भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

संख्या: उ.क्षे.वि.स./ प्रचालन/106/01/2022/ दिनांक: 06.05.2022

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 194वीं बैठक का कार्यवृत |

Subject: Minutes of 194th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 194वीं बैठक दिनांक 20.04.2022 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 |

194th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 20.04.2022. 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

सौमित्र 06/05/2022

(सौमित्र मजूमदार)

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 **194**वीं बैठक का कार्यवृत्त

194th meeting of OCC of NRPC was held on 20.04.2022 through video conferencing.

खण्ड-क: उ.क्षे.वि.स. **PART-A:NRPC**

1. Confirmation of Minutes

Minutes of 193rd OCC meeting was issued on 05.04.2022. OCC confirmed the minutes.

2. Review of Grid operations of March 2022

2.1. Anticipated vis-à-vis Actual Power Supply Position (Provisional) for March 2022

Reasons submitted by states for significant deviation of actual demand from anticipated figures during the month of March 2022 are as under:

- **Delhi**

The positive variation in demand and energy consumption is mainly due to unusual strong hot spell in March-2022.

- **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 high demand of AP and all other categories due to dry season and high temperature in the state of Punjab during month of March 2022.

- **Himachal Pradesh**

The Anticipation in Energy requirement in respect of Himachal Pradesh for the month of March 2022 came on the negative side because there was a load shedding of around 5 MUs due to the planned shutdown of the Intra - State Network of DISCOM.

- **Uttar Pradesh**

Actual Energy Requirement was higher than anticipated due to unexpected rise in temperature from 3rd week of March 2022.

2.2. Power Supply Position for NCR:

The Sub-Committee was informed that the NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of March, 2022 was enclosed in the agenda and same was discussed in the meeting.

No significant deviation in any of the states was observed.

3. Maintenance Programme of Generating Units and Transmission Lines

3.1. The maintenance programme of generating units and transmission lines for the

month of May 2022 was deliberated in the meeting on 19.04.2022.

4. Planning of Grid Operation

4.1. **Anticipated Power Supply Position in Northern Region for May 2022**

The updated anticipated Power Supply Position for May 2022 is as below:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	150	410	No Revision submitted
	Requirement	120	360	
	Surplus / Shortfall	30	50	
	% Surplus / Shortfall	25.0%	13.9%	
DELHI	Availability	4549	6900	19-Apr-22
	Requirement	3550	6900	
	Surplus / Shortfall	999	0	
	% Surplus / Shortfall	28.1%	0.0%	
HARYANA	Availability	5560	11560	No Revision submitted
	Requirement	5620	9870	
	Surplus / Shortfall	-60	1690	
	% Surplus / Shortfall	-1.1%	17.1%	
HIMACHAL PRADESH	Availability	931	1580	08-Apr-22
	Requirement	923	1570	
	Surplus / Shortfall	8	10	
	% Surplus / Shortfall	0.9%	0.6%	
J&K and LADAKH	Availability	1870	3520	No Revision submitted
	Requirement	1780	2880	
	Surplus / Shortfall	90	640	
	% Surplus / Shortfall	5.1%	22.2%	
PUNJAB	Availability	5950	11970	19-Apr-22
	Requirement	5359	9424	
	Surplus / Shortfall	591	2546	
	% Surplus / Shortfall	11.0%	27.0%	
RAJASTHAN	Availability	9280	18790	19-Apr-22
	Requirement	8150	13500	
	Surplus / Shortfall	1130	5290	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	% Surplus / Shortfall	13.9%	39.2%	
UTTAR PRADESH	Availability	13330	24000	11-Apr-22
	Requirement	12989	24000	
	Surplus / Shortfall	341	0	
	% Surplus / Shortfall	2.6%	0.0%	
UTTARAKHAND	Availability	1062	2180	06-Apr-22
	Requirement	1085	2250	
	Surplus / Shortfall	-23	-70	
	% Surplus / Shortfall	-2.1%	-3.1%	
NORTHERN REGION	Availability	42682	74700	
	Requirement	39576	65300	
	Surplus / Shortfall	3106	9400	
	% Surplus / Shortfall	7.8%	14.4%	

