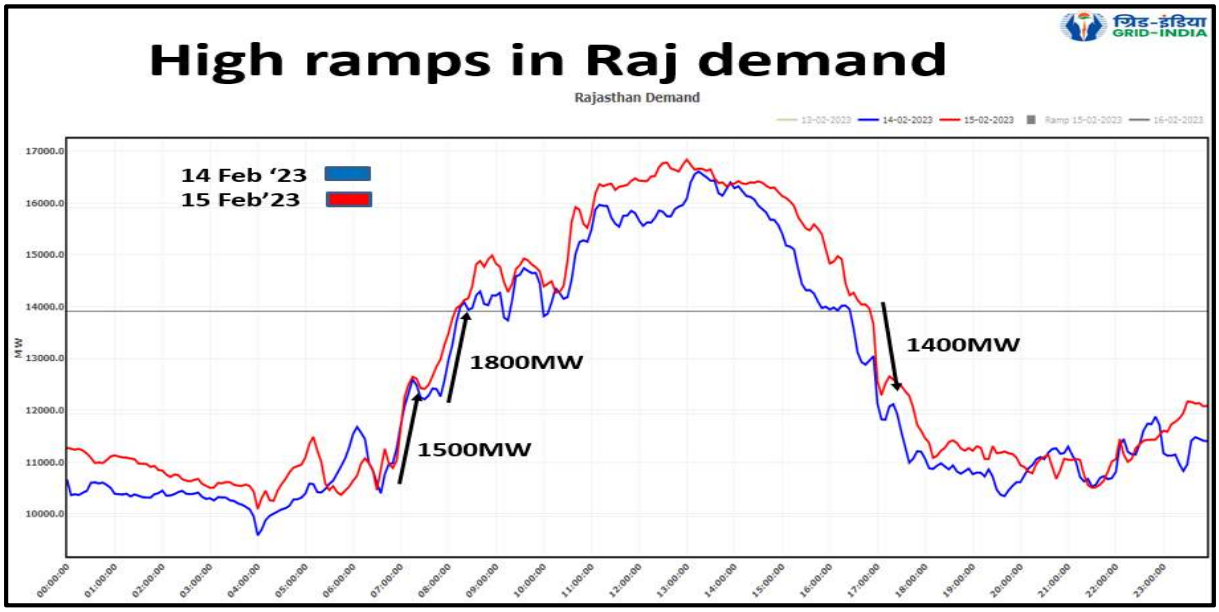
c) Issues related to Rajasthan state control area

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.



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.

d) Low CUF and large deviations by ISTS connected RE generators

As per clause (1)(r) of Regulation 2 of the Central Electricity Regulatory Commission regulation (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015 as quoted below:

Quote:

“(ii) After sub-clause (q) under clause (1) of Regulation 2, new sub-clause (r) shall be added as under:- (r) 'Available Capacity (AvC)' for wind or solar generators which are regional entities is the cumulative capacity rating of the wind turbines or solar inverters that are capable of generating power in a given time-block.”

Un Quote.

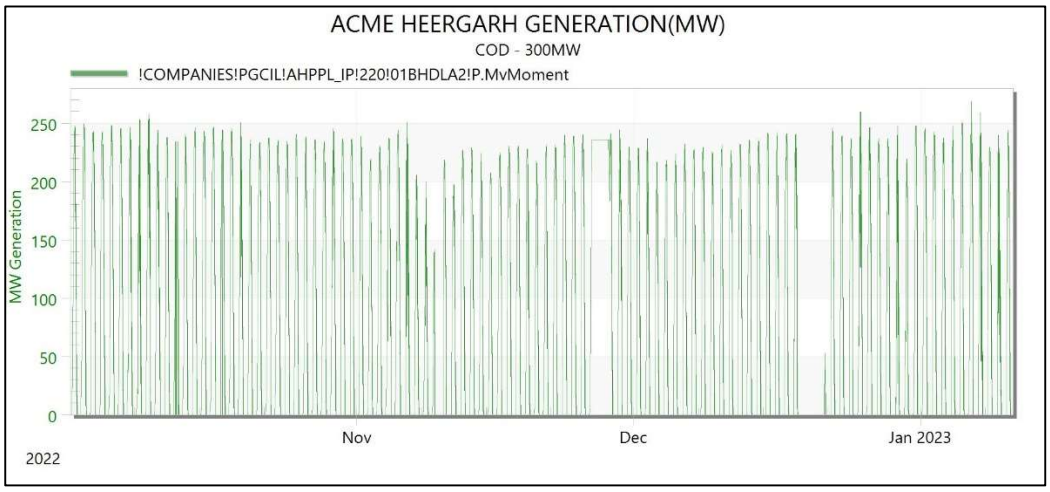
The Plant (ACME Heergarh) has already declared full COD for 300MW on 25.05.2022. Similarly, Azure Mapple also has declared full COD for 257MW on 31.03.2022.

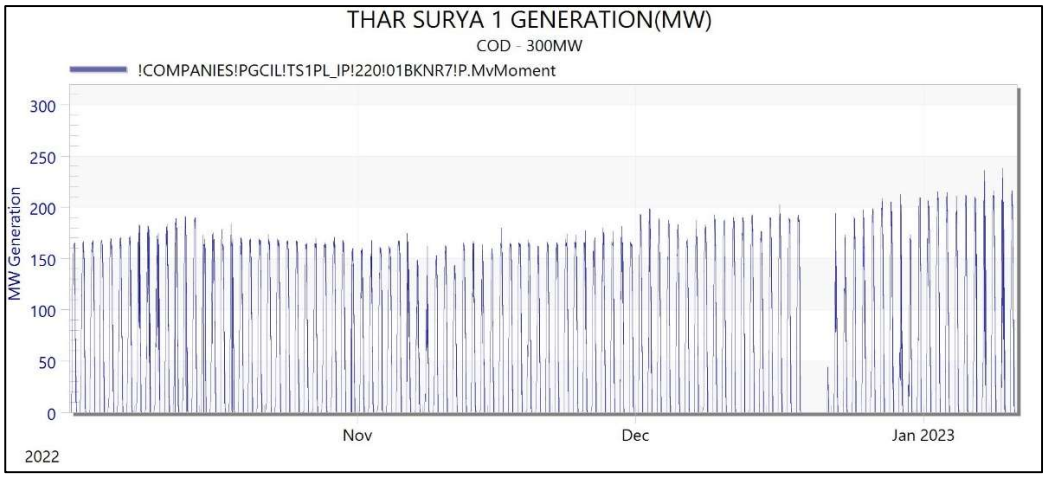
Since last few month it has been observed that max generation of ACME Heergarh plant is ~250MW and plant is not able to schedule/generate up to full COD for 300MW. Low CUF are observed in ACME Heergarh/AzureMapple and these plants are not generating up to Declared capacity/Available Capacity value on continuous basis. Communication regarding this have been sent by NRLDC but response is yet to be received.

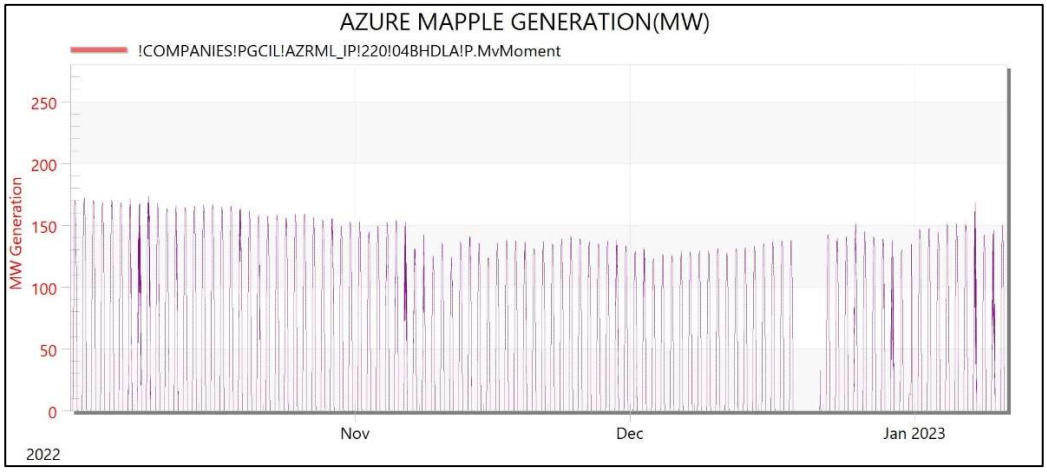
Recently same issue is observed in TharSuyra1.

Trend Graph for these plants is shown below for reference.

Plant Name	CoD quantum (MW)	Actual generation (MW)
ACME Heergarh	300	230-250
TharSuyra1	300	170-200
AzureMapple	257	140-170







In the meeting, it was discussed that ACME Heergarh vide their letter dated 20.01.2023 has submitted their response. Response is attached as Annexure-B.III of agenda. Reply from other solar developers such as Azure Mapple and Thar Surya1 is still awaited. It is to be noted that AvC quantum is considered for DSM charge calculation.

OCC forum noted the same.

e) Long outage of transmission elements

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

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.

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

NHPC representative informed that 400kV Bus 2 at Parbati_2 is likely to be revived by Feb'2023 and 400kV Bus 2 at Parbati_3 by March'2023.

UP SLDC representative informed that 400kV Bus1 at Vishnuprayag may be revived in Jun'2023 and 765kV AnparaD-Unnao line is expected to be revived by 10th March 2023.

Members were asked to take actions to expedite restoration of the Grid elements at the earliest and also provide an update regarding their expected restoration date/time.

14. Summer Preparedness 2023

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

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

operation, following are few points which have been discussed on many occasions in previous OCC and TCC/ NRPC meetings and are required to be followed by all:

<table>
<tr><th>S. No.</th><th>Issues</th><th>Action plan</th><th>Action by</th></tr>
<tr><td>1</td><td>Maintenance of reserves

During summer, in anticipation of increasing demand, adequate reserves shall be maintained.
During summer, sudden outage of hydro units on silt or other major generation outage affects frequency/voltage, line loading, reliability and security of the corridor/control area/Generation complex etc.

In events of sudden load crash, ISGS generators are being instructed to back down to 55% of their installed capacity. However, amongst states only UP state controlled generators are seen to be backing down upto 55%, which ensures that sufficient reserves are available to cater any variation in demand.

<table><tr><th>Month</th><th>Frequency in band (% time)</th></tr><tr><td>Apr’22</td><td>50.8</td></tr><tr><td>May’22</td><td>68.3</td></tr><tr><td>Jun’22</td><td>54.7</td></tr></table>
Very poor frequency profile was observed in last year during summer months.</td><td>In such cases, apart from portfolio management based on proper forecast as discussed above, re-starting of units under reserve shutdown at state as well as Inter-state level through appropriate transactions is required.

Moreover, display window showing reserve available in ISGS generators has been developed at NRLDC. SLDCs were also requested to arrange for such display window at their control centers so that system operators readily know quantum of reserve available and hence better real-time actions can be taken.

Other states were also requested to take actions to ensure backing down of thermal generation as per latest regulations issued by CEA regarding thermal plants flexible operation.</td><td>NRLDC, SLDCs, Generators</td></tr>
<tr><td>2</td><td>Furnishing of coal stock position

Advance information of coal stock of thermal plants ensures generating units</td><td>It has been observed in past years that sudden information of outage of thermal units on coal unavailability poses challenges</td><td>Generators, SLDCs</td></tr>
</table>

	availability and it is very important during high demand season.	to meet high demand. ***Utilities were asked 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.***	
3	**Portfolio Management, load staggering** As discussed in previous OCC meetings states such as UP, Rajasthan and Haryana continue to connect/ disconnect large quantum of load at hourly boundaries resulting in frequency spikes and instantaneous over voltages. This has also resulted in tripping of lines on overvoltage in recent past. In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states were requested to maximize their internal generation to avoid low frequency/low voltage operation or other related issues.	Apart from LTA/MTOA/STOA/Market arrangements based on forecast, other short term arrangements should also be planned for real time imbalances. For example, ensuring adequate margin while scheduling own thermal generation, units on bar, maintenance of reserves, technical minimum operation of thermal units in case of load crash, tie up with neighbor states or hydro rich states and utilization of real-time market etc. to bridge the load-generation gap in real time.	SLDCs
4	**Tower Strengthening and availability of ERS** There have been number of instances of tower collapse & damage in the past during thunder storms which resulted in constraints in supply power for extended duration of time. Number of tower collapse incidents	All utilities were requested to ensure availability of Emergency Restoration System (ERS) for early restoration of supply. Each utility shall work on plan for tower repairing work before April. Extra precautions need to be taken care for important lines which have history of tripping	STUs and POWERGRID

	occurred during last summer also in May/Jun 2021 & 2022 in which many EHV lines including 765kV lines were out on tower collapse.	during thunderstorm/ windstorm. ***Latest status regarding availability of ERS was requested from all transmission utilities.***	
5	**Reactive power management** Over the years during summer months, it has been observed that voltage profile during summer has improved. However, it is always essential to remain alert and take all necessary precautions to avoid any issues arising due to low voltages during summer months.	To maintain the voltage profile of Grid within IEGC band during summer, following known actions were suggested during the meeting: i. Switching ON Capacitor/Switching OFF reactor as per system requirement ii. Tap Optimization at 400/220kV by NRLDC and 220/132kV by respective state control area based on scatter plots of ICTs, offline studies, NRPC RE account etc. iii. Dynamic reactive support from Generator as per their capability curve. iv. SCADA Displays for better visualization during real-time	NRLDC, SLDCs
6	**Defense Mechanism** Several defense mechanism schemes have been recommended by various committees and advantages of such defense schemes have been discussed	Till date it has been observed that performance of SPS is considerably low. Accurate operation of SPS is very essential and hence, mapping of SPS in SCADA is also being done.	Transmission utilities

	in many fora too. Majority of defense mechanism are to cover protection for under voltage, under frequency, rate of change of frequency, SPS for line/ICTs loading/generator complex evacuation etc. It is pertinent to mention here that SPS is only for operational defense and should not be considered as long term solution.	In addition, all states/user need to provide update for changes or modifications carried out if any. ***In the meeting, it was suggested that all state control area/Users shall ensure before start of summer that their protection and defense system are in working conditions and settings are as per the recommendations of NRPC. It was also suggested to carry out mock testing exercise of important SPS in Northern region including under state control area.***	(STU/ISTS) and SLDCs
7	**Telemetry** It has been observed number of times, that telemetry of large nos of stations is affected during contingency, inclement weather, or in day to day switching operations etc. Large number of telemetry issues are also encountered with newly commissioned elements.	***All utilities were requested to ensure the telemetry of all analog & digital points of all stations at respective control centers.***	J&K/ POWERGRID to share the current status of data telemetry of J&K. Other SLDCs STUs

Following provisions of the Central Electricity Regulatory Commission (Ancillary Services) Regulations, 2022 shall come into force from 01.04.2023: -

i. Provisions pertaining to TRAS under Regulation 6;

ii. Regulations 14 to 19;

iii. Provisions pertaining to TRAS in Regulations 20 to 22

iv. Regulations 26.

Due to unfavourable weather conditions during summer months, All India demand remains on the higher side. On several days, it is observed that frequency is below the band for most of the time. In order to maintain the Grid security all SLDCs were requested to take proactive steps as follows:

- Ensure that ADMS is in service and expedite its implementation if not commissioned.
- Ensure healthiness and availability of AUFLS and df/dt load shedding.

- Ensure revival of intra-state generators under economic shutdown/RSD
- Ensure portfolio balancing through STOA/RTM market segments
- Ensure no under injection by the generators from schedule
- In case of inadequate margins in intrastate generators measures for emergency load regulation measures may be taken in interest of grid security.
- Pursue generators to expedite revival of thermal units under forced outage wherever feasible.

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

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

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

SLDCs were requested to verify that

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

In the meeting, Haryana representative informed that there is some change in the radial feeder list attached in annexure of agenda. The updated information as shared by Haryana representative is attached as Annexure-B.III.

Utilities may also intimate in case no radial feeders are available to disconnect. In such a case, NRLDC along with constituent will study the grid connected feeders /ICTs for disconnection which has low impact in the NR Grid. For such states, it is requested to nominate one nodal officer from SLDC which shall coordinate with NRLDC and study about such feeders.

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

15. 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 March 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.

NRLDC representative stated that feedback regarding issues observed during Q1 and Q2 2022-23 was submitted by Grid-India to CTUIL and CEA. It was requested that all utilities go through the issues encountered in Q1 and Q2 2022-23 and take necessary actions to avoid such issues in 2023-24. Feedbacks submitted by Grid-India to CTUIL and CEA are available:

Q1 2022-23:

https://posoco.in/download/nldc-operational-feedback_july_2022/?wpdmdl=46648

Q2 2022-23:

https://posoco.in/download/nldc-operational-feedback_oct_2022/?wpdmdl=48526

STATE	PREENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
Haryana	TTC: 9100MW RM: 600MW ATC: 8500MW	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 they have not denied installation of new ICT as mentioned by HVPN representative in 203 OCC MoM. It was further informed that talks are underway between Indigrid and HVPN to resolve issues for commissioning of new ICT at***

STATE	PREENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
			Deepalpur.
		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 being explored by HVPN.
		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 is awaited.
Punjab	TTC: 9000MW RM: 500MW ATC: 8500MW	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.
		N-1 Contingency of 2*500+1*250+1*315 MVA ICT at Moga	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
		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.
		N-1 contingency of 400kV Rajpura (Th)-Rajpura D/C	Additional evacuation path from Rajpura TPS may be planned. Line length is small.
Rajasth	TTC:	N-1 Contingency	New 1*500MVA ICT under bidding/

STATE	PREENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
an	7600MW RM: 600MW ATC: 7000MW (Issues observed with load >14500MW)	of 2*315 MVA ICT at Chittorgarh	implementation at these S/s by RVPNL. Rajasthan STU has planned and implemented SPS at these locations. (except Bhilwara & Hindaun) 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	
		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 1-2 more winter seasons. Other measures required by RVPN.
		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	Commissioning of 765kV Jodhpur (Kankani) to be expedited. Additional transmission system requirement to be

STATE	PREENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
		gen.)	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. Action plan for next winter to be submitted.
Uttar Pradesh	TTC: 15100MW RM: 600MW ATC: 14500MW	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 (before summer 2023).***
		N-1 Contingency of 3*315+1*500 MVA ICT at Sarnath	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS implemented. Commissioning of 400/220kV Sahupuri S/S likely to provide relief
		N-1 Contingency of 2*315+1*240 MVA ICT at Obra	New ICT/ Capacity augmentation to be planned by UPPTCL. ***SPS under implementation by UPPTCL.***
		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 (before summer 2023).***
		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 to be planned by UPPTCL. 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:	N-1 contingency	After bus -split due to high fault level at

STATE	PREENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
	7100MW RM: 300MW ATC: 6800MW	of 2*315 MVA ICT at Bawana	Bawana, ICTs N-1 non-compliant. Additional ICT/ load shifting to other station to be planned.
		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. One ICT already shifted from 400/220kV Bamnauli to Mundka.
Himachal Pradesh	TTC: 1400MW RM: 100MW ATC: 1300MW (lean hydro)	N-1 Contingency of 3*315 MVA ICT at Nallagarh	New ICT/ Capacity augmentation to be proposed by HPPTCL/ PSTCL
Uttarakhand	TTC: 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 is planned in Feb 2023 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 (PG)	Additional connectivity/ conductor upgradation to be planned by PTCUL (400kV Landhora S/S under discussion). Under discussion with CTUIL and CEA.
J&K	TTC: 2200MW RM: 100MW ATC: 2100MW (lean hydro)	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. To be discussed in CMETS.
		High loading of 220kV lines from Wagoora(PG)	Additional connectivity to be planned and already approved schemes to be expedited by JKPTCL
		Low voltage	Large dependency on SVC at New

STATE	PREENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
		issues during winter season	Wanpoh for MVAR support. Capacitor installation at low voltage level to be expedited.

Loading of 400/220kV ICTs and important 220kV lines observed above or close to N-1 contingency limits in last month is also attached as Annexure-B.VI of agenda.

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.

In 202 & 203 OCC meeting, it was discussed that proposal for capacity augmentation was discussed in OCC/ NRPC meeting but could not be finalised. Therefore, till capacity is augmented at 400/220kV Amargarh, any N-1 contingency is likely to lead to tripping of both ICTs as they are loaded beyond their N-1 contingency limit and there would be load loss in valley area.

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. ***J&K officers have requested for online assistance from NRLDC officers. NRLDC would be providing online training to J&K officers on 20-21 Feb 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.

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.

16. MVAR support from generators

During winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings, it is seen that MVAR data telemetry is poor/ inaccurate from most of the generating stations. For some of the generators it is seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 30 days (11 Jan 2023 – 10 Feb 2023) is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity as per capability curve (on LV side)	MVAR performance (-) Absorption (+) Generation (HV side data)	Voltage absorption above (in KV)
1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-170 to 100	415
		2	490		-147 to 294	-160 to 110	410
2	Singrauli NTPC	1	200	UP	-60 to 120	-20 to 10	405
		2	200		-60 to 120	-20 to 10	405
		3	200		-60 to 120	-20 to 5	403
		4	200		-60 to 120	-	-
		5	200		-60 to 120	-50 to 10	404
		6	500		-150 to 300	-50 to 20	405

		7	500		-150 to 300	-60 to 15	404
3	Rihand NTPC	1	500	UP	-150 to 300	-40 to 35	403
		2	500		-150 to 300	-50 to 20	402
		3	500		-150 to 300	-100 to 0	398
		4	500		-150 to 300	-40 to 40	403
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-120 to 100	Not clear
		2	600		-180 to 360	-150 to 30	Not clear
5	Anpara C UP	1	600	UP	-180 to 360	-40 to 80	770
		2	600		-180 to 360	-40 to 80	770
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-220 to 0	410
		2	660		-198 to 396	-220 to 0	410
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-50 to 80	407
		2	660		-198 to 396	-60 to 60	406
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300	-70 to 110	418
		2	500		-150 to 300	-100 to 120	417
		3	500		-150 to 300	-	-
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-220 to 0	405
		2	700		-210 to	-220 to 0	405

					420		
10	MGTPS	1	660	Haryana	-198 to 396	-150 to 50	412
		2	660		-198 to 396	-150 to 100	412
11	Bawana	1	216	Delhi-NCR	-65 to 130	-70 to 20	412
		2	216		-65 to 130	-	-
		3	216		-65 to 130	-	-
		4	216		-65 to 130	-50 to 40	415
		5	253		-65 to 130	-50 to 50	418
		6	253		-65 to 130	-30 to 40	418
12	Bara PPGCL	1	660	UP	-198 to 396	-60 to 80	765, 780
		2	660		-198 to 396	-70 to 70	765, 775
		3	660		-198 to 396	-60 to 60	765, 770
13	Lalitpur TPS	1	660	UP	-198 to 396	-50 to 80	765
		2	660		-198 to 396	-60 to 40	765
		3	660		-198 to 396	-80 to 90	760
14	Anpara D UP	1	500	UP	-150 to 300	-70 to 30	760
		2	500		-150 to 300	-50 to 50	765
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-50 to 20	405
		2	250		-75 to 150	-50 to 20	405
		3	250		-75 to 150	-	-
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-70 to 100	408
		6	660		-198 to 396	-60 to 100	408

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

Some of the generating units such as Dadri, Bawana, IGSTPP Jhajjar and Bara need to explore possibility of further MVAR absorption. Generators may also set their Vsch (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement. Plots for concerned units are attached as Annexure-B.VII of agenda. Actions from above generators was also requested in 203 OCC meeting.

In 204 OCC meeting,

NTPC representative agreed to check the matter with Dadri generating station. NRLDC representative stated that from the plot it seems that Voltage set point is being changed by Dadri.

Bara representative also assured to take actions to improve their reactive power performance. UP SLDC was also asked to monitor reactive power performance of Bara TPS and advise them accordingly.

IGSTPP Jhajjar representative stated that there is requirement of tap change of Generator transformer. Tap change of generator transformer was carried out for one unit when it was under planned shutdown. Similarly, the exercise would be carried out for other units when they would be taken under planned maintenance.

17. Frequent forced outages of transmission elements in the month of January'23:

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

S. No.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Kotputli(PG)-Bansur(RS) (RS) Ckt-1	3	Rajasthan
2	400 KV Agra-Unnao (UP) Ckt-1	3	UP
3	400 KV Aligarh-Sikandrabad (UP) Ckt-1	4	UP
4	400 KV Amargarh(NRSS XXIX)-Samba(PG) (NRSS XXIX) Ckt-2	3	INDIGRID/J&K
5	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	4	UP

6	400 KV Bareilly-Unnao (UP) Ckt-1	7	UP
7	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	3	Rajasthan
8	765 KV Anta-Phagi (RS) Ckt-2	3	Rajasthan

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

Discussion during the meeting:

- **220 KV Kotputli(PG)-Bansur(RS) (RS) Ckt-1:** *Rajasthan representative informed that A/R operation is functional at Bansur end however, there is issue in its operation. Rajasthan representative said that issue w.r.t. A/R operation has been taken up and will be resolved at the earliest.*

- ***400 KV Agra-Unnao (UP) Ckt-1:****UP representative informed that two (no.) of tripping occurred due to fault and one tripping occurred due to LBB operation at Unnao end. NRLDC representative raised concern on mechanical heathenness of CB and other components, replacement work of old CBs at S/s need to be started. UP representative informed that old CBs are being replaced, pending work will be expedited.*

- ***400 KV Aligarh-Sikandrabad (UP) Ckt-1****: UP representative informed that frequent failure occurred due to insulation issue, most of the porcelain insulators has been replaced with polymer insulators. NRLDC representative raised concern on A/R non-operation. UP representative said that issue w.r.t. A/R operation will be taken up and resolved at the earliest.*

- ***400 KV Amargarh(NRSS XXIX)-Samba(PG) (NRSS XXIX) Ckt-2*****:** *INDIGRID representative informed that A/R is operational in line and line tripped on multiple faults in line during snow fall and inclement weather condition.*

- ***400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1:****UP representative informed that two (no.) of tripping occurred on permanent fault and two (no.) of tripping occurred on line to line fault, A/R is operational in line. He further informed that old CBs are being replaced, pending work will be expedited.*

- **400 KV Bareilly-Unnao (UP) Ckt-1:** *UP representative informed that A/R is operational at both the ends, frequent tripping occurs due to design issue. NRLDC representative informed that in two (no.) cases, line successfully autoreclosed on single phase to earth fault and tripped after few seconds of*

A/R operation without any fault in system, he asked the reason for the same. Further, in view of poor reporting status from Bareilly (UP) end, he asked the status of DR extraction and storage facility at Bareilly(UP) S/s end. UP representative informed that issue w.r.t. DR extraction has been resolved however, issue related to storage facility still persists. He further informed that DT was sent from Bareilly end line reactor after successful A/R operation in line, same has been kept disabled.

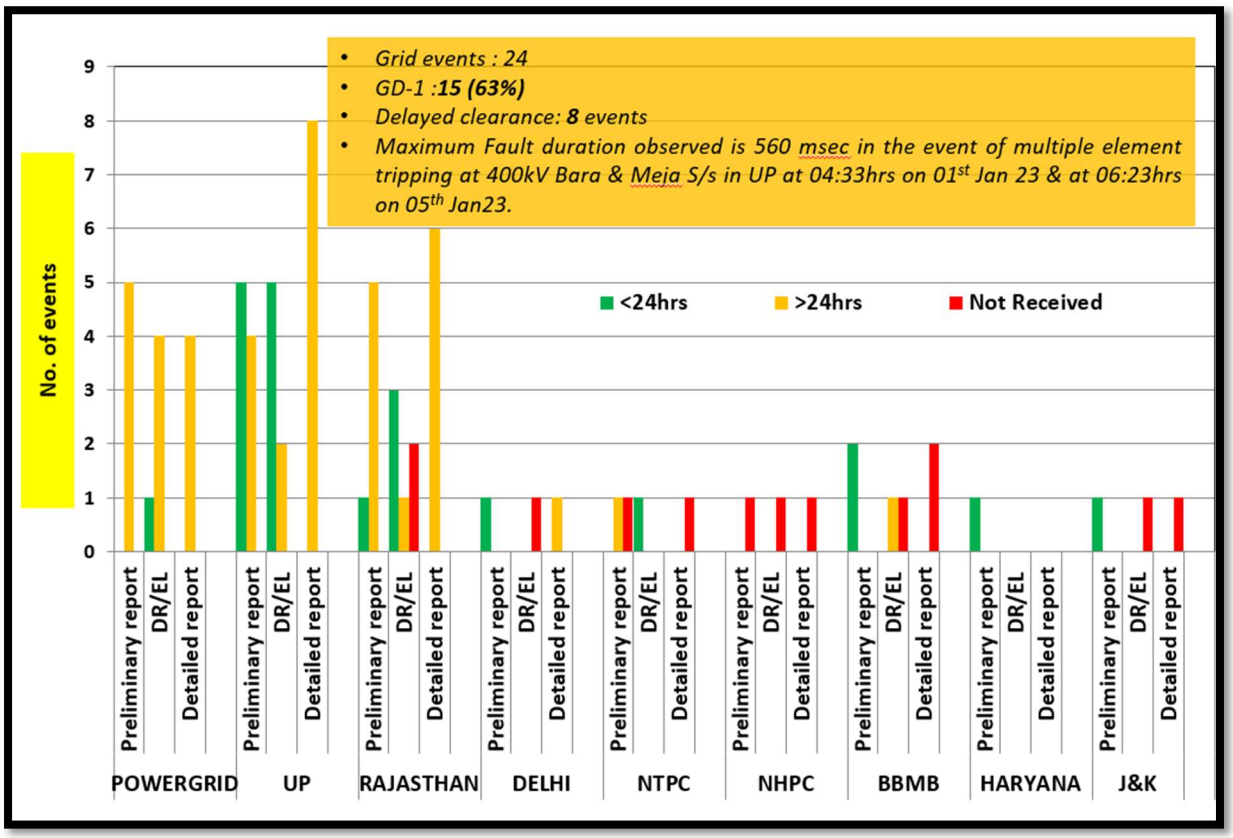
- **400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2:** *Rajasthan representative informed that A/R at Suratgarh end was kept not functional due to faulty relay, purchase order of the same has been placed, present status will be share shortly.*

- **765 KV Anta-Phagi (RS) Ckt-2:** *NRLDC representative raised concern on A/R non-operation in 765kV line. Rajasthan representative informed that A/R in enabled in line, issue w.r.t. its operation will be checked and corrected.*

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

18. Multiple element tripping events in Northern region in the month of January ’23:



A total of 24 grid events occurred in the month of January'23 of which **15** are of GD-1 category, **07** are of GI-2 Category & 02 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.IX** 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 560 msec in the event of multiple element tripping at 400kV Bara & Meja S/s in UP at 04:33hrs on 01st Jan 23 & at 06:23hrs on 05th Jan23. During both the 400 KV Bara(UP)-Meja TPS(MUN) (UP) D/C tripped on single phase to earth fault.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 8events out of **24** grid events occurred in the month. The other events with delayed clearance of faults are as follows:

i. **Multiple elements tripping at 220kV Samaypur(BB) at 16:56hrs on 12th Jan23, fault clearance time of 520ms:**

BBMB representative informed that details are yet to be received, follow-up are being taken up and details will be shared as soon it received.

ii. Multiple elements tripping at 400kV Rajwest(RS) at 05:32hrs on 13th Jan23 and at 05:02hrs on 30th Jan23, fault clearance time of 200ms & 320ms during 13th Jan & 30th Jan tripping event respectively:

Rajasthan representative informed that A/R in operational in line, issue w.r.t. its operation will be checked and corrected.

iii. Multiple elements tripping at 132kV Sewa-2(NHPC) & 220/132kV Hiranagar(J&K) at 20:05hrs on 25th Jan23, fault clearance time of 280ms:

iv. Multiple elements tripping at 400kV Anpara(UP) at 17:04hrs on 28th Jan23, fault clearance time of 440ms:

UP representative informed that due to pole stuck, fault didn't clear in time and thus LBB operated. He further informed that CBs of most of the lines are old, they are being replaced and pending work will be expedited.

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

As per the discussion in last OCC, tripping report along with status of corrective actions are yet to be received from BBMB w.r.t. event at Dehar & Panipat in Dec22 and from Haryana & Delhi w.r.t. event at Jhajjar on 20th Dec22.

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.

On event of multiple element tripping at 400kV Bara & Meja S/s in UP at 04:33hrs on 01st Jan 23 & at 06:23hrs on 05th Jan23, UP representative informed that issue with the protection setting and A/R operation at Bara end has been checked and corrected, cleaning of insulator disk has been done at fault prone locations. PLCC issue at Meja end is still unhealthy, same has been taken up and will be resolved at the earliest.

NRLDC representative raised concern about poor status of report updation by BBMB & J&K on the tripping portal. He further stated that timely report submission is an important activity and all constituents are advised to take this on priority and upload the reports.

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

19. Details of tripping of Inter-Regional lines from Northern Region for January' 23:

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Brief Reason (As reported)	Category as per CEA Grid standards	# 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	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	19-Jan-23	01:01	Phase to earth fault R-N	NA	NA	yes	yes	As per PMU & DR submitted, line tripped on R-N fault in zone-1 from Auraiya end. No AR attempt visible.
2	220 KV Auraiya(NT)-Mehgaon(MP) (MPSEB) Ckt-1	MPSEB	25-Jan-23	06:39	Line tripped from Auriya end only	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU & DR submitted, line tripped from Auraiya end only and no fault is visible.
3	400 KV Allahabad-Sasaram (PG) Ckt-1	POWERGRID	2-Jan-23	00:40	Phase to earth fault Y-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU & DR submitted, line tripped after unsuccessful A/R operation on permanent Y-N fault in zone -1 from Allahabad end.
4	400 KV Allahabad-Sasaram (PG) Ckt-1	POWERGRID	21-Jan-23	00:15	Phase to phase fault R-B	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU & DR submitted, line tripped after R-B phase-phase fault in zone -1 from Allahabad end.
5	400 KV Balia-Biharshariff (PG) Ckt-2	POWERGRID	2-Jan-23	01:18	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU & DR submitted, line tripped after unsuccessful A/R operation on permanent R-N fault which later converted to Y-N fault.
6	400 KV Gorakhpur(PG)-Muzaffarpur(PG) (POWERLINK) Ckt-1	POWERLINK	2-Jan-23	00:43	Phase to earth fault Y-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As reported, line tripped on R-N fault in zone-1 from Gorakhpur end with unsuccessful AR due to persistent fault.
7	400 KV Varanasi-Biharshariff (PG) Ckt-1	POWERGRID	2-Jan-23	00:46	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on R-N fault in zone-1 from Varanasi with unsuccessful AR.
8	400 KV Varanasi-Biharshariff (PG) Ckt-1	POWERGRID	7-Jan-23	04:21	tripped on Y-N fault at F.D 147.457Km and FC-2.932 KA	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on Y-N fault in zone-1 from Varanasi with unsuccessful AR.
9.	400 KV Varanasi-Biharshariff (PG) Ckt-1	POWERGRID	9-Jan-23	06:13	Phase to earth fault Y-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on Y-N fault in zone-1 from Varanasi with unsuccessful AR.
10.	400 KV Varanasi-Biharshariff (PG) Ckt-1	POWERGRID	10-Jan-23	01:56	Y-N fault, Dist. 148.515km, Fault current 3.017kA from Varanasi.	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on Y-N fault in zone-1 from Varanasi with unsuccessful AR.
11.	400 KV Varanasi-Biharshariff (PG) Ckt-2	POWERGRID	1-Jan-23	06:26	Phase to earth fault B-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on B-N fault in zone-1 from Varanasi with unsuccessful AR.
12.	400 KV Varanasi-Biharshariff (PG) Ckt-2	POWERGRID	1-Jan-23	23:25	Phase to earth fault B-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on B-N fault in zone-1 from Varanasi with unsuccessful AR.
13	400 KV Varanasi-Biharshariff (PG) Ckt-2	POWERGRID	10-Jan-23	00:24	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on R-N fault in zone-1 from Varanasi with unsuccessful AR.
14	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-1	POWERGRID	29-Jan-23	13:11	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on R-N fault with unsuccessful AR. DR time sync at Phagi end is faulty.
15	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-2	POWERGRID	14-Jan-23	17:01	At Phagi end, DT Send, At Gwalior- DT Receive	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on OV stage-1&2. DT sent to Gwalior from Phagi. Voltage=814 kV.
16	765 KV Phagi(RS)-Gwalior(PG) (PG) Ckt-2	POWERGRID	30-Jan-23	00:34	tripped during charging attempt of 765 kV Phagi-Gwalior-1	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	
17	765 KV Varanasi-Gaya (PG) Ckt-2	POWERGRID	11-Jan-23	04:31	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)	As per PMU and DR, Line tripped on R-N fault with successful AR at Varanasi end.

A total of 17 inter-regional lines tripping occurred in the month of January'23. The list is attached at **Annexure-B.X** 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.

With respect to tripping of 220kV Auraiya-Malanpur ckt and 220kV Auraiya-Mehgaon ckt, NTPC representative informed that there is issue related to PLCC at MPPTCL end and same has been already communicated to MPPTCL & WRLDC. As of now no feedback regarding action take has been received from MPPTCL end in this regard.

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

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

The status of receipt of DR/EL and tripping report of utilities for the month of January'2023 is attached at **Annexure-B.XI** 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 & Uttarakhand in January'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)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	ADANI	1	1	100	1	0	100	1	0	100	1	0	100	
2	AHEJ4L	3	2	67	2	1	100	2	1	100	2	1	100	DR/EL & Tripping report needs to be submitted
3	APFOL	1	1	100	1	0	100	1	0	100	1	0	100	
4	APMPL	1	1	100	1	0	100	1	0	100	1	0	100	
5	AREPRL	3	1	33	1	2	100	1	2	100	1	2	100	
6	ASEJOL	4	0	0	0	0	0	0	0	0	0	0	0	Details Received
7	AURAIYA-NT	2	0	0	0	0	0	0	0	0	0	0	0	
8	AVAADA RJHN	1	0	0	0	1	0	0	1	0	1	0	100	
9	BBMB	41	7	17	5	22	26	5	25	31	9	15	35	DR/EL & Tripping report needs to be submitted
10	CPCC1	97	56	58	55	2	58	67	3	71	62	1	65	
11	CPCC2	14	2	14	2	3	18	2	3	18	4	0	29	
12	CPCC3	37	0	0	0	2	0	0	2	0	10	0	27	
13	DADRI-NT	3	0	0	0	0	0	0	0	0	0	0	0	Details Received
14	EDEN (ERCPL)	1	0	0	0	0	0	0	0	0	0	0	0	
15	ESUCRL	2	2	100	2	0	100	2	0	100	2	0	100	DR/EL & Tripping report needs to be submitted
16	FARIDABAD-NT	1	1	100	0	0	0	0	0	0	0	0	0	Details Received
17	FBTL	4	0	0	0	0	0	0	0	0	0	0	0	
18	KISHENGANGA-NH	1	1	100	1	0	100	1	0	100	1	0	100	
19	NTPC_KOLAYAT SL	3	3	100	3	0	100	3	0	100	3	0	100	DR/EL & Tripping report needs to be submitted
20	NTPC_SL_DEVIKOT	1	1	100	1	0	100	1	0	100	1	0	100	
21	PKTSL	2	2	100	2	0	100	2	0	100	2	0	100	
22	RAPPA	15	0	0	14	0	93	13	0	87	11	0	73	
23	RAPPB	3	0	0	0	0	0	0	0	0	0	0	0	Details Received
24	RAPPC	1	0	0	0	0	0	0	0	0	0	0	0	
25	RENEW	2	2	100	2	0	100	2	0	100	2	0	100	
26	RENEW SUN BRIGHT (RSBPL)	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
27	SALAL-NH	1	1	100	1	0	100	1	0	100	1	0	100	
28	SAURYA	2	2	100	2	0	100	2	0	100	2	0	100	
29	SBSRPC-11	2	2	100	2	0	100	2	0	100	2	0	100	
30	SEWA-2-NH	2	2	100	2	0	100	2	0	100	2	0	100	
31	SINGRAULI-NT	1	1	100	0	0	0	0	0	0	0	0	0	Details Received
32	SLDC-DV	9	0	0	5	1	63	6	1	75	6	0	67	
33	SLDC-HP	8	0	0	7	1	100	7	1	100	4	1	57	DR/EL & Tripping report needs to be submitted
34	SLDC-HR	9	3	33	3	0	33	3	0	33	3	0	33	
35	SLDC-JK	6	0	0	6	0	100	6	0	0	6	0	100	
36	SLDC-PS	19	2	11	11	1	61	12	1	67	14	0	74	
37	SLDC-RS	172	0	0	65	0	38	62	0	36	98	0	57	
38	SLDC-UK	12	0	0	0	10	0	0	9	0	0	0	0	Details Received
39	SLDC-UP	139	18	13	20	24	17	20	31	19	24	7	18	
40	STERLITE	5	0	0	0	2	0	0	1	0	1	1	25	DR/EL & Tripping report needs to be submitted
41	TANAKPUR-NH	2	2	100	1	0	50	1	0	50	2	0	100	
42	TANDA-NT	3	1	33	2	0	67	2	0	67	2	0	67	
43	TATAPOWER	1	0	0	0	1	0	0	0	0	0	0	0	Details Received
44	THAR SURYA 1 PRIVATE LIMITED	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
45	TPGEL_SL	1	1	100	1	0	100	1	0	100	1	0	100	
46	UNCHAHAR-NT	4	0	0	0	0	0	0	1	0	0	0	0	Details Received
Total in NR Region		**644**	**120**	**19**	**223**	**73**	**39**	**233**	**82**	**41**	**284**	**28**	**46**	

NRLDC representative stated that status of POWERGRID (NR-1), Punjab, Delhi, HP, 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.

21. 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.XII** 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.

NRLDC representative informed that PSS tuning of 600MW Kalisindh TPS Unit-1&2 (Rajasthan) conducted on 03rd Feb2023, report of the same has been received.

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.

22. Frequency response characteristic:

Three FRC based event occurred in the month of **January-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	12-Jan-23	05:52hrs	On 12th Jan at 03:03hrs, 400kV Bara-Meja ckt-1 tripped on Y-N fault. Further at 03:48hrs 400kV Bara-Meja ckt-2 tripped on phase to earth fault, as per PMU, Y-N followed by R-N fault observed. With the tripping of 400kV Bara-Meja ckt-1&2 generation of all three 660MW Units at Bara TPS (carrying ~1250MW during antecedent condition) was evacuating from 765kV Bara-Mainpuri ckt-2. Further at 05:52hrs, 765kV Bara-Mainpuri ckt-2 tripped on R-N phase to earth fault. Due to loss of evacuation path, all three(03) running units at Bara TPS tripped and loss of ~1250MW generation occurred. Hence, generation loss of 1250MW has been considered for FRC calculation.	49.91	49.88	0.03
2	14-Jan-23	12:06hrs	On 14th Jan 2023, As reported At 12:06 hrs drop in RE generation of approx.1100MW observed in Rajasthan RE complex. As per PMU at 12:06hrs R-N phase to earth fault is observed and multiple elements tipping at 220kV Heerapura(Raj) observed from SCADA data.	50.04	50.00	0.04

			Accordingly 1100MW has been considered in FRC Calculation.			
3	14-Jan-23	13:03hrs	On 14th Jan 2023, As reported At 13:03 hrs Due to Multiple tripping at Rajasthan RE complex, generation loss of around 2340 MW resulted in Rajasthan RE generation loss complex of Northern Region and same has been considered in FRC Calculation.	50.13	50.02	0.11
4	14-Jan-23	14:55hrs	On 14th Jan 2023, As reported At 14:55 hrs Due to multiple tripping in solar park lead to tripping of evacuating lines at 765kV, 400kV , 220kV and resulted in generation loss of around 3210 MW resulted in Rajasthan RE generation loss complex of Northern Region and same figure has been considered in FRC Calculation.	50.01	49.83	0.18
5	14-Jan-23	15:18hrs	On 14th Jan 2023, As reported At 15:18 hrs Due to multiple tripping in solar park lead to tripping of evacuating lines at 765kV, 400kV , 220kV and resulted in generation loss of around 4780 MW resulted in Rajasthan RE generation loss complex of Northern Region and same figure has been considered in FRC Calculation.	50.04	49.70	0.34
6	17-Jan-	09:55hrs	On 17th Jan 2023, As reported at 09:56 hrs,	50.04	50.08	0.04

	23		Due to Auxiliary bus fault at Sterlite of Easterner Region led to tripping of all lines and resulted in 1900 MW load loss. After tripping all Generation of 1550 MW started exporting to Grid, subsequently due SPS action two generators tripped which lead to 752 MW generation loss. Accordingly for FRC Calculation figure of 1148 MW has been considered. For FRC calculation an offset value of 0.053 Hz has been considered in the settling frequency 50.03Hz based on approximate calculation and final settling frequency 50.08 Hz has been considered for calculation in the event.			