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	Mar-2022
Haryana	Apr-2018	Feb-2022
Himachal Pradesh	Apr-2018	Feb-2022
Punjab	Apr-2018	Jan-2022
Rajasthan	Apr-2018	Feb-2022
Uttar Pradesh	Apr-2018	Jan-2022
Uttarakhand	Apr-2018	Sep-2021

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

6. System Study for Capacitor requirement in NR for the year 2019-20

6.1. OCC forum was intimated that NRPC in its 48th meeting decided that the study report for 2019-20 along with the guidelines for finding the capacitor requirement at 11/33 kV level in NR would be submitted by CPRI. Accordingly, CPRI have submitted the system study report on 24.02.2021 and thereafter same was

shared with the constituent states. The recommended capacitor compensation, additionally required as per the report is 352MVAr. The report has brought out the additional requirement of 137MVar and 215MVar compensation for Punjab and J&K respectively. Moreover, empirical relationship for capacitor requirement against voltage profile at 11 kV, based on two configurations has been worked out in the report.

6.2. In the 45th TCC / 48th NRPC meeting, it was decided after the submission of report for 2019-20 and the guidelines, the same would be studied by the same sub-group who had earlier recommended for guidelines and foreclosure of the contract. Based on Committee's recommendations, NRPC Sectt. can process the pending bills of Rs. 14 lakhs (Rs. 2 + 12 Lakhs), excluding taxes along with foreclosure of the contract. Accordingly, submitted report needs to be examined by the Committee.

6.3. In 181st OCC, forum decided that sub-group comprising of following officers would study the report and submit the recommendation report within two weeks:

6.4. NRPC Sectt. sought comments/observations on the CPRI report from all the states via e-mail. Comment from Delhi was received. Rajasthan, HP, Punjab, Haryana submitted NIL comment. Comment from rest of the members was not received.

6.5. In the 182nd OCC meeting, forum decided that a video-conferencing meeting may be held by members of sub-group to finalize the comments, latest by 30th April, 2021 and compiled comments may be sent to CPRI for necessary correction in the report.

6.6. The meeting of sub-group was held on 03.05.21. In the meeting, sub-group members decided to get PSSE file from CPRI for better understanding, which was later shared with them.

6.7. In 183rd OCC meeting, NRPC representative requested for any other comments on the CPRI report, if remaining, from any of the members. Sub-group committee member from Rajasthan stated that since the CPRI report is for the year 2019-20, old data needs to be collected and then values in the CPRI report would be checked. It was further intimated that around 2-3 days' time would be required for this task. Forum decided that after receiving observations/comments from Rajasthan, the compiled observations / comments may be sent to CPRI so that necessary corrections may be done in the draft report.

6.8. In 184th OCC, forum was apprised that compiled comments have been mailed to CPRI vide email dated 28th May'21 with a request to submit the corrected report within two weeks' time.

6.9. CPRI vide email dated 31st May'21 communicated that majority of comments are on the modeling of base case PSSE file. Since the file is given by NRPC and CPRI has not modeled it; so, they are not in position to make any comment on the accuracy & modeling of file.

6.10. In the 185th OCC, NRPC stated that CPRI has submitted on 28th June 2021 its point-wise reply on the observations of sub-group along with updated report. OCC forum decided that a video-conferencing meeting may be held within sub-group members and CPRI for further discussion on reply of CPRI.

6.11. In the 186th OCC meeting, NRPC representative apprised the forum that in line with decisions of 185th OCC, a meeting was held on 06.08.2021 under the chairmanship of MS, NRPC through Video Conferencing. It was attended by members of the sub-group, CPRI representatives, and officials from NRPC Sectt & NRLDC.