Status of Data received till date:

For 12th Jan23 event:

Data/update has been received from NTPC(Singrauli, Koldam, Dadri), TSPL, NHPC, Delhi, AD Hydro HEP, Rosa Reliance, & Koteshwar HEP.

For 14th Jan23 event:

Data/update has been received from NTPC(Singrauli, Koldam), TSPL, NHPC, UP, Delhi, Tehri HEP, AD Hydro HEP, CSCTPP Chhabra, Karcham HEP & Koteshwar HEP.

For 17th Jan23 event:

Data/update has been received from NTPC(Singrauli, Tanda, Koldam), TSPL, Kawai TPS, NHPC, UP, Delhi, Tehri HEP, AD Hydro HEP, CSCTPP Chhabra & Karcham HEP.

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.

23. 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 Sindh and Kishenganga	**31st Jan 2023**
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**
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	23rd Jan 2023
*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		Gamma Infra	2x76+1x73

22	Uttarakhand	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 they are following up with the ALDCs to conduct the mock black start exercise of Ramgarh GPS, Mahi Sagar HEP & Jawahar Sagar HEP. Regarding mock black start exercise of Anta GPS, Rajasthan stated that they will share their conformation of readiness at the earliest.

UP representative informed that Mock black start exercise of Obra & Rihand HEP has been conducted successfully on 07th Feb 2023, report of the same will be shared soon.

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.

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.

24. Revision of document for System Restoration Procedure (SRP) and System Protection Scheme for Northern Region:

System Restoration Procedure document of Northern Region and System Protection Scheme for Northern region have been revised and shared with all the constituents on 31st Dec 2022. Documents are available at NRLDC website with following link:

System Restoration Procedure:

https://nrldc.in/download/nr-system-restoration-document/?wpdmdl=11999

System Protection Scheme:

https://nrldc.in/download/nr-sps-2023/?wpdmdl=12006

Documents are password protected and password has already been shared with all the NR constituents through letter dated 31st Jan 2023.

All the NR constituent were requested to go through these document and provide the feedback, suggestion if any. All the state SLDCs were requested to prepare these documents for their own control area.

25. Drop/loss of RE generation and Non-compliance of LVRT/HVRT

In recent past, multiple events of loss of RE generation connected at ISTS pooling stations in RE generation complex in Rajasthan occurred due to non-compliance of LVRT/HVRT. Brief details of events occurred during recent past are as follows:

a) **On 14thJan 2023:**
   i) Reduction of approx. 2430MW RE generation at 13:03hrs, triggering incident was R-N (L-G) fault in 765kV Ajmer-Bhadla2 ckt-2.
   ii) Reduction of approx. 3210MW RE generation at 14:55hrs, triggering incident was R-Y (L-L) fault in 400kV Bassi-Heerapura ckt-2.
   iii) Reduction of approx. 4468MW RE generation at 15:18hrs, triggering incident was R-Y (L-L) fault in 400kV Phagi-Heerapura ckt-1.

b) **On 08th Feb 2023:**
   Reduction of approx. 1700MW RE generation at 12:25hrs during opening of 125MVAr Bus reactor at 400kV Fatehgarh1 Pooling S/s.

c) **On 09th Feb 2023:**
   Eight (no.) incidents of significant reduction in RE generation along with tripping of multiple 765kV ISTS lines at RE pooling stations occurred.
   Significant reduction in RE generation also occurred during these incidents i.e, ~4459MW at 11:45hrs, ~3678MW at 11:57hrs, ~2993MW at 12:03hrs, ~1444MW at 12:08hrs, ~1288MW at 12:12hrs, ~3379MW at 12:17hrs, ~2273MW at 12:23hrs and ~3055MW at 12:30hrs.

d) **On 10th Feb 2023:**
   iv) Reduction of approx. 3000MW RE generation at 11:31hrs, triggering incident was R-Y (L-L) fault 220kV fatehgarh2-Eden ckt.

LVRT/HVRT compliance status of RE stations connected at ISTS pooling stations in RE generation complex in Rajasthan based on analysis of 14th Jan 2023 event from PMU data is attached at **Annexure-B.XIII** of agenda.

NRLDC representative elaborated the brief of recently occurred grid events in RE generation complex in Rajasthan mainly during fault in system and during switching operations. Significant quantum of RE generation dropped during

these events. From the analysis of PMU data, it is observed that most of the RE stations are LVRT/HVRT non-compliant. Communications via NRLDC letters have already been done and are being done to ensure the proper operation of RE stations w.r.t. LVRT/HVRT compliance.

Additional Agenda:

1. **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 and UP.

Members were requested to share the details w.r.t. above subject at the earliest.

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>Nov-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>Jan-2023</td></tr><tr><td>◎</td><td>UP</td><td>Jan-2023</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Jan-2023</td></tr></table>All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
<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>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>Jun-2022</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Sep-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></td><td></td><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
<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>

			BBMB was requested to submit the updated self certification report indicating increase of 0.2 Hz in AUFR settings, within one week. J&K and LADAKH were requested to update status for increasing settings of UFRs.
4	Status of FGD installation vis-à-vis installation plan at identified TPS	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.	Status of the information submission (month) from states / utilities is as under: ◎ HARYANA — Sep-2022 ◎ PUNJAB — Feb-2023 ◎ RAJASTHAN — Feb-2023 ◎ UP — Sep-2022 ◎ 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.
5	Information about variable charges of all generating units in the Region	The variable charges detail for different generating units are available on the MERIT Order Portal.	All states/UTs are requested to submit daily data on MERIT Order Portal timely.
6	Status of Automatic Demand Management Sysytem in NR states/UT's	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:	Status: ◎ DELHI — Fully implemented ◎ HARYANA — Scheme not implemented ◎ HP — Scheme not implemented ◎ PUNJAB — Scheme not implemented ◎ RAJASTHAN — Under implementation. Likely completion schedule is 31.03.2023. ◎ UP — Scheme implemented by NPCIL only

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: First week of March'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	-	HVPNL to update the status.
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	Feb'23	Updated in 201st 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: 0 Unutilized: 6	• 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.HVPNL to update the status.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0 Approved:4	• 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	Updated in 197th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.
				• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 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	Mar'23	Updated in 198th 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.	Mar'23	Updated in 197th 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	May'23	Updated in 197th 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	Jun'23	Updated in 197th OCC by HVPNL
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status
				• 220kV D/C for Sector78, Faridabad	02.03.2023	Updated in 198th OCC by HVPNL
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Under Implementation (Mar'24). Updated in 198th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 2 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	-	HVPNL to update the status.
				• Sonepat - HSIISC Rai 220kV D/c line	Mar'23	Line work is complete howere substation work is under progress. Updated in 201st OCC by HVPNL
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	Mar'23	• Lucknow -Kanduni, 220 kV D/C line expected energization date Mar'23 updated by UPPTCL in 203rd OCC _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Mar'23	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date Mar'23 updated by UPPCL in 204th 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	Oct'22	Updated in 198th 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	Jun'23	Updated in 203rd OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Jun'23	Updated in 203rd OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Sept'23	Updated in 194th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Unutilized: 1 Approved in 50th NRPC- 1 no.	• 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.
				• 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	• Network to be planned for 2 bays.	Mar'24 and July'24	Updated in 198th OCC by HVPNL
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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	One bay 220 kV Manesar (PG)-Panchgaon ckt commissioned on 05.09.2022
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 first week of March'23 updated by UPPTCL in 204th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Mar'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 March 2023.Updated in 198th OCC by PSTCL.
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian 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 (10.02.2023)
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)

ग्रिड-इंडिया GRID-INDIA

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
राष्ट्रीय भार प्रेषण केन्द्र / National Load Despatch Centre

कार्यालय : बी-9, प्रथम एवं द्वितीय तल, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016
Office : 1st and 2nd Floor, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016
CIN : U40105DL2009GOI188682, Website : www.grid-india.in, E-mail : gridindiacc@grid-india.in, Tel.: 011- 40234672

Ref: NLDC/SO/2023-24/ 220

Date: 10/02/2023

उ.क्षे.वि.स. सं./No. 173 Date 14/02/2023 NRPC Dis

To,
Member secretary,
NRPC/WRPC/SRPC/ERPC/NERPC

Subject: Expeditious revival of thermal (coal) units by Mar-23 and ensure maximum capacity on bar during anticipated crunch period (from 01st April to 15th May-23)

Sir,

You may kindly be aware that the all India peak demand forecasted is 229GW with energy requirement to the tune of 144BU in April, 2023.

In view of high forecasted demand and likely resource adequacy issues in the upcoming summer months (especially from 01st April-23 to 15th May-23), various steps are being taken at the highest level for meeting all India demand without compromising security and reliability of the electricity grid at all time. Some of the important actions are as follows:

- To run gas-based plants and arrangement of necessary fuels during the crunch period in coordination with MoPNG.
- Revival of stressed plants out on account of various disputes such as NCLT, PPA disputes etc.
- Running of untied capacity of Imported Coal Based (ICB) plants as firm generations during the crunch period.

In addition to above, MoP has also directed to defer all planned outages from 1st April-23 to 15th May-23 to ensure maximum thermal units remain on bar during the above-mentioned high demand period.

Presently, around 9.35GW thermal capacity is under planned outage (list enclosed as Annex-I). It is seen from the cumulative planned outage capacity that the revival of some of the units are spilling over beyond 31.03.23 (as attached Annex-I) as per revival dates furnished by plants as on date.

EE(O) - on leave.
AEE(O)
SE
Pls take up in next OCC.
14/2

Accordingly, it is requested to kindly advise all the utilities of your region to make all efforts in regard to the following.

- Expeditious revival of all thermal (coal) based units which are under planned outage so as to be available by March 2023 end.
- Ensure adequate fuel stocks at all plants so as to maintain required generation levels during the high demand period.
- All the states to maintain the appropriate reserves on bar at all times to accommodate any unforeseen demand variation and/or variability in RE generation/contingency.
- Review of the shutdown of other elements (bus/ICT/transmission line/HVDC etc.) to avoid any transmission bottleneck.
- All defense mechanisms viz; UFR, df/dt, ADMS etc. should be ensured to be in service and healthy.

Matter being important and critical, the above may be taken up with the respective stakeholders.

Yours sincerely,

(S. C. Saxena)
Executive Director (NLDC)

Copy for kind information:

1) Chief Engineer (OM), MOP
2) Chief Engineer (GM), CEA
3) ED, ERLDC/NERLDC/NRLDC/SRLDC/WRLDC

Annexure-I

Daily unit outage report (As on 00:00hrs of 08 February 2023)

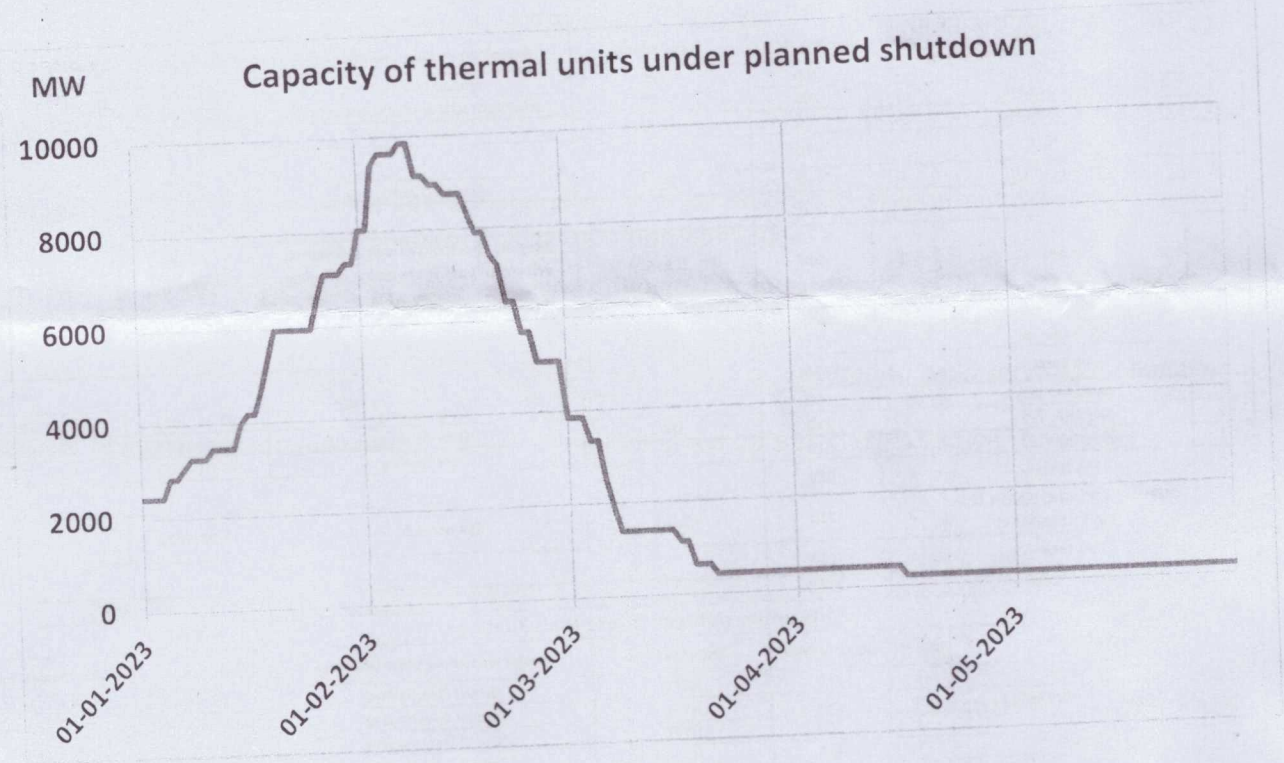
Units under Planned Outage as on 00:00hrs of 08 February 2023)

A. Units under outage for more than 30 days:

S.No	Plant Name	Unit No	Capacity (MW)	State/ Utility	Reason for availing planned outage	Outage date	Likely revival date
1	FSTPP	2	200	NTPC	Annual Overhauling	08-01-2023	08-02-2023
2	RAMAGUNDAM	2	200	NTPC	RENOVATION & MODERNISATION	26-10-2022	10-02-2023
3	SINGRAULI STPS	4	200	NTPC	Over hauling	05-01-2023	20-02-2023
Sub Total			600				
1	NEYVELI TS II	6	210	NLC	Annual Overhauling	19-12-2022	12-02-2023
Sub Total			210				
1	IL&FS	1	600	IL&FS	Integrity check of sea water make-up system and off shore piping including desilting work	01-01-2023	20-02-2023
Sub Total			600				
1	WANAKBORI	4	210	Gujarat	Annual Overhauling	14-08-2022	15-04-2023
Sub Total			210				
1	ANPARA TPS	4	500	UP	Over hauling	01-11-2022	07-03-2023
2	ANPARA TPS	3	210	UP	Over hauling	05-01-2023	05-03-2023
3	PARICHA TPS	4	210	UP	Over hauling	07-01-2023	15-02-2023
Sub Total			920				
1	GURU HARGOBIND SINGH TPS (LEHRA MOHABBAT)	2	210	Punjab	ESP breakdown	13-05-2022	01-01-2024
Sub Total			210				
Grand Total			2750				

B. Units under outage for less than 30 days:

S.No	Plant Name	Unit No	Capacity (MW)	State/ Utility	Reason for availing planned outage	Outage date	Likely revival date
1	KHSTPP	3	210	NTPC	Annual Overhauling	01-02-2023	20-03-2023
2	NABINAGAR(BRBCL)	2	250	NTPC	Annual Overhauling	04-02-2023	15-03-2023
3	SIPAT II	4	500	NTPC	Annual Over Hauling	01-02-2023	17-03-2023
4	VSTPS I	3	210	NTPC	Annual Over Hauling	11-01-2023	16-02-2023
Sub Total			1170				
1	MPL	1	525	MPL	Annual Overhauling	15-01-2023	28-02-2023
2	STERLITE	4	600	STERLITE	Annual Overhauling	20-01-2023	06-03-2023
3	JP NIGRIE	2	660	JP NIGRIE	Annual Overhauling	26-01-2023	22-02-2023
4	ISTPP (JHAJJAR)	2	500	APCPL	Annual Overhauling	27-01-2023	03-03-2023
Sub Total			2285				
1	TROMBAY	5	500	Maharashtra	Annual Overhauling	18-01-2023	18-02-2023
Sub Total			500				
1	WANAKBORI	2	210	Gujarat	Annual Overhauling	16-01-2023	16-02-2023
Sub Total			210				
1	HARDUAGANJ_EXT	1	660	UP	Overhauling	19-01-2023	05-03-2023
2	LALITPUR TPS	2	660	UP	Over hauling	03-02-2023	24-02-2023
Sub Total			1320				
1	RAJPURA(NPL) TPS	2	700	Punjab	Over hauling	03-02-2023	28-02-2023
2	GURU GOBIND SINGH TPS (ROPAR)	6	210	Punjab	Over hauling	07-02-2023	15-02-2023
Sub Total			910				
1	KOLAGHAT	5	210	West Bengal	Overhauling for Boiler License renewal	30-01-2023	19-02-2023
Sub Total			210				
Grand Total			6605				
All India Planned Outage (Total)			9355				

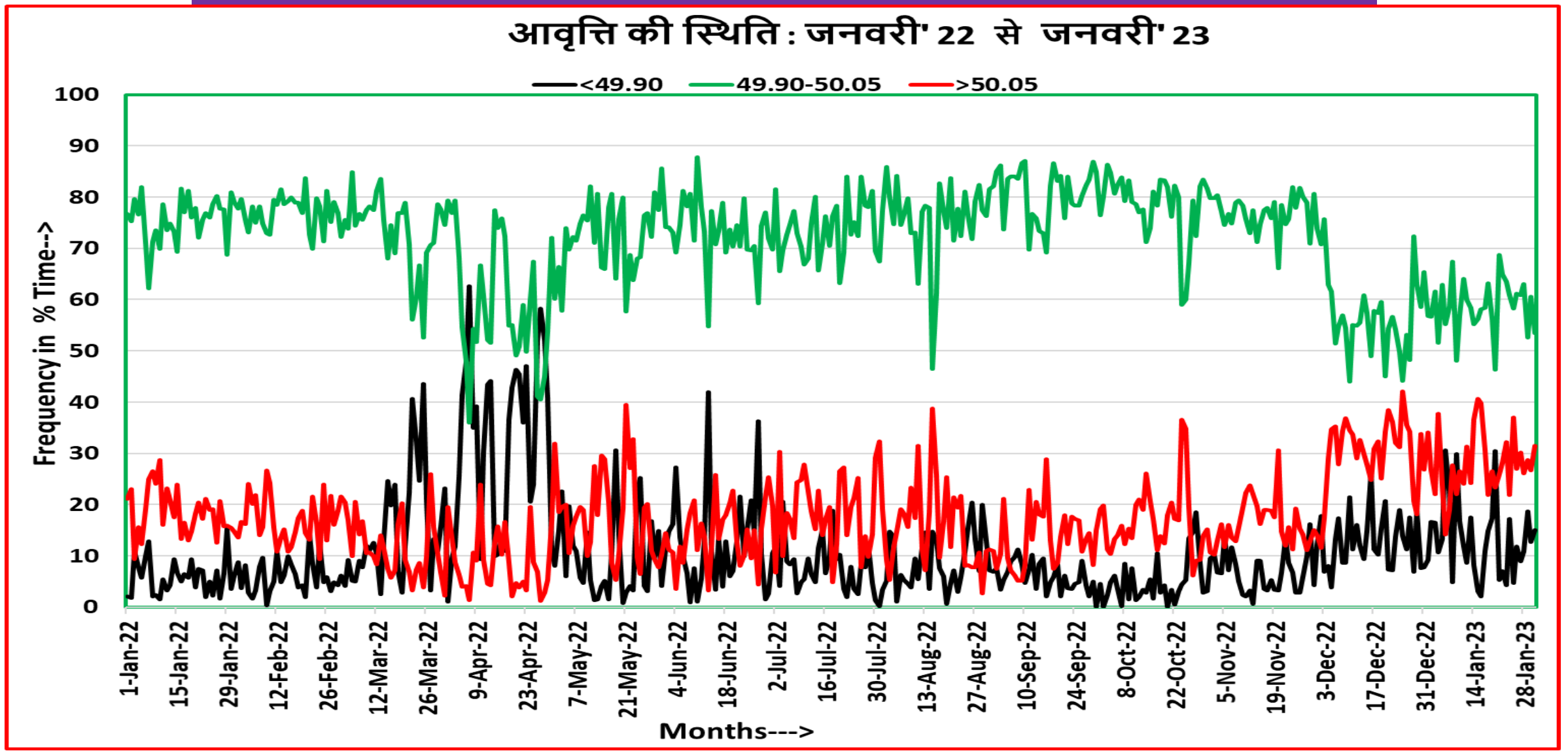

Capacity of thermal units under planned shutdown
MW
10000
8000
6000
4000
2000
0
01-01-2023
01-02-2023
01-03-2023
01-04-2023
01-05-2023

प्रचालन समन्वय उपसमिति की बैठक
जनवरी - 2023

पिछले एक साल मे आवृत्ति की स्थिति

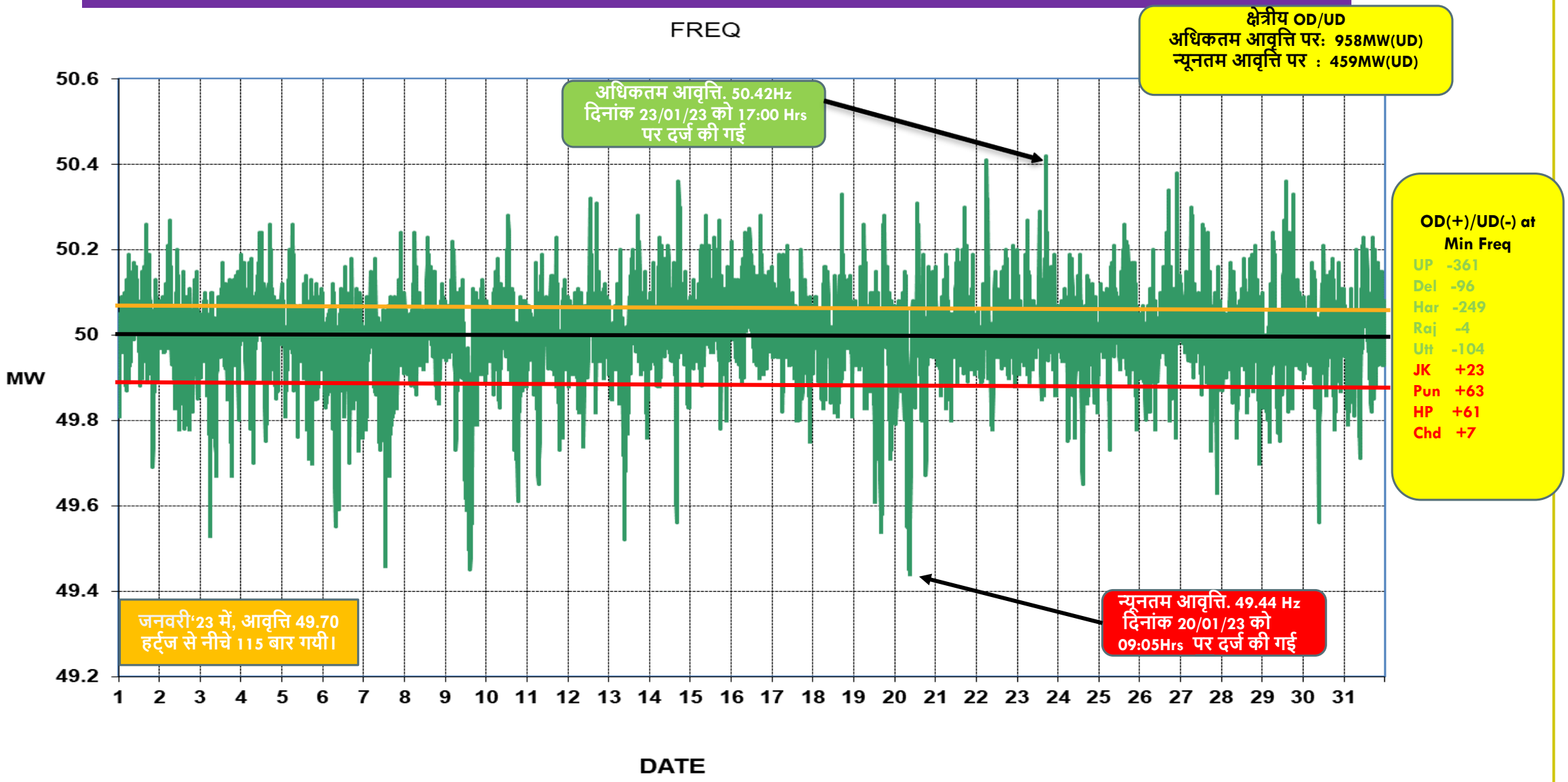
आवृत्ति बैंड	जनवरी 2022	फ़रवरी 2022	मार्च 2022	अप्रैल 2022	मई 2022	जून 2022	जुलाई 2022	अगस्त 2022	सितम्बर 2022	अक्टूबर 2022	नवम्बर 2022	दिसंबर 2022	जनवरी 2023
< 49.7 Hz(%)	0.02	0.08	0.46	4.94	0.27	0.42	0.42	0.49	0.17	0.04	0.13	1.11	1.25
<49.8 Hz(%)	0.53	0.55	2.92	13.60	1.94	2.41	1.78	2.02	0.91	0.46	0.76	3.96	3.60
<49.9 Hz(%)	5.84	5.99	14.50	31.98	9.83	12.45	7.82	8.77	5.94	4.88	6.70	12.78	13.30
49.90-50.05 Hz(%)	**75.66**	**77.06**	**73.42**	**59.30**	**72.23**	**73.38**	**73.45**	**75.77**	**80.77**	**78.27**	**77.00**	**57.39**	**58.70**
50.05-50.10 Hz(%)	15.17	14.36	10.28	7.35	12.95	11.46	14.84	11.99	11.55	14.04	13.88	11.99	15.26
>50.10 Hz(%)	3.21	2.51	1.72	1.35	4.11	2.43	3.58	3.00	1.65	2.63	2.30	13.77	10.54
>50.20 Hz(%)	0.11	0.08	0.08	0.08	0.88	0.28	0.31	0.47	0.08	0.18	0.12	4.07	1.83
औसत आवृत्ति	50.00	50.00	49.98	49.93	50.00	49.99	50.00	50.00	50.00	50.00	50.00	50.00	50.00

आवृत्ति की स्थिति: जनवरी -2022 से 2023



जनवरी -2023 के दौरान आवृत्ति की स्थिति

(As per 5 Minute SCADA data)



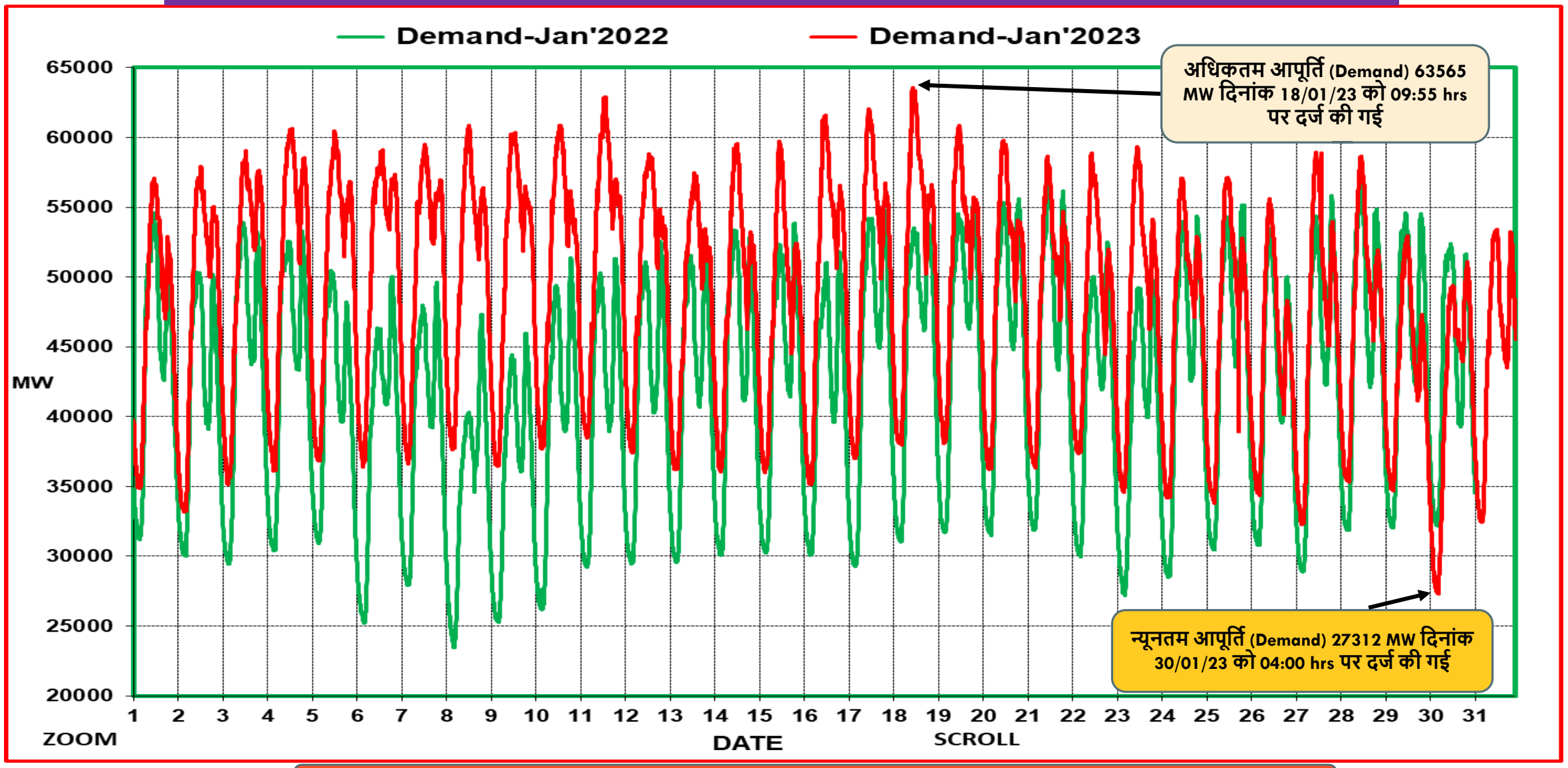
जनवरी-2023 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

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	9089	17.01.23 at 10:15	14295	22.08.22 को 14:45 बजे	163.0	17.01.23	334.45	29.06.22
हरियाणा	8259	11.01.23 at 12:15	12768	28.06.22 को 11:56 बजे	153.2	04.01.23	266.15	07.07.21
राजस्थान	17206	18.01.23 at 14:30	16612	27.12.22 को 10:30 बजे	315.5	08.01.23	328.86	09.09.22
दिल्ली	5526	06.01.23 at 10:58	7695	29.06.22 को 15:10 बजे	89.0	11.01.23	153.52	28.06.22
उत्तर प्रदेश	21342	04.01.23 at 19:24	26589	09.09.22 को 21:39 बजे	380.1	10.01.23	547.360	19.08.22
उत्तराखंड	2492	19.01.23 at 09:00	2594	14.06.22 को 21:00 बजे	45.6	19.01.23	54.27	15.06.22
हिमाचल प्रदेश	2071	06.01.23 at 09:45	2030	07.01.22 को 10:00 बजे	37.0	06.01.23	36.91	28.06.22
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	3019	18.01.23 at 21:00	2967	30.09.22 को 07:00 बजे	64.6	20.01.23	59.95	17.01.22
चंडीगढ़	323	06.01.23 at 09:00	426	08.07.21 को 15:00 बजे	5.4	11.01.23	8.41	08.07.21
उत्तरी क्षेत्र #	63565	18.01.23 at 09:55	77006	28.06.22 को 11:50 बजे	1165.2	11.01.23	1737.09	28.06.22

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

क्षेत्रीय विद्युत आपूर्ति (Demand) जनवरी 2021 बनाम जनवरी 2023 (As per 5 Minute SCADA data)

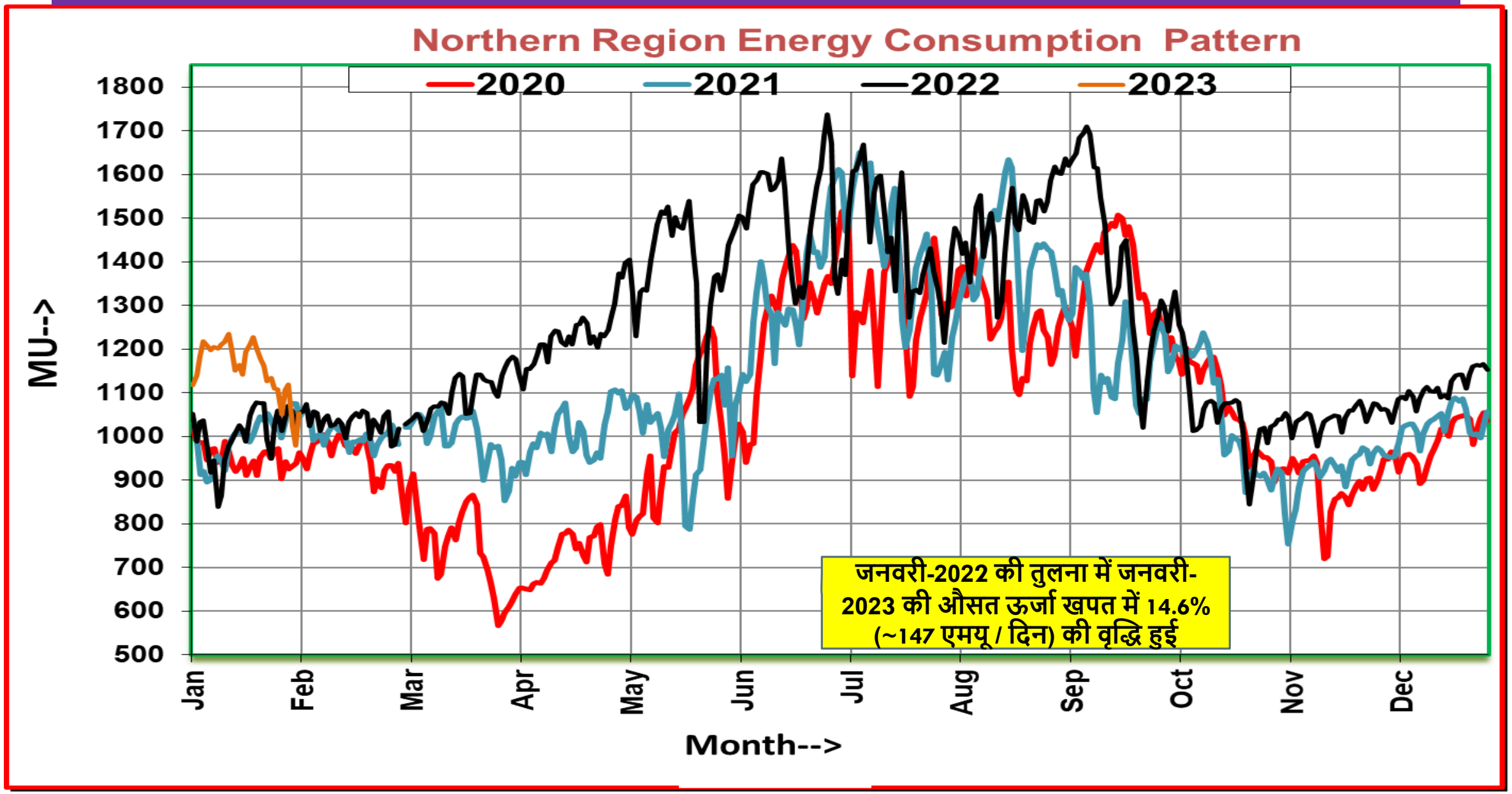


जनवरी -2022(42948MW) की तुलना में जनवरी -2023(46193MW) की औसत विद्युत आपूर्ति में 7.56% (~3245MW) की वृद्धि हुई

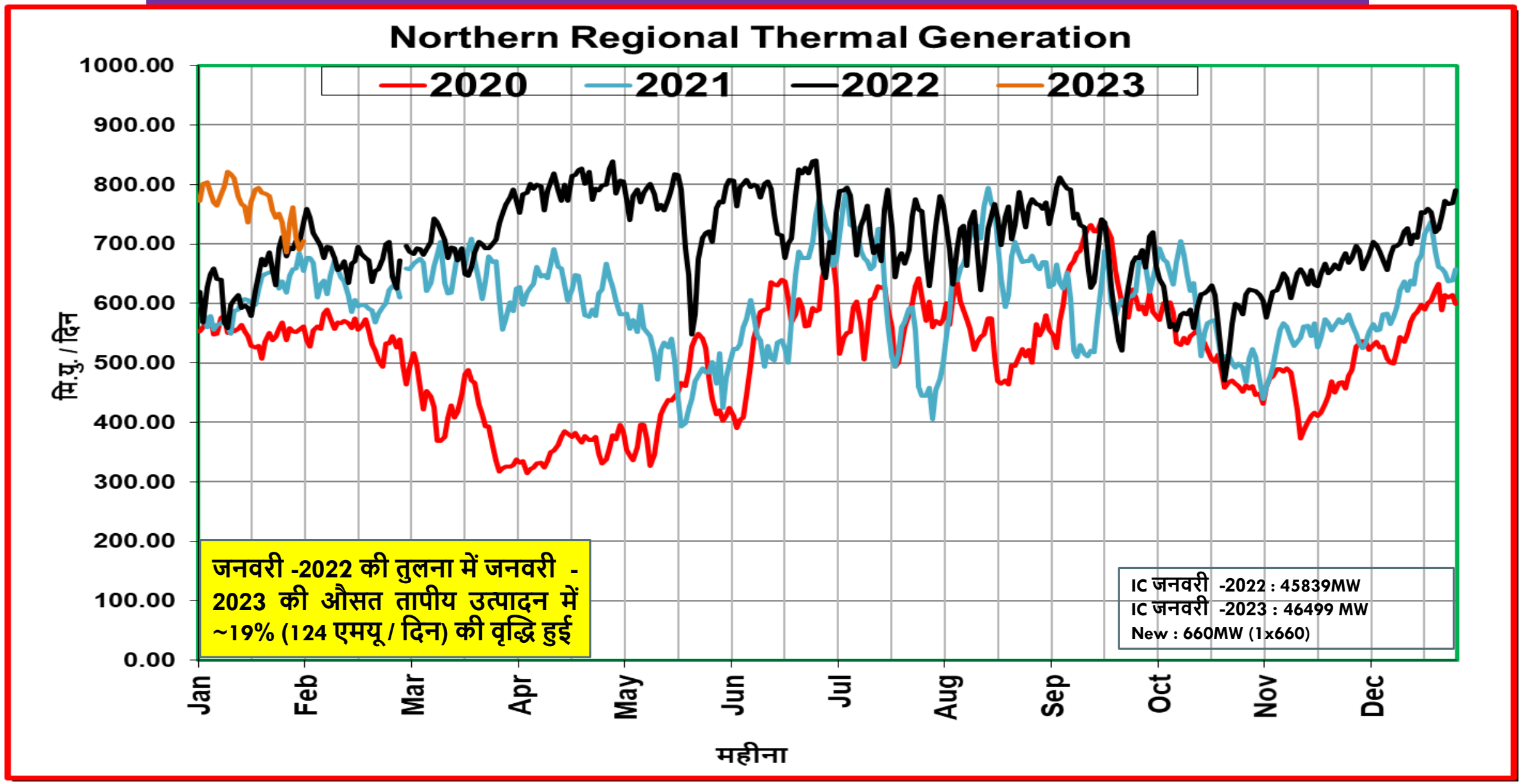
उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) जनवरी-2023/ जनवरी-2022 / जनवरी-2021

राज्य	जनवरी -2021	जनवरी -2022	जनवरी -2023	% वृद्धि (जनवरी -2022 vs जनवरी -2021)	% वृद्धि (जनवरी -2023 vs जनवरी -2022)
पंजाब	123.62	120.17	148.77	-2.79%	23.80%
हरियाणा	126.43	118.33	141.49	-6.41%	19.58%
राजस्थान	251.29	248.50	296.73	-1.11%	19.41%
दिल्ली	72.98	72.46	80.03	-0.71%	10.44%
उत्तर प्रदेश	296.98	311.94	343.41	5.04%	10.09%
उत्तराखंड	40.65	41.84	42.74	2.93%	2.14%
चंडीगढ़	4.00	4.04	4.60	1.07%	13.85%
हिमाचल प्रदेश	32.48	34.19	34.47	5.25%	0.81%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	51.30	55.87	61.86	8.90%	10.74%
उत्तरी क्षेत्र	999.73	1007.34	1154.09	0.76%	14.57%

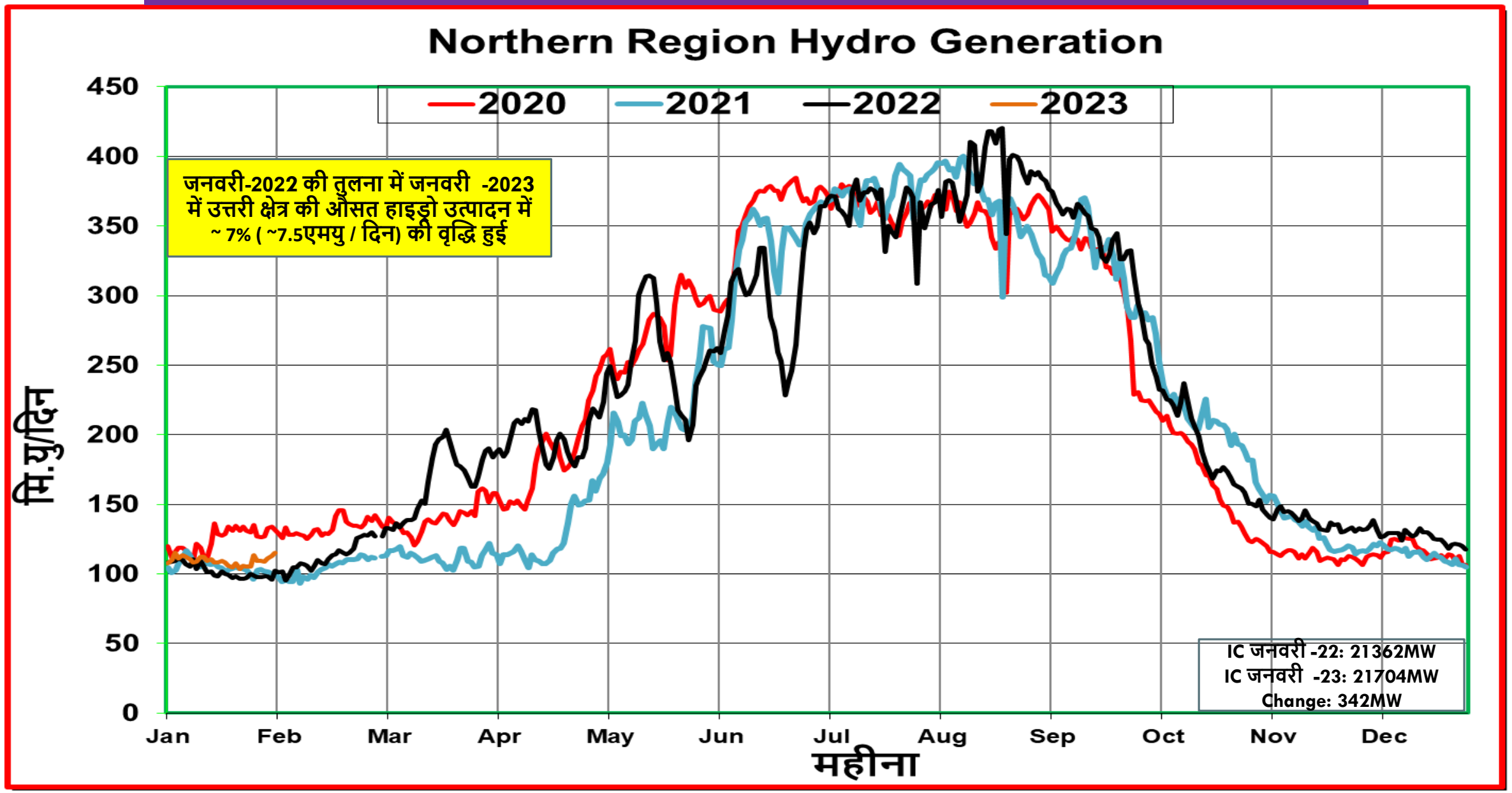
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