6.12. It was also stated that in the meeting dt. 06.08.2021, comments of the sub-group on the latest version of CPRI report were deliberated in detail. After weighing the merits of the original & revisions of the report, following were decided:

- First Report submitted by CPRI in September, 2020 shall be considered as the reference report. CPRI confirmed that the base-case of 11.07.2018 at 00:45 hrs. received from NRPC Sectt has been used for preparing September, 2020 report.
- Comments from all utilities and NRLDC on September 2020 report must be submitted to NRPC Sectt, latest by 24.08.2021.
- NRPC Sectt, after examination, shall share with CPRI the compiled comments of the utilities and NRLDC, latest by 31.08.2021.
- Thereafter, CPRI shall submit its reply on the compiled comments sent by NRPC Sectt, latest by 15.09.2021.

6.13. It was further intimated that base case file (11.07.2018 00:45 hrs) and CPRI's Sep'2020 report, were e-mailed to all sub-group members on 10.08.2021 along with the request to submit comments/observations thereon, latest by 24.08.2021.

6.14. In the meeting (187th OCC), forum was apprised that although last date for submission of comments was 24.08.2021, NRPC Sectt. received comments from Himachal Pradesh, Punjab, Rajasthan, Delhi, and NRLDC vide mails dtd. 24.08.2021, 25.08.2021, 26.08.2021, 31.08.2021, and 03.09.2021 respectively. As the received comments were also on the base-case data, a meeting was held on 06.09.2021 among officers of NRPC Sectt, NRLDC and above four states for discussing comments before sending to CPRI. After detailed discussions, following were decided:

A. Himachal Pradesh:

a) It was apprised by NRLDC that generation data of micro IPPs has not been modelled by them in base-case due to their small quantity. Further, Capacitor at Baddi needs to be removed from base-case.

b) HP was requested to submit within 3 days data regarding (11.07.2018 00:45 HRS):

i. Generation break-up along with details of micro IPPs.

ii. Capacitors at 132 kV level.

iii. Nodes of major voltage profile mismatch

iv. Load factor of state (current scenario if data of past is not available)

c) It was decided that after getting above data from HP, base-case will be tuned by NRLDC before sending to CPRI.

B. Punjab:

a) All switched reactors/capacitors to be converted into fixed & net shunt capacitor value in the base-case to be corrected as per Punjab's comment.

b) Punjab was requested to submit low voltage nodes (11.07.2018 00:45 HRS) within 3 days.

c) Based on data from Punjab, initial tuning to be done by NRLDC for Q values of generators. CPRI may be required to do further tuning.

C. Rajasthan:

a) Except low voltage points, power factor needs to be upgraded in the base-case.

b) Rajasthan representative confirmed that most of the capacitors were off during the time for which modelling is done, so lumped capacitor at 132kV needs to be deleted.

c) Rajasthan was requested to submit

i. List of bus-wise capacitors and their status (OFF/ON condition) on 11.07.2018 00:45 HRS.

ii. Voltage profile of generator buses.

D. Delhi:

a) Delhi was requested to submit voltage profile of generator buses.

6.15. It was decided that after receiving data from above four states, NRLDC will tune the basecase initially and will also ensure that regional generators shall not absorb reactive power in the base-case and then base case will be sent to CPRI along with compiled comments.

6.16. In 188th OCC, it was apprised that CPRI vide e-mail dtd. 23.09.2021, requested to send comments at the earliest.

6.17. NRPC Sectt. vide e-mail dtd. 23.09.2021 apprised the CPRI that as per decisions of meeting dtd. 06.09.2021, tuning of base-case file is being done by NRLDC so that no new issue arises in future.

6.18. CPRI vide e-mail dtd. 24.09.2021 has requested that any change in loading & generation profile will be a new base case and this will be a fresh study for new base case. It will require an extensive time and efforts. CPRI has requested to ensure that load/generation profile in tuned PSSE should be same as was given to CPRI for PSSE base 11.7.2018 at 00.45.