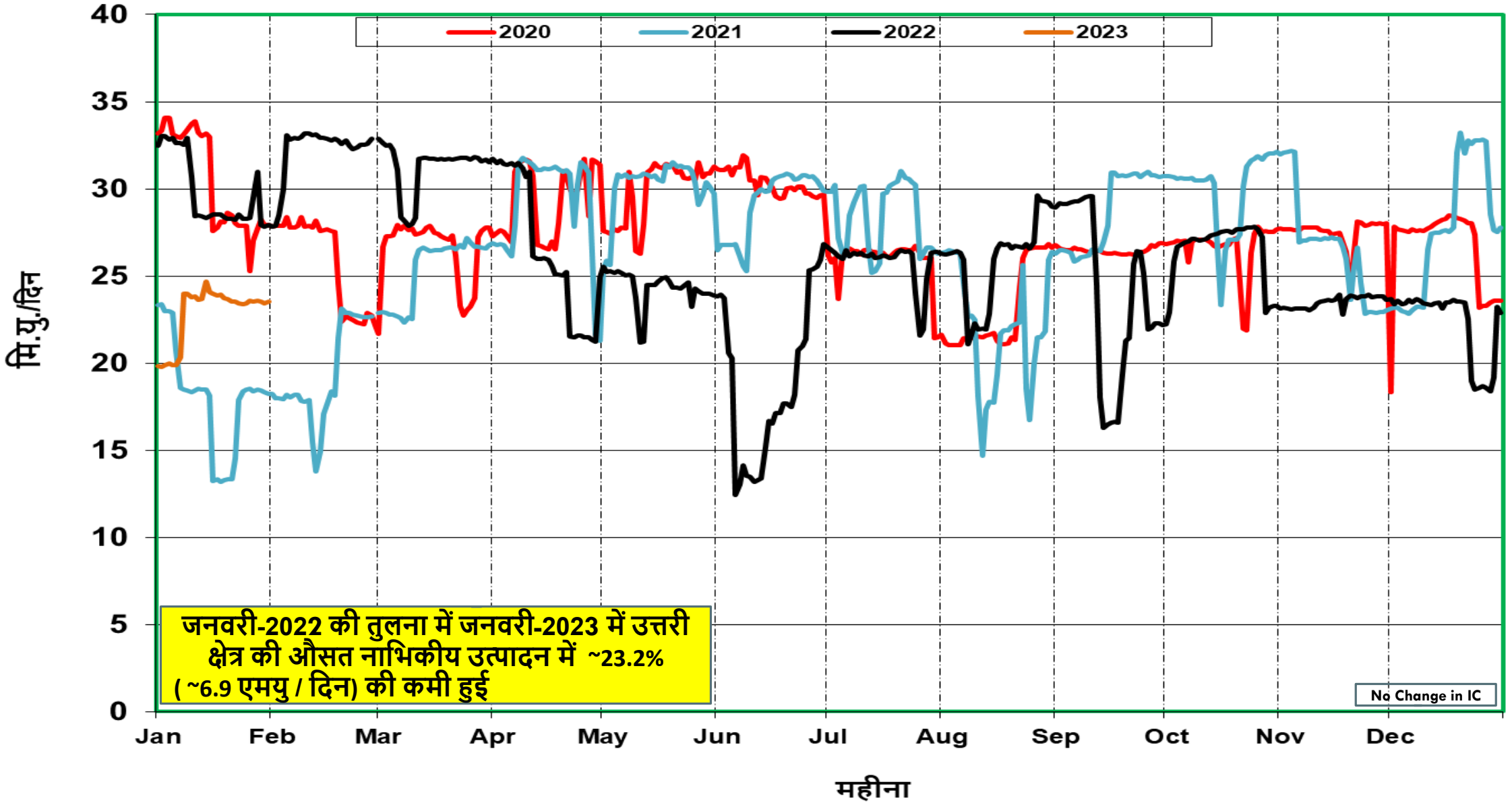
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



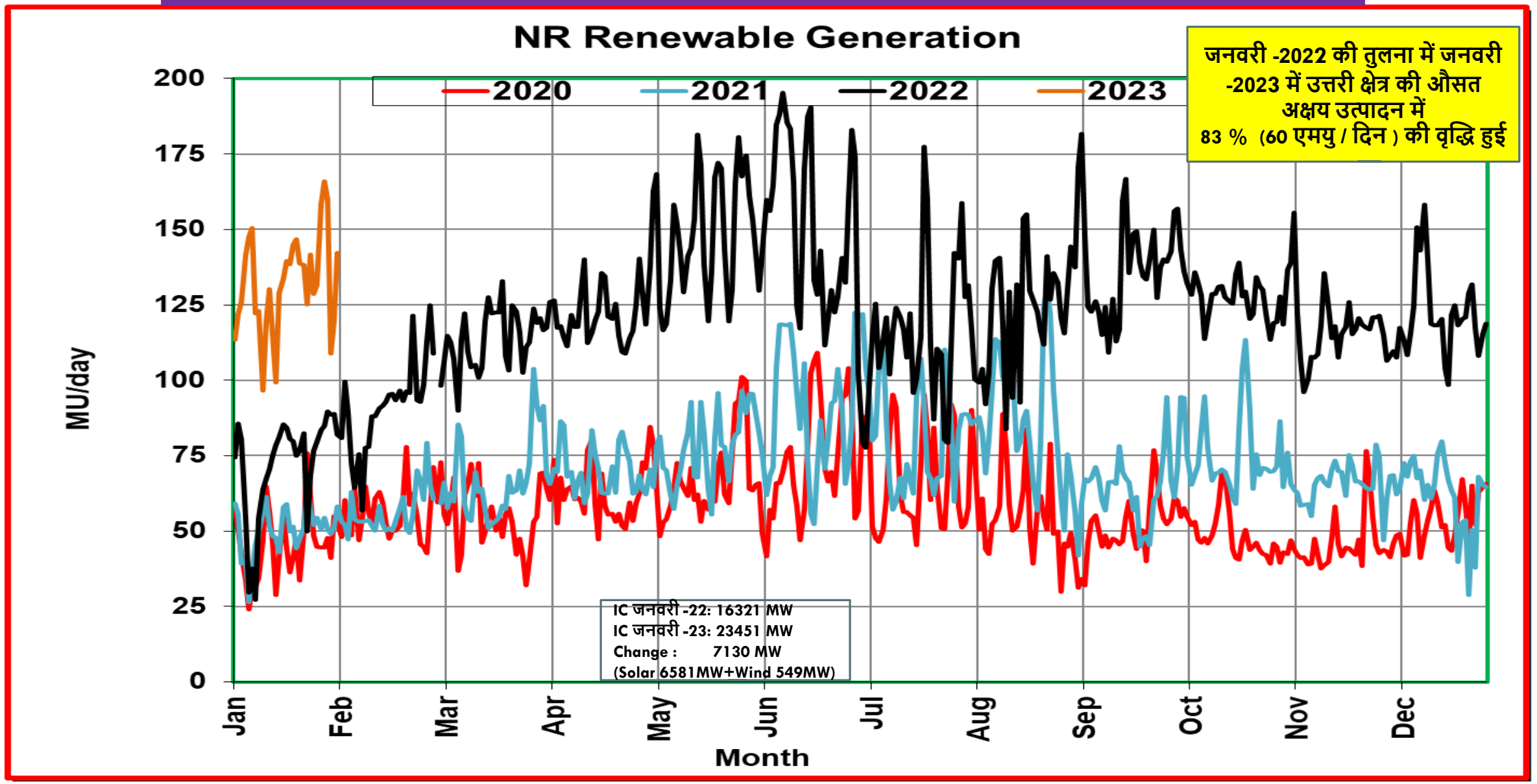
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



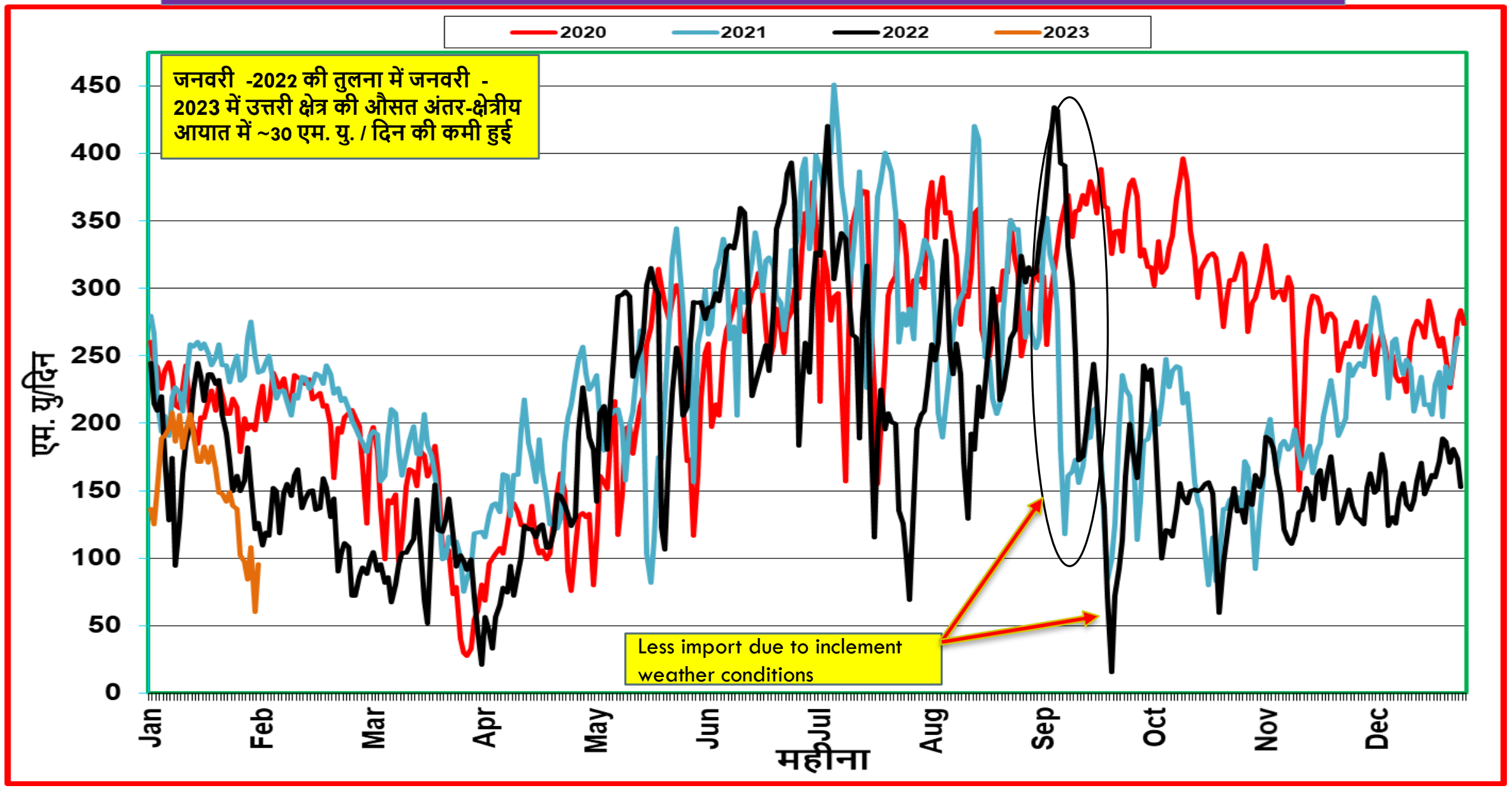
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



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



अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



वास्तविक सारांश -
जनवरी-2021 वनाम जनवरी-2022

	जनवरी -2022 (मि.यु. /दिन)	जनवरी -2023 (मि.यु. /दिन)	जनवरी माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	641.97	766.36	124.40
जलीय (Hydro) उत्पादन	102.01	109.46	7.45
नाभिकीय (Nuclear) उत्पादन	29.81	22.87	-6.94
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	186.02	155.53	-30.49
अक्षय (Renewable) उत्पादन	72.108	132.165	60.06
कुल	**1031.92**	**1186.39**	**154.48**

RE Penetration

	Maximum Daily MU Penetration			
	January '2023		Record upto December '2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	4.41	26-01-2023	12.28	01-04-2020
Rajasthan	18.24	19-01-2023	36.47	22-10-2021
UP	3.73	28-01-2023	4.07	30-10-2021
NR	15.09	26-01-2023	15.90	25-10-2022

	Maximum Instantaneous Penetration in MW			
	January '2023		Record upto December '2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	8.26	26-01-2023	26.87	22-04-2020
Rajasthan	31.25	05-01-2023	68.38	31-03-2020
UP	11.52	28-01-2023	15.13	01-04-2021
NR	36.70	26-01-2023	42.96	25-10-2022

B.20

Outage Summary For January 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	362	301	201	100	64.3%	35.7%	66.8%	33.2%	663
UPPTCL	65	140	33	107	66.3%	33.7%	23.6%	76.4%	205
RRVPNL	32	149	38	111	45.7%	54.3%	25.5%	74.5%	181
PSTCL	67	32	18	14	78.8%	21.2%	56.3%	43.8%	99
BBMB	38	34	13	21	74.5%	25.5%	38.2%	61.8%	72
HVPNL	37	20	7	13	84.1%	15.9%	35.0%	65.0%	57
Adani Solar	31	17	6	11	83.8%	16.2%	35.3%	64.7%	48
NTPC	14	14	6	8	70.0%	30.0%	42.9%	57.1%	28
DTL	8	16	11	5	42.1%	57.9%	68.8%	31.3%	24
HPPTCL	10	13	7	6	58.8%	41.2%	53.8%	46.2%	23
Renew Power	13	6	1	5	92.9%	7.1%	16.7%	83.3%	19
PTCUL	9	4	0	4	100.0%	0.0%	0.0%	100.0%	13
ADHPL	12	0	0	0	100.0%	0.0%	0.0%	0.0%	12
SJVNL	12	0	0	0	100.0%	0.0%	0.0%	0.0%	12
PDD JK	10	1	0	1	100.0%	0.0%	0.0%	100.0%	11
Azure	0	10	4	6	0.0%	100.0%	40.0%	60.0%	10
FBTL	1	9	1	8	50.0%	50.0%	11.1%	88.9%	10
Singoli(LTUHP)	9	0	0	0	100.0%	0.0%	0.0%	0.0%	9
AEPL	4	4	3	1	57.1%	42.9%	75.0%	25.0%	8
NHPC	3	5	4	1	42.9%	57.1%	80.0%	20.0%	8
NTPC Solar	0	7	2	5	0.0%	100.0%	28.6%	71.4%	7
ATIL	2	4	4	0	33.3%	66.7%	100.0%	0.0%	6
NRSS XXIX	1	5	2	3	33.3%	66.7%	40.0%	60.0%	6
Saurya Urja	1	5	2	3	33.3%	66.7%	40.0%	60.0%	6
BKTL	0	5	1	4	0.0%	100.0%	20.0%	80.0%	5
MEGA_SURYAURJA	1	3	0	3	100.0%	0.0%	0.0%	100.0%	4
PKTCL	2	2	1	1	66.7%	33.3%	50.0%	50.0%	4
SBSRPC-11	1	3	0	3	100.0%	0.0%	0.0%	100.0%	4
Tata Power	2	2	0	2	100.0%	0.0%	0.0%	100.0%	4
POWERLINK	0	4	2	2	0.0%	100.0%	50.0%	50.0%	4
ACME_HEERGARH	1	2	0	2	100.0%	0.0%	0.0%	100.0%	3
EDEN (ERCPL)	2	1	0	1	100.0%	0.0%	0.0%	100.0%	3
PKATL,JPL	3	0	0	0	100.0%	0.0%	0.0%	0.0%	3
PKTSL	2	1	0	1	100.0%	0.0%	0.0%	100.0%	3
THAR SURYA1	1	2	0	2	100.0%	0.0%	0.0%	100.0%	3
PFTL	1	1	0	1	100.0%	0.0%	0.0%	100.0%	2
Sekura	2	0	0	0	100.0%	0.0%	0.0%	0.0%	2
NPCIL	0	2	2	0	0.0%	100.0%	100.0%	0.0%	2
GPTL	0	1	0	1	0.0%	0.0%	0.0%	100.0%	1
ABC Renew	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
PTCL	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
THDC	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
TOTAL	761	826	370	456	67.3%	32.7%	44.8%	55.2%	1587

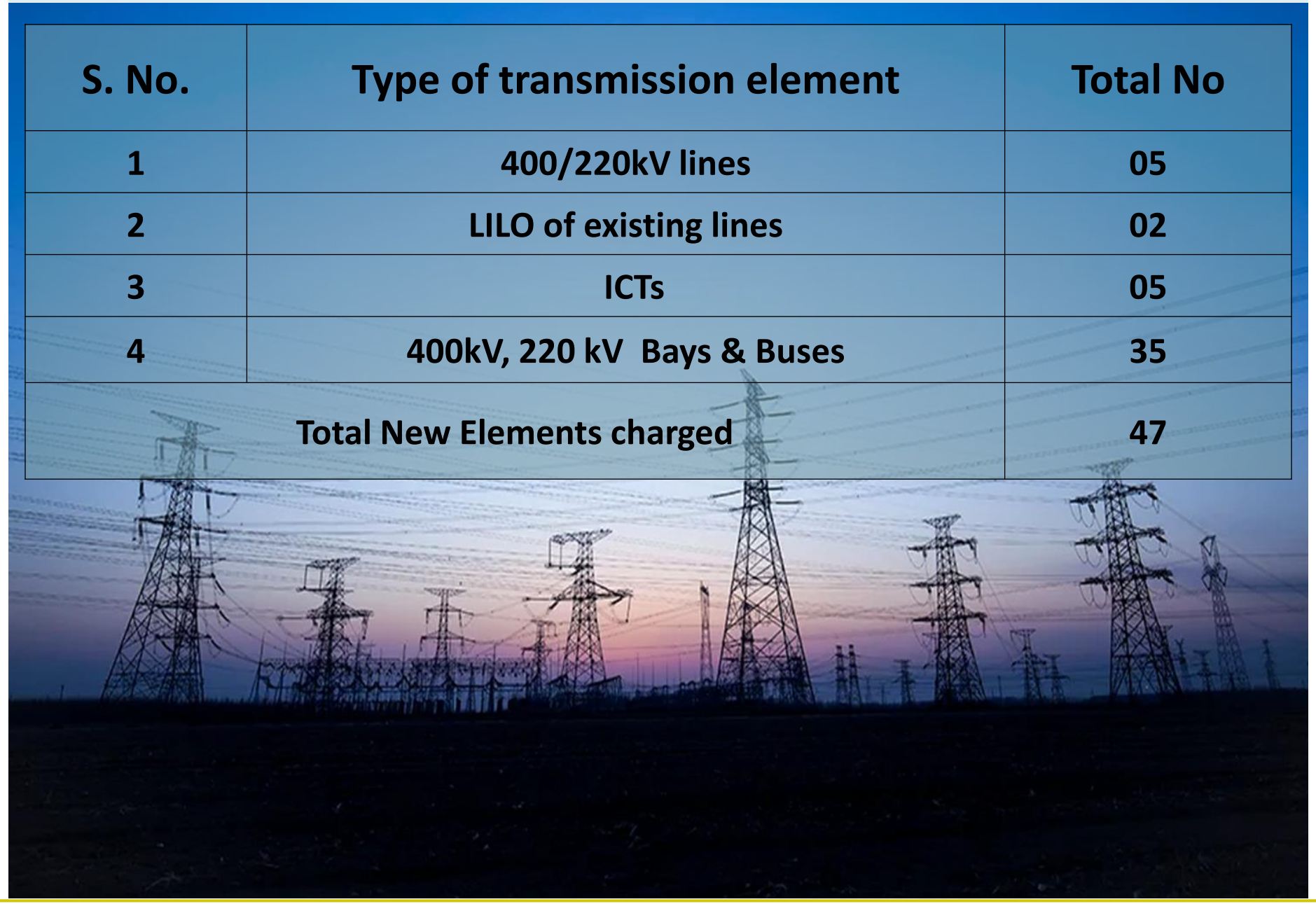
B.20

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))	
October-22	818	648	309	339	72.6%	27.4%	1466
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**

B.20

New Elements First Time Charged During January 2023

S. No.	Type of transmission element	Total No
1	400/220kV lines	05
2	LILO of existing lines	02
3	ICTs	05
4	400kV, 220 kV Bays & Buses	35
Total New Elements charged		47



B.20

TRANSMISSION LINES

S.NO.	Agency/Owner	LINE NAME	Length (KM)	Conductor Type	DATE	Remarks
1	POWERGRID	400kV Bhiwani(PG)-Moga(PG)-1	275.04	Twin Moose	03-Jan-2023	
2	HPPTCL	400kV Lahal(HP)-Chamba(PG)-2	35.307	Twin Moose	10-Jan-2023	
3	HPPTCL	400kV Lahal(HP)-Chamba(PG)-1	35.307	Twin Moose	10-Jan-2023	
4	PRSTL	400kV Sambhal_PRSTL (UP)-Rampur_PRSTL (UP)-1	74.343	Twin Moose	21-Jan-2023	
5	PRSTL	400kV Sambhal_PRSTL (UP)-Rampur_PRSTL (UP)-2	74.343	Twin Moose	21-Jan-2023	

LILO OF EXISTING TRANSMISSION LINES

S.NO.	Agency/Owner	LINE NAME	Length (KM)	Conductor Type	DATE	Remarks
1	POWERGRID/PDD JK	220kV Samba(PG)-Chowadhi (JK) (LILO Length-0.912 Kms)	52.351	ZEBRA	11-Jan-2023	After LILO of 220KV SAMBA-GLADINI LINE at CHOWADHI SS(JKPTCL)
2	POWERGRID/PDD JK	220kV Gladni(PDD)-Chowadhi (JK) (LILO Length-0.912 Kms)	10.3	ZEBRA	11-Jan-2023	

B.20

ICTs/ GTs / STs							
S.NO.	**Agency/Owner**	**SUB-STATION**	**ICT NO**	**Voltage Level (kV)**	**CAPACITY (MVA)**	**DATE**	**Remarks**
1	POWERGRID	Chandigarh Sec-47 (PG)	1	220/66/11	160	13-Jan-2023	
2	POWERGRID	Chandigarh Sec-47 (PG)	2	220/66/11	160	13-Jan-2023	
3	UPPTCL,PRSTL	Rampur_PRSTL (UP)	1	400/220/33	500	21-Jan-2023	
4	UPPTCL,PRSTL	Rampur_PRSTL (UP)	2	400/220/33	500	22-Jan-2023	
5	Saurya Urja	Saurya Urja Solar(SU)	4	220/33	125	23-Jan-2023	Replacement of old 125 MVA Transformer

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_Fatehgarh_2 (PG)	Solar	37.5	300	30.01.2023	
		Total Solar Generation addition		**37.5**			


धन्यवाद

Hon'ble CERC Order Dated 06th February 2023 in Suo-Motu Petition No. 01/SM/2023

Effective from 00 Hrs of 08th Feb 2023
In supersession to Order Dated 26th Dec 2022 in Petition No. 16/SM/2022

Kavita Parihar, Sr DGM
NRLDC (GRID-INDIA)

Chronology

1. CERC (Deviation Settlement Mechanism and Related matters), Regulations,2022, notified on 14th March 2022 and effective from 05th Dec 2022 (Monday)
2. Order dated 26th Dec 2022 in Suo-Motu Petition No. 16/SM/2022 effective from 00Hrs of 28th Dec 2022 (Wednesday)
3. Order dated 06th Feb 2023 in Suo-Motu Petition No. 01/SM/2023 effective from 00 Hrs of 08th Feb 2023 (Wednesday) in supersession to Order Dated 26th Dec 2022.
4. Directions in this Order are issued in exigency as an interim measure.

Major changes in Order dated 26.12.22 in 16/SM/2022

- Normal Rate of Charges for Deviation Capped at Rs 12 per kWh
- Deviation Charges linked to Frequency
  - When f>=50.05Hz (irrespective of Volume Limits)
    - General Seller shall not receive anything for over-injection
    - General Seller shall pay @50% of RCR for under-injection
    - The Buyer shall neither pay nor receive anything for under-drawl
  - When f<=49.9 Hz (irrespective of Volume Limits)
    - the General Seller shall receive 150% of RCR for over-injection

Major changes in Order dated 06th Feb 2023 vis-à-vis DSM Regulations dated 14th Mar 2022

- Entities are allowed to deviate (and incentivised for deviating) in a manner that helps maintain Grid Frequency
- (Entities were not supposed to deviate from their Schedule, and Deviations were to be managed by the System Operator as per Ancillary Services Regulations)
- Normal rate of charges for deviation delinked from Ancillary Service Charge
- Normal rate = Higher of (weighted average ACP of DAM and Weighted average ACP of RTM) (weighted Average Ancillary Service Charge of all the Regions Dropped)
- Maximum Normal Rate capped at Rs 12/kWh (introduced in Order dated 26.12.22 and continued in Order dated 06.02.23)

Major changes in Order dated 06th Feb 2023 vis-à-vis DSM Regulations dated 14th Mar 2022:Types of Sellers and Buyers

- General Seller
  - Other than Run of River (ROR) and Municipal Solid Waste (MSW)
  - Run of River (ROR)
  - Municipal Solid Waste (MSW)
- WS Seller (Wind/Solar/Hybrid of Wind-Solar)
  - Earlier only one category of WS Seller
  - Now two categories of WS Seller
    - Solar and Solar/Hybrid Based
    - Wind Based
- Buyers
  - other than buyer with schedule less than 400 MW and RE-rich State
  - Buyer with schedule up to 400 MW
  - RE Rich State

Major changes in Order dated 06th Feb 2023vis-à-vis DSM Regulations dated 14th Mar 2022

- Deviation charges linked with frequency
  - only for General Seller (except ROR and MSW) and Buyer (all categories).
- Five frequency bands applicable for calculation of deviation charges:
  - F=<49.9,
  - 49.9<f<49.95,
  - 49.95<=f<=50.03,
  - 50.03<f<50.05,
  - f>=50.05
- Narrow normal band is 49.95Hz to 50.03Hz, and Volume limits applicable only when 49.95<=f<=50.03
- Deviation charges for General seller (ROR), General Seller (MSW) and WS Seller (both categories)
  - not linked to frequency
  - Linked only to Reference Charge Rate (in case of General Seller (ROR) or Contract Rate in case of General Seller (MSW) and WS Seller
  - Deviation Volume limits are Less Stringent

Major changes in Order dated 06th Feb 2023 vis-à-vis DSM Regulations dated 14th Mar 2022

- Deviation Charges for injection of Infirm Power
- DSM Regulations dated 14th Mar 2022
  - *"(3) (a) The charges for deviation for injection of infirm power shall be zero."*
- Order Dated 06th Feb 23
- *"(3) (a) The charges for deviation for injection of infirm power shall be zero:*
  - *Provided that upon such infirm power being scheduled, the charges for deviation for such power shall be as applicable for a general seller*."
  - If the infirm power is Scheduled, then, Deviation Charges shall be as applicable to General Seller
  - if not scheduled, will not receive anything (Zero)
- Deviation Charges payable @Reference Charge Rate or Contract Rate
  - For drawal of startup power
  - For drawal of power to run the auxillaries during S/D of plant
  - Earlier it was @ Normal rate of Charges of Deviation

Major changes in Order dated 06th Feb 2023 vis-à-vis DSM Regulations dated 14th Mar 2022

Charges for Inter- regional Deviation and Cross-border transactions

DSM Regulations dated 14th Mar 2022

- The charges for inter-regional deviation and for deviation in respect of cross-border transactions, **caused by way of over-drawal or under-injection** shall be payable at the normal rate of charges for deviation.

Order dated 06th Feb 2023

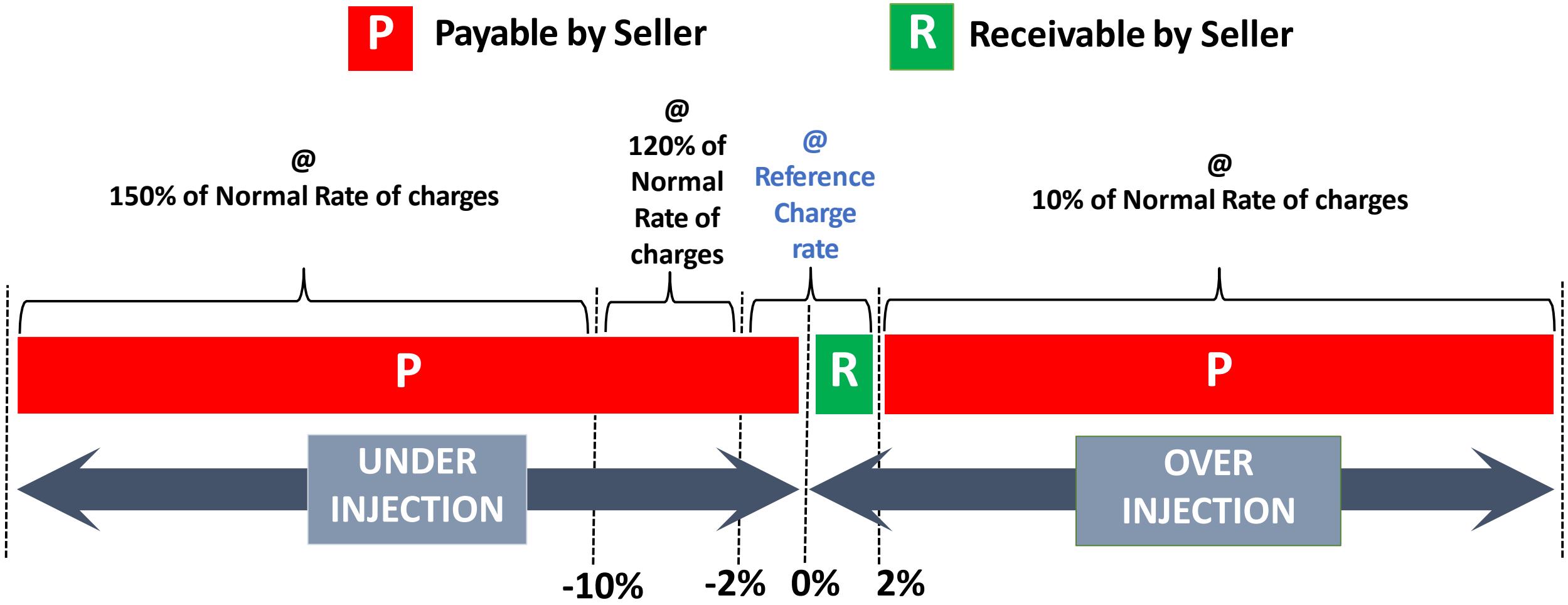
- The charges for inter-regional deviation **caused by way of over-drawal or under-drawal or over injection or under-injection shall be payable or receivable, as the case may be,** at the normal rate of charges for deviation.
- The charges for deviation in respect of cross-border transactions, **caused by way of over drawal or under drawal or over injection or under-injection shall be payable or receivable, at the deviation charge rates and subject to volume limits as applicable to a seller (of respective category) or to a buyer (other than an RE-rich State), as the case may be.**

Major changes in Order dated 06th Feb 2023 vis-à-vis DSM Regulations dated 14th Mar 2022

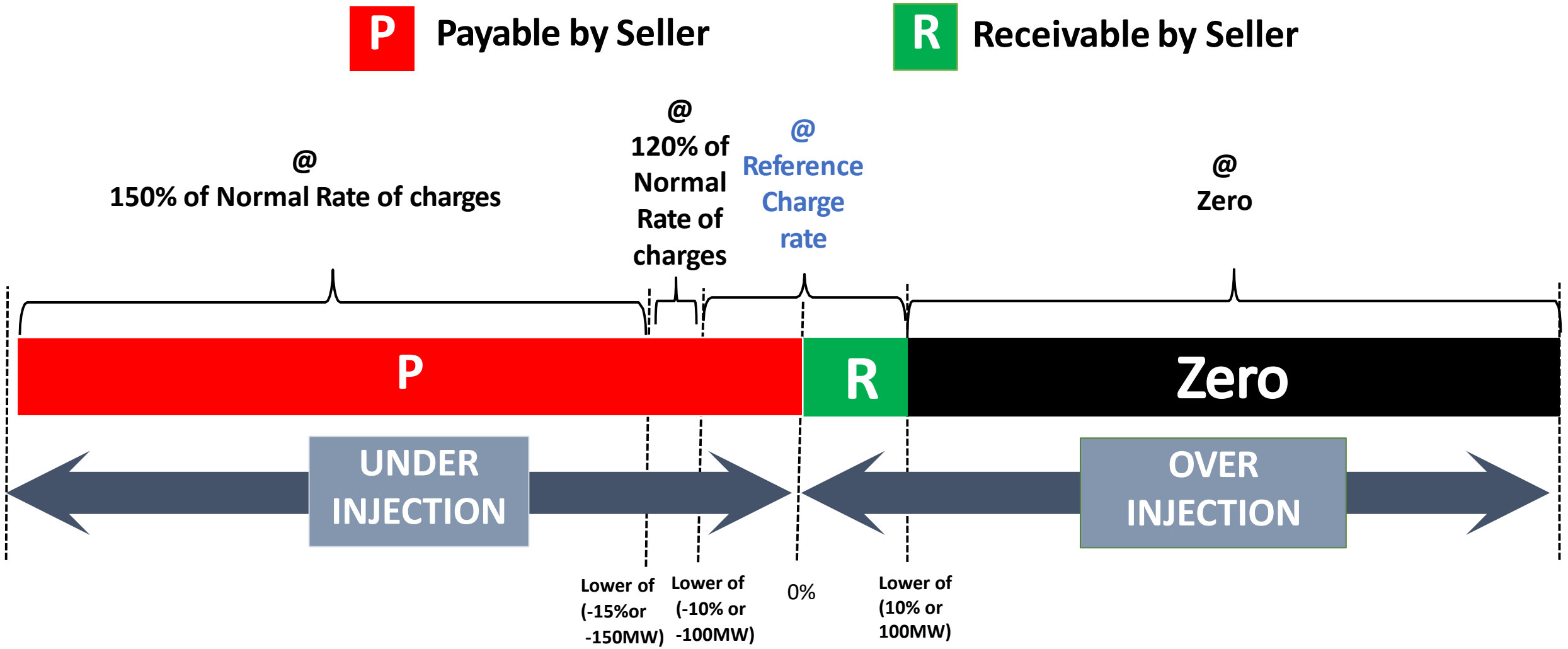
- Forced Outage of a seller
  - No explicit mention of forced outage in DSM Regulations dated 14th Mar 2022
  - In Order dated 06th Feb 2023
    - *"in case of forced outage of a seller, the charges for deviation shall be @ the reference charge rate, for a maximum duration of eight time blocks or until the revision of its schedule, whichever is earlier."*
    - i.e. Deviation Charges shall be @ RCR only up to a maximum of 8th time block and if the seller fails to revise its schedule, then deviation charges shall be as per the deviation rates applicable to that particular category of seller.
  - Implementation of forced Outage Clause:
    - List of generators with forced outage
    - To know the exact time of tripping of the generator
    - Verification of time of forced outage from meter data

DSM Regulation dtd 14.03.22 effective from 05.12.22

General seller (other than RoR & MSW) **(Independent of frequency)**



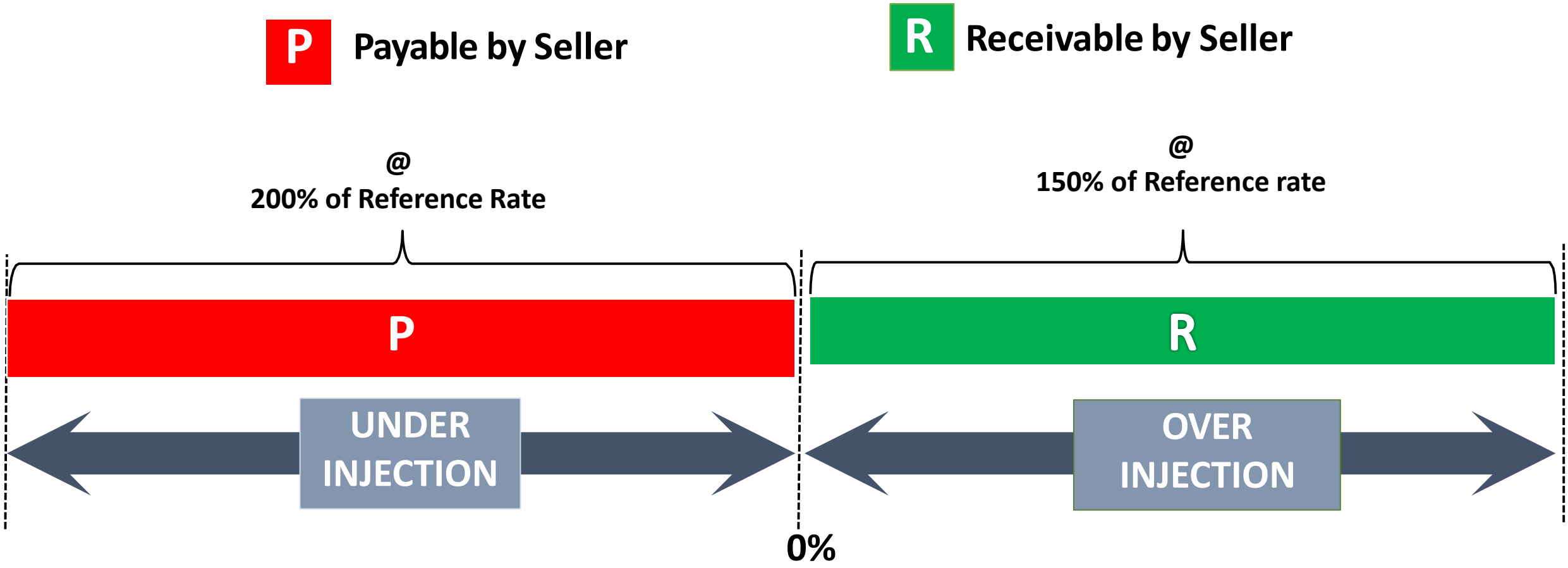
DSM Order Dated 06th Feb 2023
General seller (other than RoR & MSW)(49.95<=f<=50.03)



DSM Order Dated 06th Feb 2023

General seller (other than RoR & MSW)

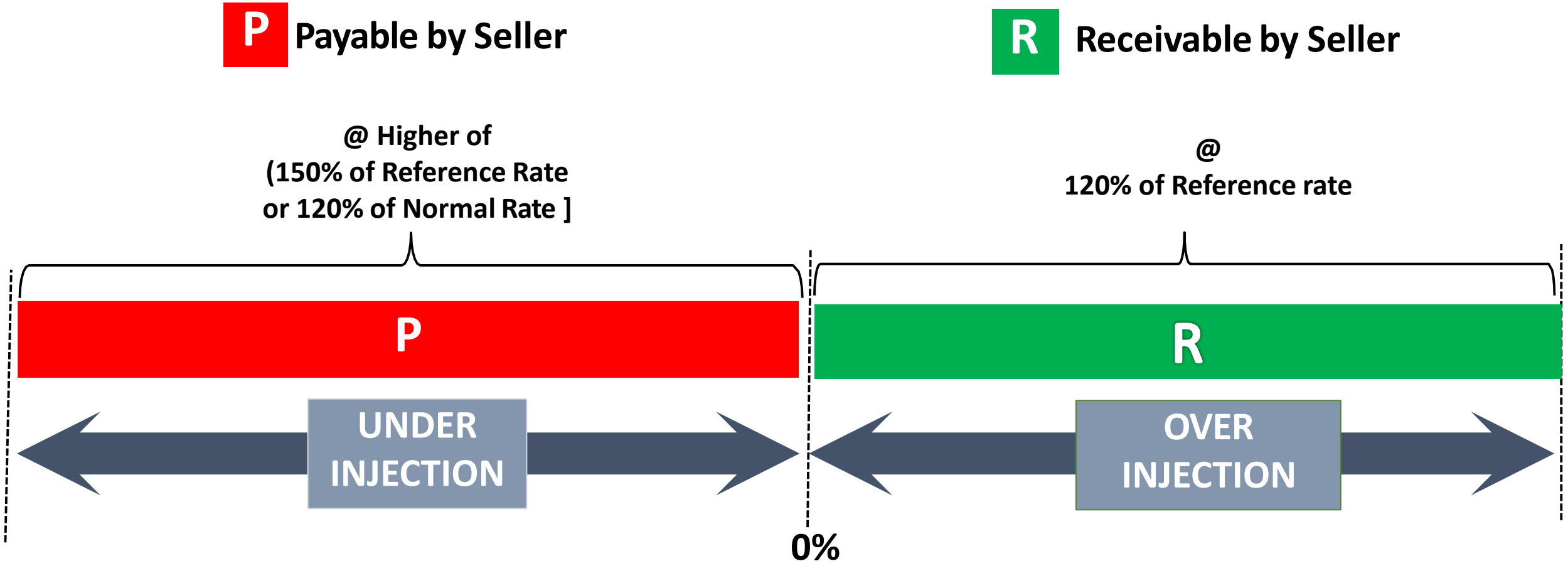
(f<=49.90) (Independent of Volume Limits)



DSM Order Dated 06th Feb 2023

General seller (other than RoR & MSW)

(49.90<f<49.95)(Independent of Volume Limits)



DSM Order Dated 06th Feb 2023

General seller (other than RoR & MSW)

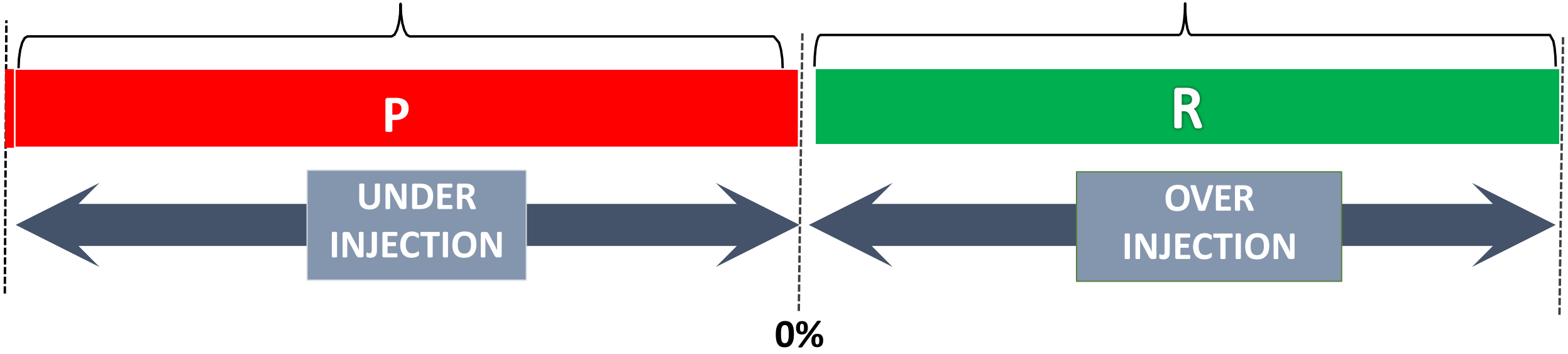
(50.03<f<50.05) (Independent of Volume Limits)