6.19. In view of CPRI's request, NRLDC was requested vide e-mail dtd. 24.09.2021 to halt tuning of base-case till further discussion.

6.20. A meeting was held between NRPC Sectt. and NRLDC on 04.10.2021, wherein it was decided that without incorporating corrective comments of states, the report is not acceptable w.r.t drawing any conclusion on requirement of capacitor. Accordingly, NRLDC was requested vide e-mail dtd. 08.10.2021 to complete tuning of base-case at the earliest.

6.21. NRLDC representative informed that tuned base-case will be submitted by NRLDC by 28.10.2021. It was decided that the same will be sent to CPRI for necessary correction in report.

6.22. Tuned base-case has been received from NRLDC vide mail dtd 10.11.2021.

6.23. In 189th OCC, NRPC representative apprised that tuned base-case received from NRLDC is under examination in NRPC Sectt. After examination, the same will be sent to CPRI for correction in the report along with the comments submitted by states.

6.24. In 190th OCC, NRPC representative informed that tuned base-case along with comments of states has been sent to CPRI vide mail dated 30.11.2021 for correction in the report.

6.25. In 191st OCC, NRPC representative apprised the forum that a meeting was held between members of the sub-group, CPRI representatives, and officials from NRPC Sectt & NRLDC on 05.01.2022, wherein it was decided that CPRI shall tune the Q_{gen} value by taking help of NRLDC. Tuning may be done for some machines of Punjab (such as Talwandi Sabo), Uttarakhand (such as Shravanti), Himachal Pradesh, and Jammu. CPRI shall also tune Q_{gen} of Central Sector machines such as Salal, Rampur, Bhakra, Dehar etc. These Q_{gen} tunings shall be done in spirit to relieve machines from absorbing MVARs and to avoid over compensation in system due to recommended capacitors. CPRI has intimated 20th Jan'22 as target date for the activity.

6.26. In 192nd OCC, NRPC representative apprised the forum that report has been received from CPRI vide mail dtd. 14.02.2022. However, some grammatical and typographical error were observed in the report and CPRI has been requested to resolve the same. After resolution of same, report shall be shared with sub-group members tentatively in next week. After final acceptance, payment to CPRI may be processed.

6.27. In 193rd OCC, NRPC representative informed that final study report of CPRI has been shared with all states of NR region vide mail dated 02.03.2022. Further, matter regarding the payment will be taken as agenda in the next NRPC meeting.

6.28. In the meeting (194th OCC), NRPC representative informed that in the 52nd NRPC meeting, NRPC Board gave approval for payment of Rs. 14 Lakh (excluding GST) to CPRI for the system study conducted by them.

6.29. OCC forum decided that the payment process may be undertaken by NRPC Sectt as per the decision in 52nd NRPC meeting and this agenda would not be pursued further from 195th OCC onward.

7. Automatic Demand Management System

7.1. Forum was informed that as decided in the 175th OCC meeting, to conduct separate meeting with states, nominations are pending from PuVVNL, PVVNL, MVVNL, DVVNL, UPPTCL, UPCL, PTCUL, SLDC Uttarakhand, and J&K. They were requested on 01.03.2021 to submit nominations for the meeting.

7.2. Meetings on ADMS implementation roadmap have been held with the officers of Haryana, HP, Punjab and UP on 05.02.2021, 19.02.2021, 05.03.2021 and 14.07.2021 respectively. In these meetings, issues and apprehensions on ADMS were discussed along with vital aspects like addressing the commercial issues, basic architecture for scheme and funding possibilities for the scheme.

7.3. As per the request of states for DPR of any state that has got PSDF support for ADMS, website link of PSDF Sectt. has been shared with Haryana, Himachal Pradesh, Punjab and Uttar Pradesh for accessing DPR. SLDCs were also requested to expedite the submission of pending nominations.

7.4. In 186th OCC, In-charge, NRLDC stated that as per IEGC, implementation of ADMS is mandatory. It helps in reducing DSM charges also. States must take it seriously.

7.5. MS, NRPC stated that non-implementation of ADMS by states is indistinguishably non-adherence to directions of CERC. He enquired from NRLDC whether POSOCO has made any communication with CERC regarding non-adherence of its deadline i.e., 31.06.2016. NRLDC representative stated that he would look into and inform in next meeting.

7.6. NRPC representative added that initial deadline for ADMS implementation was 1st January 2011 as per para 5.4.2 (d) of IEGC. Later, CERC has taken suo-motu cognizance of non-implementation of ADMS by states and given 31.06.2016 as deadline vide its order dt. 31.12.2015 in petition no. 5/SM/2014. Implementation deadline given by the statutory and regulatory body need to complied by concerned SLDC / SEB / distribution licensee as per regulation no. 5.4.2 (a) & (b) of IEGC. Moreover, hand holding process for project proposal preparation in respect of four NR states has already been done by NRPC

7.7. Forum decided that NRLDC may file a report to CERC based on compiled status of ADMS implementation in states of Northern Region.

7.8. In 187th OCC, NRLDC representative quoted the texts of CERC order dt. 31.12.2015 in petition no. 5/SM/2014. He apprised the status of ADMS implementation till 2015. Further, he requested the states to update the status so that NRLDC may file petition in CERC on the basis of compiled status.

7.9. In 188th OCC, NRLDC informed that it has not received comments from states in this matter. Accordingly, all SLDC/DISCOMs are requested to furnish the latest status of ADMS implementation in their respective control areas latest by 31st October 2021 to NRLDC. Status as received till 31.10.2021 would be reported to CERC by NRLDC.

7.10. In the 189th OCC, NRLDC informed that status of ADMS has been sent to CERC twice (Aug'16 and Sep'16) in the past. The same is recorded in MoM of 127th OCC also.

7.11. NRLDC representative informed that CERC will be apprised again within next 10 days about the latest status of ADMS as per the updated information available with them.

7.12. In the 190th OCC, NRLDC representative informed that vide letter dated 09.12.2021 (enclosed as Annexure-A.0 of minutes of 190th OCC), CERC has been apprised about the latest status of ADMS as per the updated information available with them.

7.13. In 192nd OCC, forum was intimated that no further update has been received on this matter. Rajasthan representative intimated that ADMS implementation schedule in their state has been extended till Dec'22 and this agenda may be continued in OCC meetings for monitoring the ADMS implementation schedule.

7.14. In 193rd OCC, Rajasthan representative informed that first trail is tentatively scheduled in May 2022.

7.15. In the meeting (194th OCC), Rajasthan representative reiterated its commitment for the first trials in May 2022. MS, NRPC asked representatives of other states to regularly update the status on ADMS implementation.

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

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

8.2. In 193nd OCC, SLDC's were requested to coordinate with respective Transmission utilities of states/UT's 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.

8.3. In 194th OCC, SLDCs were requested again to coordinate with respective Transmission utilities of states/UT's 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.

9. NR Islanding scheme

9.1. Based on the decisions taken in the meeting taken by Hon'ble Minister of State (IC) for Power and New & Renewable Energy on 28.12.2020, Islanding Schemes for NR have been continuously reviewed/discussed in various forums.

9.2. In 187th OCC, it was decided that states shall submit MIS report before every OCC meeting so that same may be discussed. Format was circulated vide agenda of 187th OCC.

9.3. It was also highlighted that MoP has agreed for PSDF funding for implementation of islanding schemes and states were requested to prepare and submit DPR for the same. Further, a sample DPR on implementation of Islanding scheme for PSDF funding has been already circulated vide email dated 07.10.2021 and requested to expedite the preparation of DPR.