P **Payable by Seller**

R **Receivable by Seller**

@ 75% Reference Charge rate

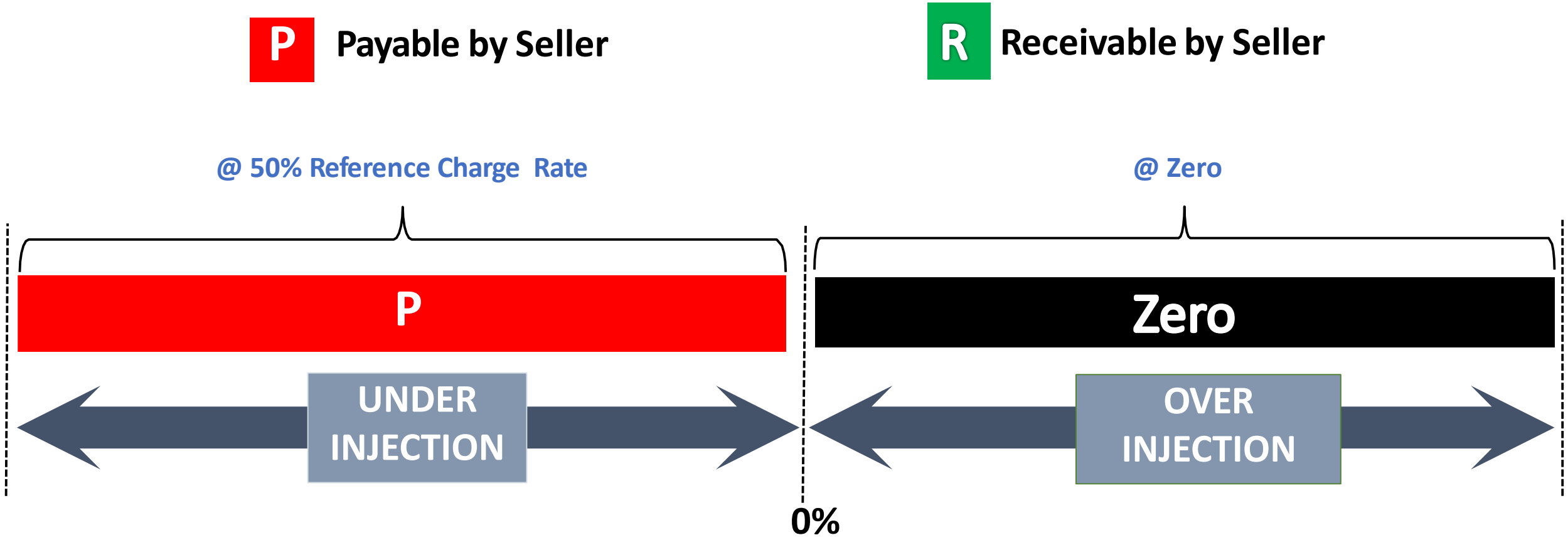
@ 50% Reference Charge Rate



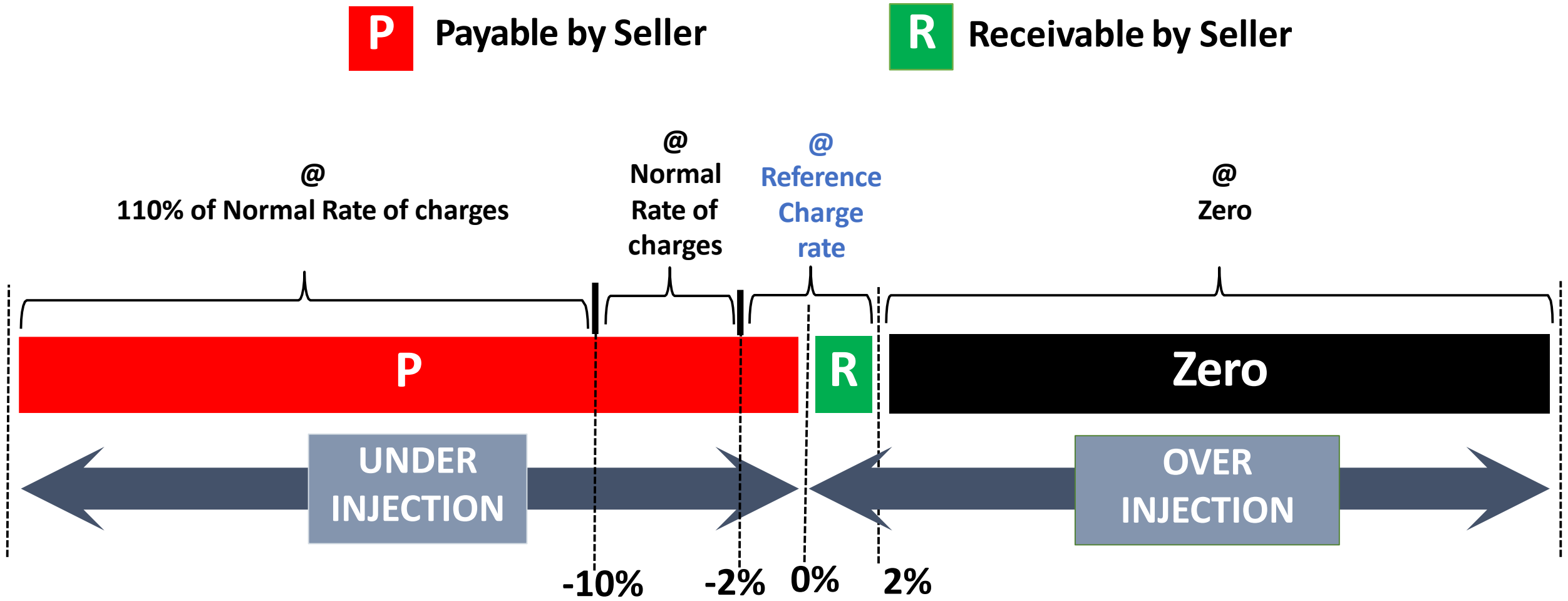
DSM Order Dated 06th Feb 2023

General seller (other than RoR & MSW)

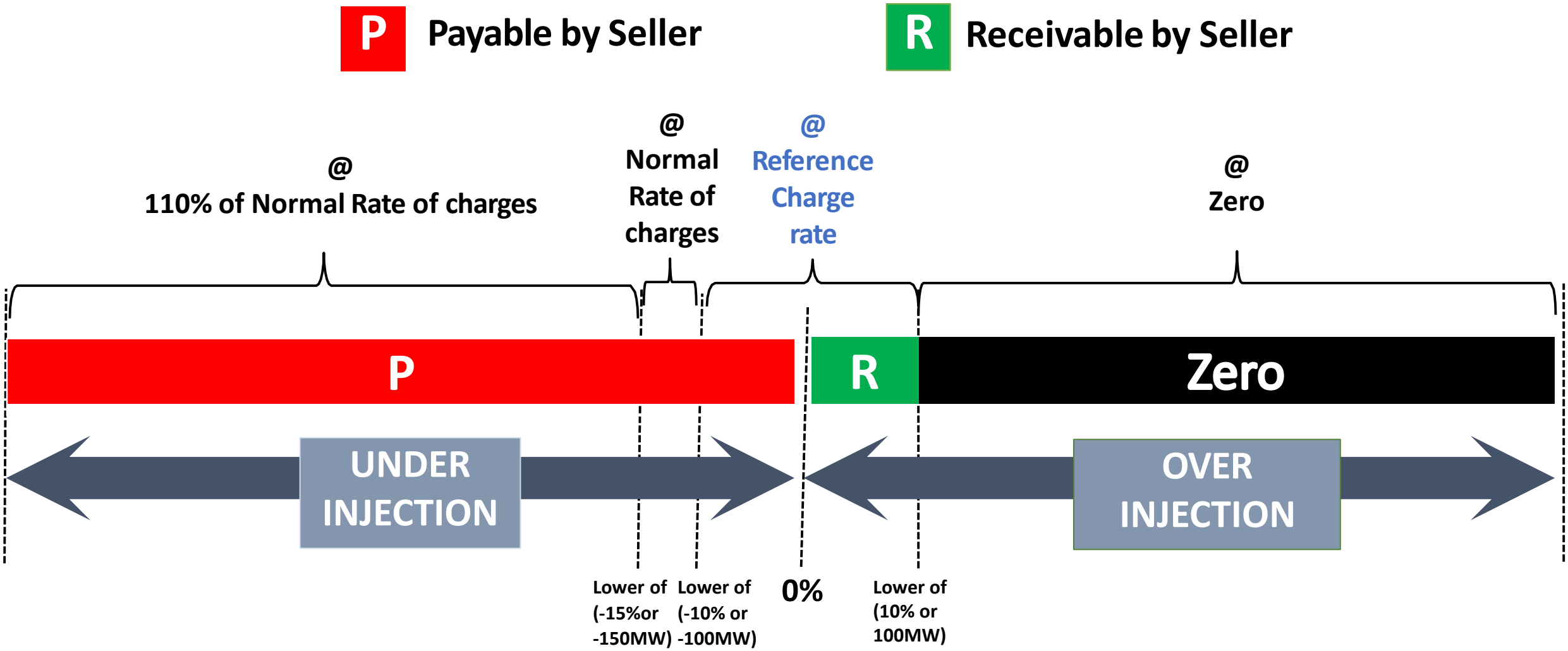
(f>=50.05) (Independent of Volume Limits)



DSM Regulation dtd 14.03.22 effective from 05.12.22
General Seller (Run of River) (Independent of Frequency)



DSM Order Dated 06th Feb 2023
General Seller (Run of River) **(Independent of Frequency)**

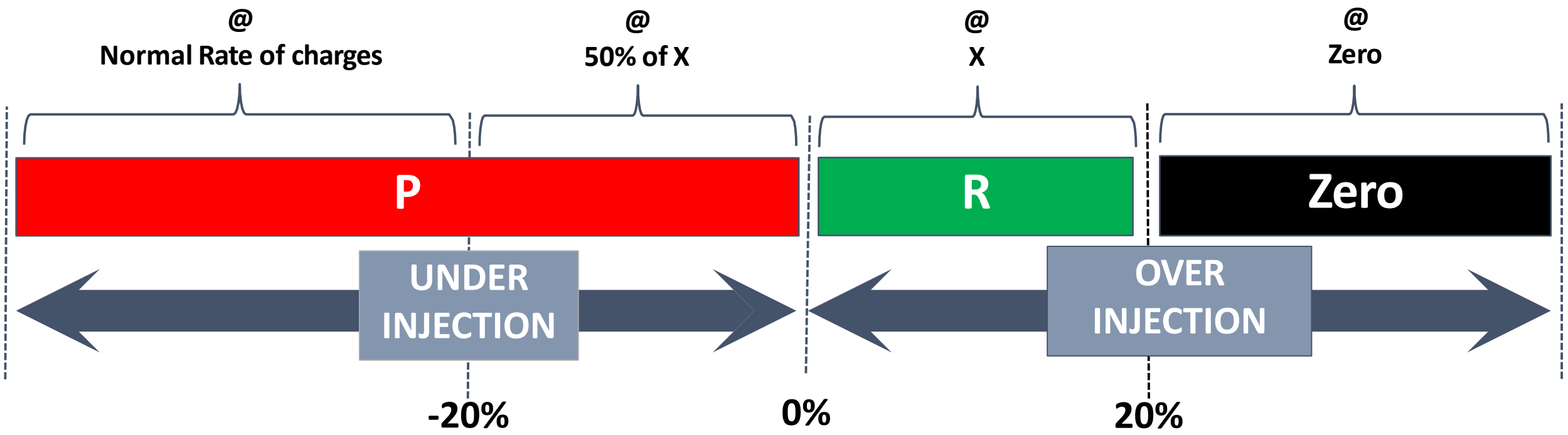


DSM Order Dated 06th Feb 2023 same as DSM Regulation dtd 14.03.22 for General Seller (Municipal Solid Waste) (Independent of Frequency)

P Payable by Seller

R Receivable by Seller

X = Contract rate, or in the absence of Contract Rate, Weighted avg. ACP of DAM segments of all power exchanges for the respective Time block



WS Seller

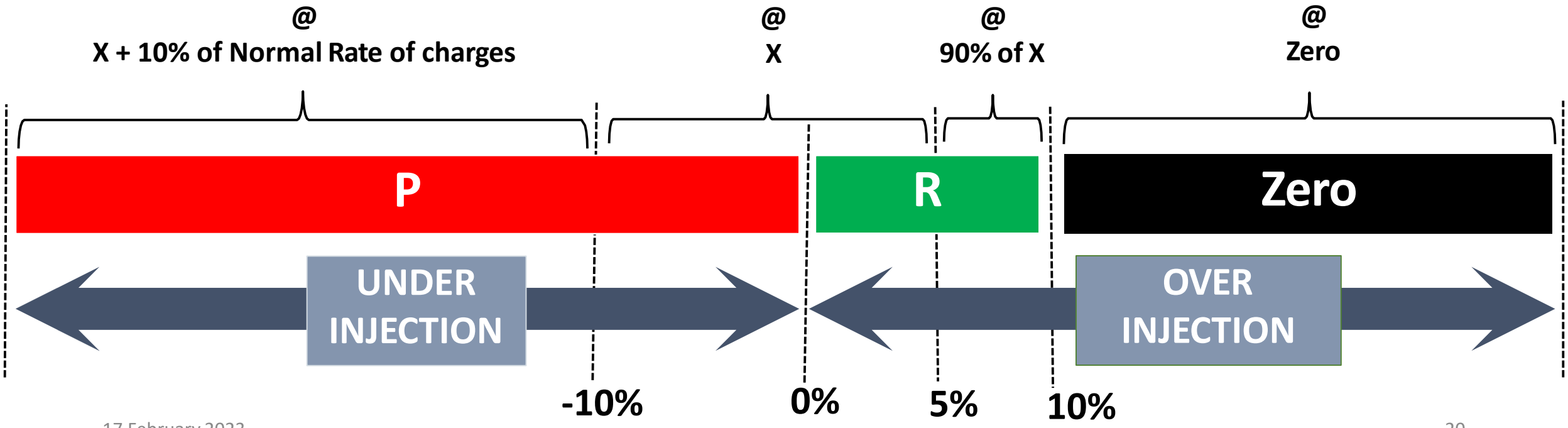
- Two Distinct Categories of WS Seller: (Solar and WS Hybrid) WS Seller and Wind WS seller
- Earlier, Wind, Solar and WS Hybrid Plants had same Deviation rates for same deviation Volumes
- Now different rates for different Deviation percentages for these two categories.
- More relaxed Volume limits for Wind Generators
- 5% additional relaxation for Wind Generators to deviate as compared to Solar and WS Hybrid
- Deviation charges no more linked to Normal Rate of Charges of Deviation

DSM Regulation dated 14.03.22 effective from 05.12.22
WS Seller (Independent of Frequency)

P Payable by Seller

R Receivable by Seller

X = Contract rate, or in the absence of Contract Rate, Weighted avg. ACP of DAM segments of all power exchanges for the respective Time block



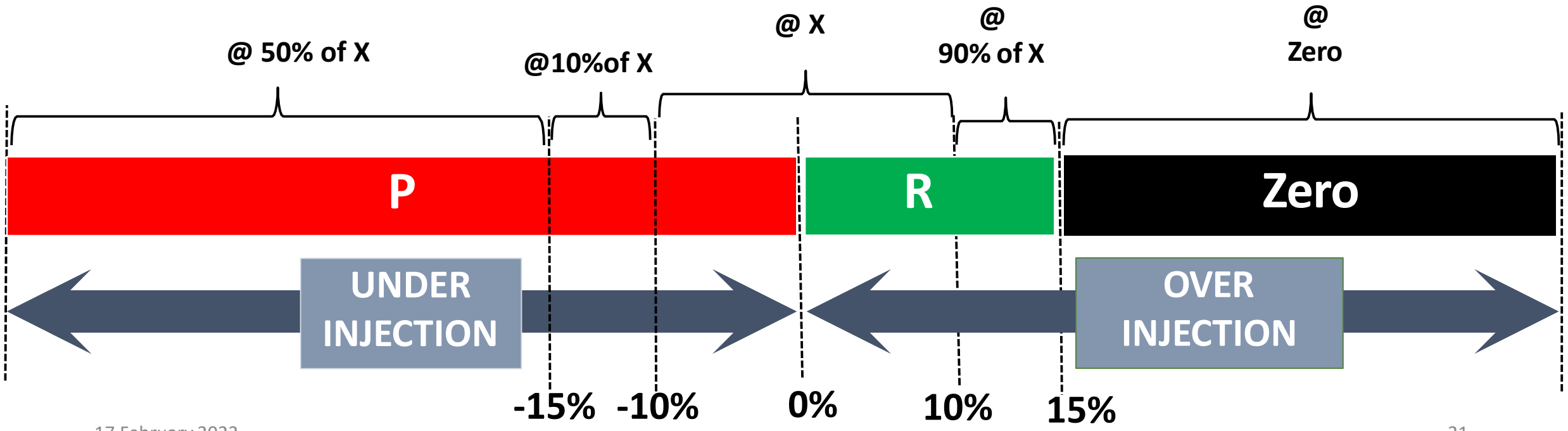
Order dated 06th Feb 2023

WS Seller (Solar & Wind-Solar Hybrid) (Independent of Frequency)

P **Payable by Seller**

R **Receivable by Seller**

X = Contract rate, or in the absence of Contract Rate, Weighted avg. ACP of DAM segments of all power exchanges for the respective Time block

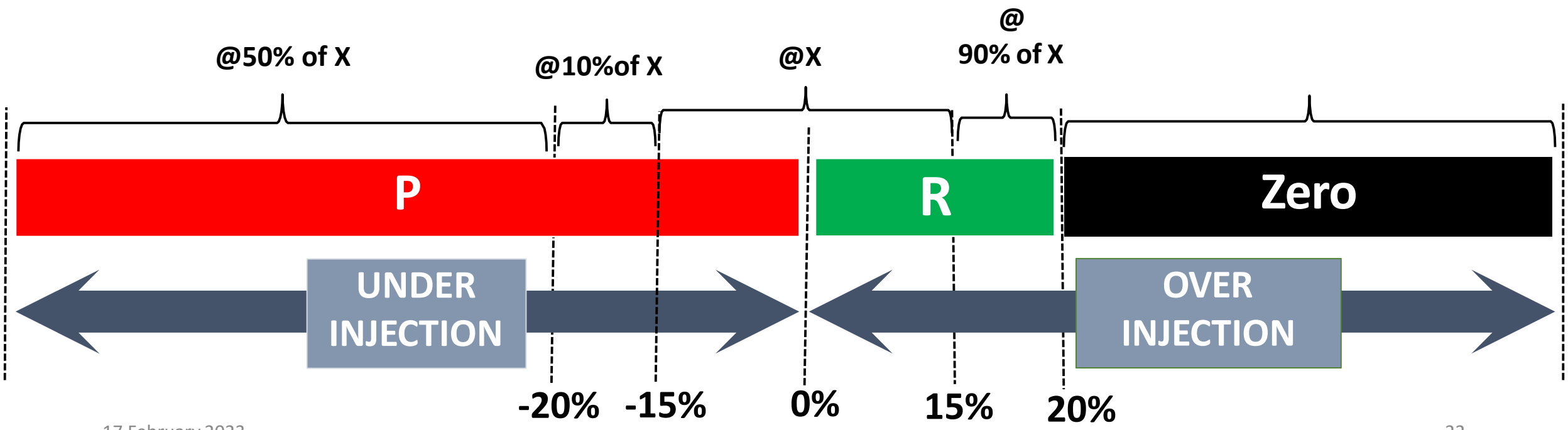


Order dated 06th Feb 2023
WS Seller (Wind based) (Independent of Frequency)

P Payable by Seller

R Receivable by Seller

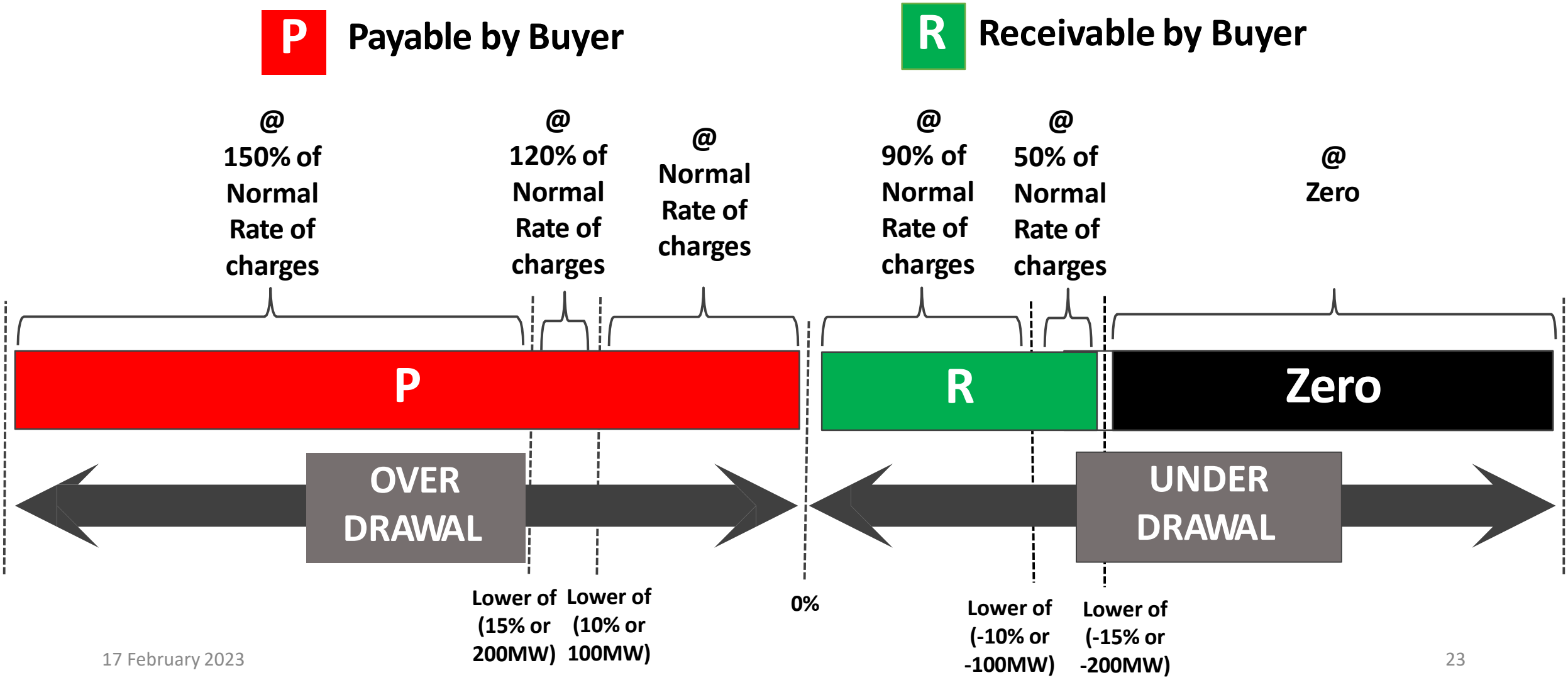
X = Contract rate, or in the absence of Contract Rate, Weighted avg. ACP of DAM segments of all power exchanges for the respective Time block