9.4. Utilities were requested to refer and submit SOP for every Islanding scheme in their control area.

9.5. A meeting was also taken by Honorable Cabinet Minister (Power, New & Renewable Energy) on 07.10.2021 wherein emphasis was given on PSDF funding for Islanding schemes and DPR submission for the same. MoM has been issued and copy of the same was enclosed as Annexure-A.II of 189th OCC agenda.

9.6. In the 189th OCC, NRPC representative highlighted no progress from states of Punjab, Uttarakhand, Himachal, J&K, Ladakh.

9.7. UP and Punjab representatives stated that they have sent the offer along with data to CPRI for study of Islanding Schemes. HP intimated that system study is under process at DISCOM end. Rajasthan SLDC assured the submission of RAPS SCADA display on the same day.

9.8. NRLDC submitted that they use PSSE software for system study but Rajasthan has submitted details of Islands in MI Power Software, therefore, they are exploring whether they can use that file.

9.9. MS, NRPC desired to know the reason for sending data to CPRI for system study. He stated that it may be done at state level itself.

9.10. UP representative stated that they are not able to perform dynamic system study as it involves parameters like rotor inertia, hunting, etc.

9.11. MS, NRPC expressed concern regarding apathy of states in implementation of Islanding Schemes. He stated that all SLDCs will intimate the names of Islands for which system study from CPRI is required along with justification for the same by 30th Nov, 2021. He also set timeline of 30th Nov, 2021 for Delhi to submit SOP data. He stated that communication may be sent to RAPS for submission of SOP data at the earliest.

9.12. In 190th OCC, NRPC representative informed that SOP data in respect of Delhi and RAPS have been received.

9.13. UPSLDC vide letter dated 01.12.2021 has submitted the names of islands for which system study from CPRI is required. UPSLDC has highlighted, inter-alia, that involvement of long length 765kV line and high number of buses necessitates them to go for system study by CPRI. It has mentioned that SLDC/STU has no expertise in such studies and before doing any investment on

the project, proper study is must for successful implementation and operation of Islands.

9.14. HPSLDC vide lett er dtd. 18.12.2021 has intimated that a meeting was held on 26.11.2021 between HPSLDC and HPSEBL wherein a team of officers from HPSLDC and HPSEBL has been formed to carry out transient study of all islands within a month.

9.15. UPSLDC representative informed that CPRI has asked for some additional details and technical commercial offer would be provided to them by CPRI by 15th Jan 22.

9.16. NRLDC representative informed that report received from Rajasthan regarding the Jodhpur-Barmer-Rajwest islanding scheme is in order and Rajasthan SLDC can proceed ahead. Further, NRLDC submitted that they use PSSE software for system study but Rajasthan has submitted details of Islands in MI Power Software, therefore, they are not able to access the file.

9.17. Rajasthan SLDC representative informed that they have given the details in the hard copy of the load and generation to be considered for islanding scheme, and based on that have requested NRLDC to simulate it in PSSE software for validation. NRLDC representative agreed to the request of the Rajasthan SLDC.

9.18. Uttarakhand SLDC representative informed that hydro stations near Dehradun are peaking stations and the proposed Dehradun islanding scheme appears to be infeasible. NRPC representative informed that some schemes in NR have been proposed by considering Hydro stations and Dehradun islanding scheme was proposed by the state SLDC itself in view of all factors. Thus, Uttarakhand SLDC shall immediately conduct study on the proposed Islanding Scheme having Khodri & Chibro units and provide status on the feasibility of scheme with supporting data so that same may be communicated to the Ministry.

9.19. In the meeting (191st OCC), HPSLDC representative informed that they need further two weeks to submit the outcome of transient study of all islands.

9.20. Uttarakhand representative informed that major hydro stations e.g. Chibro, Khodri etc at Dehradun Region in Yamuna valley are non-must run and peaking stations. Therefore, it is technically not feasible to implement Dehradun as an islanding scheme. However, nominations of nodal officers from various utilities (PTCUL, UJVN Ltd & UPCL) are being sought for the formation of internal committee for accessing the possibility of Dehradun as Islanding scheme and the report shall be submitted to NRPC Secretariat subsequently.

9.21. NRPC representative asked Uttarakhand to expedite the submission regarding the status on feasibility of the proposed Islanding scheme.

9.22. MS, NRPC stated that all constituents that have given their information about the planning of islanding scheme shall take up the work on top priority and submit the progress in time bound manner by submitting the updated MIS format every month.

9.23. NRLDC representative informed that Rajasthan SLDC is modelling data on PSSE software and it is expected to be completed within one week. Thereafter, NRLDC will submit its comments on the same. Rajasthan representative consented for the same.

9.24. UP and Punjab were asked to update the status of their study being done by CPRI. Both informed that there is no progress since last OCC and they are waiting for response from CPRI.

9.25. In 192nd OCC, UPSLDC informed that they have received techno-commercial offer from CPRI for both the islanding schemes of UP and accessing the inputs from CPRI they will be conveying a meeting in last week of February 2022.

9.26. NRLDC representative informed modelling data on PSSE software received from Rajasthan has not been modelled for islanding scheme. Further, NRLDC representative asked Rajasthan SLDC to send their team next week for modelling the data on PSSE software.

9.27. MS, NRPC asked Uttarakhand SLDC to expedite the study they are conducting to access the feasibility of Dehradun islanding scheme.

9.28. NRPC representative informed that a meeting was convened by HPSLDC with officials of NRPC Sectt., NRLDC, HPSEBL, & HPPTCL on 11.02.2022. It was observed that system study work has been pending due to pre-occupation of the concerned resource. Therefore, it was decided that HPSLDC shall write letters to MDs of HPSEBL & HPPTCL. It was decided to review the status in another meeting in the first week of March 22. It was intimated that HPSLDC has written letter dt. 14.02.2022 to HPSEBL, & HPPTCL.

9.29. Punjab SLDC also informed that they will be convening a meeting with STU within a week to track the progress.

9.30. In meeting (193rd OCC), NRPC representative informed forum that HPSLDC convened a meeting on 4th March 2022 wherein they presented the results of static and dynamic study conducted by them. NRLDC suggested that dynamic data used by HPSLDC is common data and it was decided that they will use data of particular generators and then apprise about the same.

9.31. UPSLDC also convened a meeting on 7th March 2022 wherein they informed that CPRI has submitted the offer with a completion target of 5 months. It was also discussed that as there are two islanding schemes in UP control area hence it was suggested that CPRI may be asked to do it in 2 parts preferably 2.5 months each for both the islanding scheme.

9.32. UPSLDC representative informed that CPRI would not be able to bifurcate the time separately for both the islanding scheme and acceptance is under consideration by the management.

9.33. HPSLDC representative informed that they have communicated to all generators for providing dynamic data, and only reply from Karcham Wangtoo has been received from till date.

9.34. Rajasthan representative informed that next week they will send their team to NRLDC for modelling the data on PSSE software.

9.35. J&K representative informed that load has been identified and no further update. MS, NRPC asked J&K representative expedite the study work.

9.36. Further, MS NRPC suggested that states shall coordinate with NRPC and NRLDC officials for carrying out the study.

9.37. Further, Punjab and J&K representative were requested to convene a meeting in the last week of March with the officials of NRPC and NRLDC to deliberate about the updated status of the islanding scheme in their control area.

9.38. In the meeting (194th OCC), Punjab representative informed that CPRI has asked for PSSE file for dynamic study which is being coordinated with NRLDC. STU has given timeline of 6 months for implementation after CPRI study.

9.39. MS, NRPC along with NRLDC have desired that all states of northern region where islanding scheme is to be implemented shall convene meeting with the officials of NRPC and NRLDC wherein the study requirements can be discussed.

9.40. OCC forum was of opinion that all generating units (especially 660MW units) shall make an effort to ensure successful household operations. UP representative was requested to expedite the implementation work of Unchahar-Lucknow Islanding scheme after analysing load-generation balance and conducting steady state study.