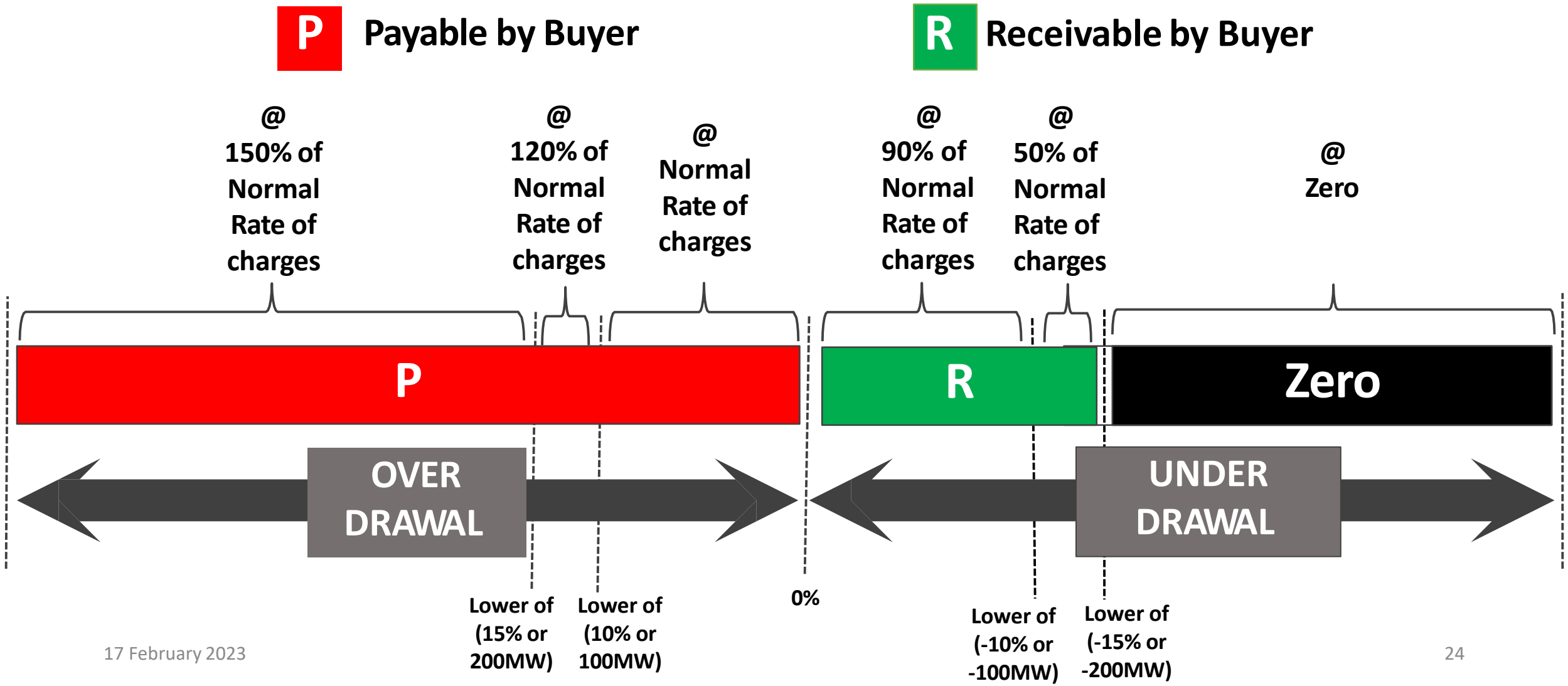
DSM Regulation dtd 14.03.22 effective from 05.12.22

Buyer (Other than buyer with Schedule <400MW and RE Rich State)

(Independent of Frequency)



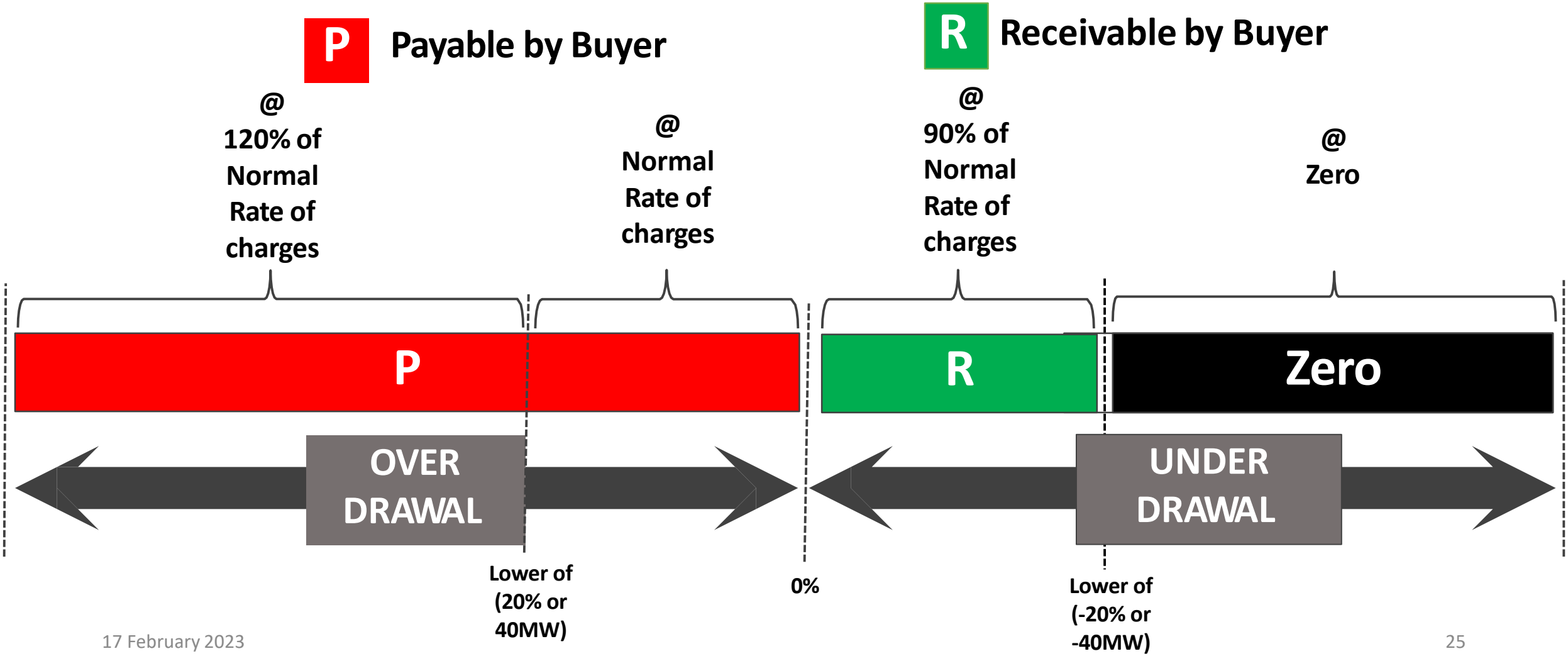
DSM Order Dated 06th Feb 2023
Buyer (Other than buyer with Schedule <400MW and RE Rich State)
(49.95 =< f <= 50.03) (same as DSM Regulations dated 14.03.22)



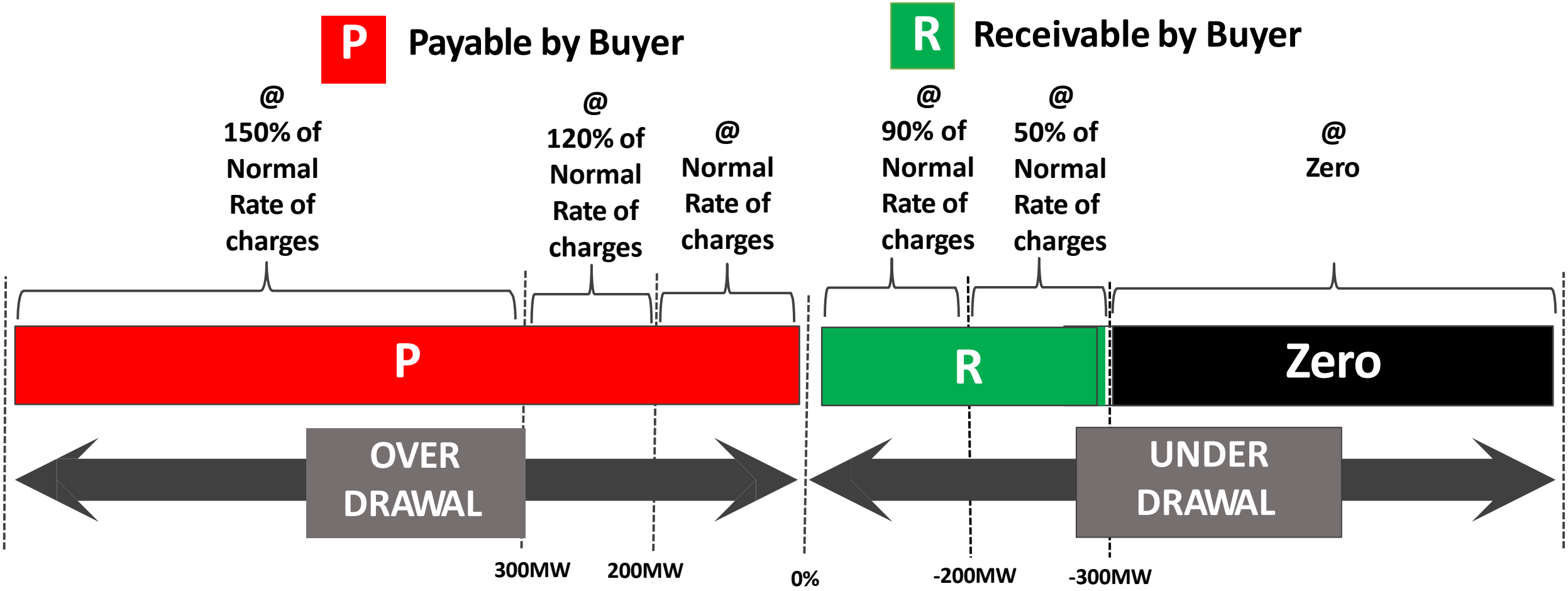
DSM Order Dated 06th Feb 2023

Buyer with schedule up to 400 MW (49.95=<f<=50.03)

(Same as in DSM Regulations dated 14.03.22)



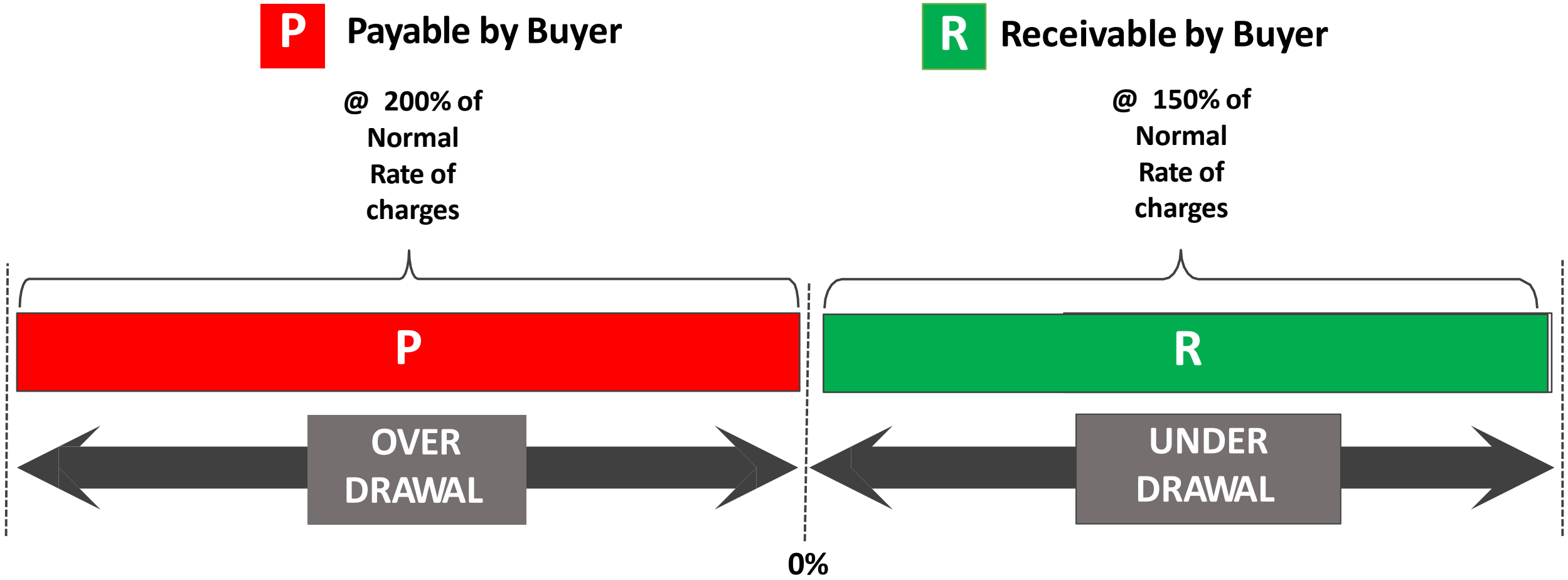
DSM Order Dated 06th Feb 2023 Buyer RE Rich State (49.95=<f<=50.03)
(Same as DSM Regulations dated 04.03.22 except the Volume Limits in %)



volume limits(10% or 200MW) or (20% or 300 MW) in terms of Percentage removed and retained only in absolute MW terms

DSM Order Dated 06th Feb 2023

All Buyers (f<=49.9) (Independent of Volume Limits)

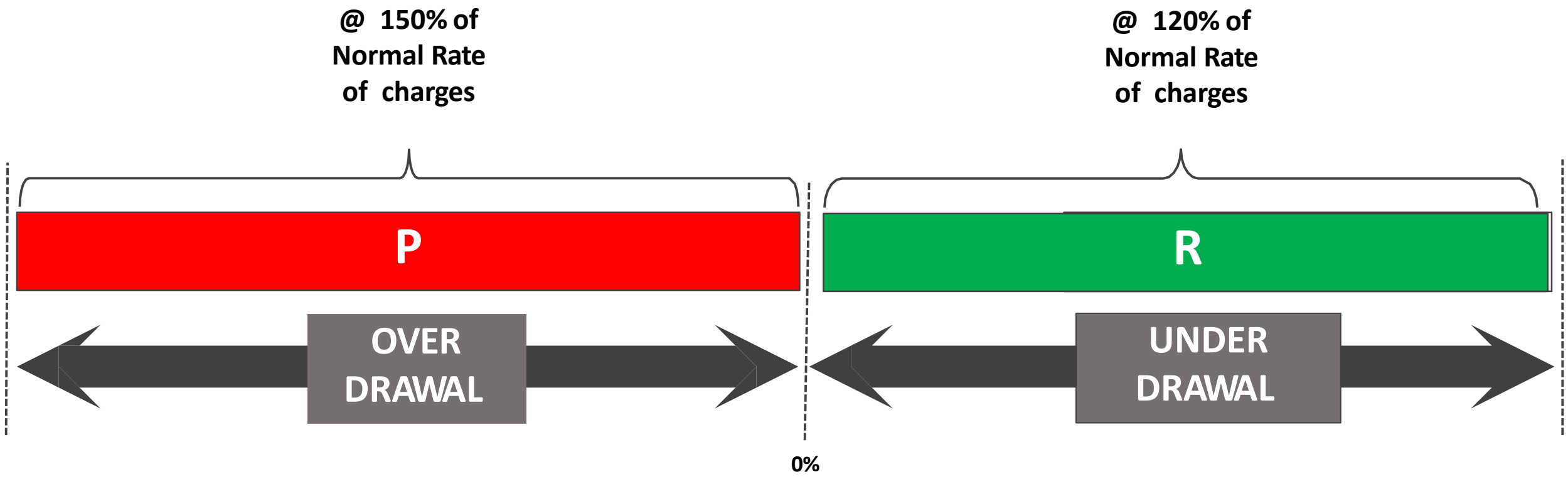


DSM Order Dated 06th Feb 2023

All Buyers (49.9<f<49.95) (Independent of Volume Limits)

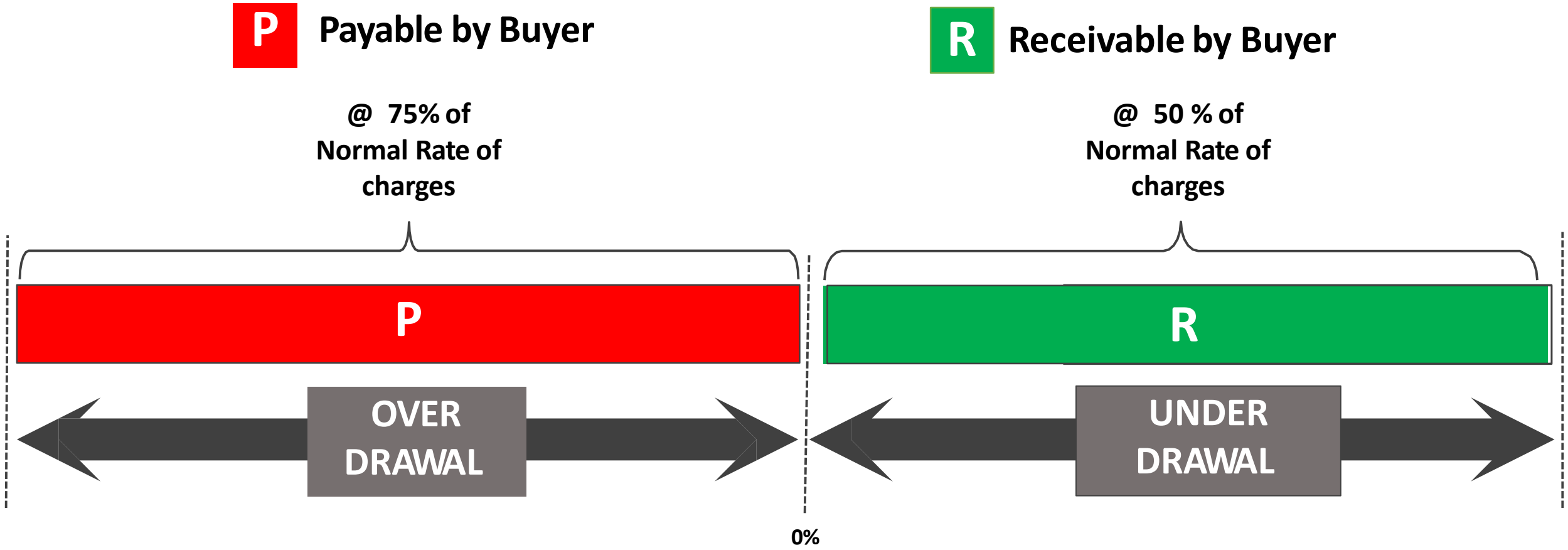
P Payable by Buyer

R Receivable by Buyer



DSM Order Dated 06th Feb 2023

All Buyers (50.03<f<50.05) (Independent of Volume Limits)

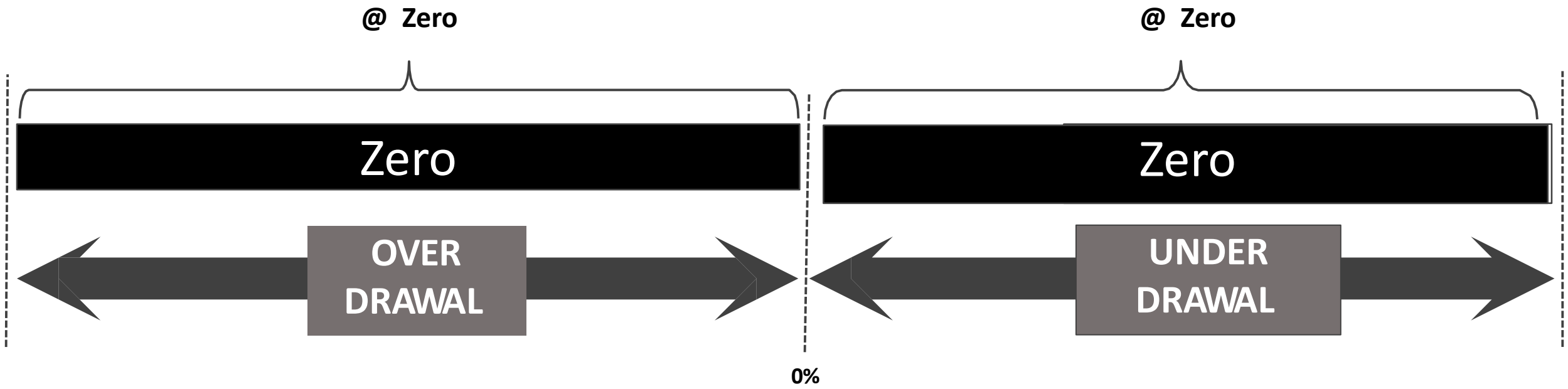


DSM Order Dated 06th Feb 2023

All Buyers (f>=50.05) (Independent of Volume Limits)

P Payable by Buyer

R Receivable by Buyer



NR STATES Over-Drawal / Under-Drawal During Low Frequency
(Post 08/02/2023)

Frequency Band	Recommended Action
Case 1 : f < =49.90Hz,Over-drawal (Buyer to pay for deviation @ 200% of normal rate of charge)	Over-drawal has reduced, Earlier (4-8)%, Now (2-4)% Over-drawal expected to be reduced to NIL when f < =49.90
Case 2 : f < = 49.90,Under-drawal (Buyer to receive for deviation @ 150% of normal rate of Charge)	Under-drawal has decreased instead of increasing Earlier (6%) Now (3%) Under-drawal expected to be increased when f < = 49.90

NR STATES Over-Drawal / Under-Drawal During High Frequency (POST (08/02/2023)

Observations	Recommended Action
Case 3 : **f >= 50.05 Hz,** **OD (pay for deviation @ 0)**	Over-drawal has increased as expected Earlier (12%) Now (14%)
Case 4 : **f >= 50.05 Hz,** **UD (pay for deviation @ 0)**	Under-drawal has increased instead of decreasing Earlier (12%) Now (15%) Under-drawal expected to be reduced to Zero when f>=50.05

THANK YOU

Revised list of schedule A&B feeders for physical regulation of supply in Haryana:

S.No.	Transmission element to be opened	Power supply interruption in	Approx Relief (MW)	Remarks
1	**Feeders in schedule A** Panipat: a) 33kV Panipat-Sewah b) 33kV Panipat-Untla c) 33kV Panipat-Israna d) 33kV Panipat-Narayana e) 33kV Panipat-Sanoli road Kurukshetra: a) 33kV Kurukshetra-Mathana b) 33kV Kurukshetra-Ajrana c) 33kV Kurukshetra-Kirmich d) 33kV Kurukshetra-REC d) 11kV Kurukshetra-Bahadurpura e) 11kV Kurukshetra-Pipli -2 Dhulkote: a) 66kV Dhulkote-Barnala b) 66kV Dhulkote-Babyal c) 66kV Dhulkote-Sadopur Narela: a) 132kV Kundli line emanating from Narela BBMB	Panipat , Kurukshetra, Dhulkote, Kundli (Sonipat)	200 MW (Approx.)	Radial Lines or fed radially **(These feeders were already included in schedule A&B)**
2	**Feeders in Schedule B** a) 220kV Sector-72 PG – Sector-33 ckt-1&2 b) 220kV Kaithal PG – Neemwala ckt-1&2	Kaithal, Gurugram,	180 MW (approx.)	Radial Lines **(Additional feeders included in Schedule-B now to achieve desired load relief)**