9.41. Further, OCC forum was of view that states shall go for implementation of islanding scheme after steady state study along with load generation balancing and dynamic study, if desired, may be carried out in later stage.

10. Coal Supply Position of Thermal Plants in Northern Region

10.1. In the meeting, NRPC representative apprised the forum about the coal stock position of generating stations in northern region during current month (till 10th April 2022).

11. Appraisal report of NRPC regarding Installation/ Re-shuffling Programme of 33kV Shunt Capacitor Banks at various GSS of RVPN (Agenda by RRVPNL)

11.1. NRPC representative apprised forum that RVPN has planned reshuffling of existing capacitors and installation of new capacitors for improving voltage profile and power factor. In this regard, they have submitted proposal to NLDC for PSDF funding. In turn, NPC Division, CEA has sought appraisal report of NRPC for further processing of RVPN's case.

11.2. NRPC representative informed that final capacitor study report has recently been submitted by CPRI and same has been circulated among all NR states, including Rajasthan. The CPRI report provides insight of state-wise MVAr requirement for the year 2019-20 and empirical formula for assessing the capacitor requirement at Distribution level.

11.3. MS, NRPC asked RVPN to conduct an initial study at their side for the year 2021-22 and thereafter results of their study can be discussed with the officials of NRPC and NRLDC. Further, he opined that a sub-group comprising of officers of NRPC Sectt, NRLDC and RVPN may go through the proposal of RVPN and submit its recommendation on the subject matter. Representative of RVPN was requested to depute their concerned officer(s) in NRLDC/NRPC in the first week of May, so that sub-group can jointly go through the proposal.

12. Calibration and testing of Interface Energy Meters installed at Generating stations. (Agenda by NHPC)

12.1. NHPC vide mail dated 12.04.2022 (Copy of the letter is attached as Annexure-A.IV. of agenda) requested that OCC forum may issue a guideline to fix the responsibility for carrying out the calibration/testing of SEMs which are owned by PGCIL/CTU.

12.2. CTU representatives informed the forum that as per the regulation they have no mandate to carry out the Calibration and testing of Interface Energy Meters; moreover, currently they do not have any regional set up for facilitating the same. However, considering the criticality of the issue of Calibration and testing of Interface Energy Meters for all the generating stations and economy of these calibration and testing, MS, NRPC opined that a separate meeting may be conveyed with the CTU, POWERGRID, NRPC, NRLDC and generators wherein the matter may be discussed and subsequently a decision can be taken on this issue.

13. Review of Special Protection Scheme at POWERGRID Bhadla Pooling station (Agenda by POWERGRID)

13.1. NR-1 Powergrid vide email dated 13.04.2022 intimated that currently the total capacity of 400/220kV ICTs at Bhadla pooling station (POWERGRID) is 7X500MVA. As of 3rd Mar 2021, connectivity (220kV side) of 3380 MW RE capacity has already been granted. SPS for Bhadla (PG) has already been designed and approved in the RPC forum. The work order for implementation of SPS scheme at Bhadla has been placed and implementation is under progress.

13.2. However, at the time of design of conditions and formulation of load groups, there were only 03 ICTs in operation at Bhadla and connectivity of station was limited to Bhadla RVPNL (at 400kV) and Bikaner (at 765kV) substations. The network at Bhadla has changed since the design of last SPS scheme i.e. currently 07 ICTs are in operation and additional connectivity to Bhadla-II (POWERGRID) at 400kV has established and Fatehgarh-II at 765kV is expected soon.

13.3. In view of significant changes in network and increasing solar generation, NR-1 Powergrid requested OCC forum that there is a need to review the load groups and earlier approved SPS scheme.

13.4. NRLDC representative mentioned that during the time of deign of conditions and formulation of load group it was envisaged that at the time of n-1 non-compliance of ICT's at Fatehgarh-II, Bhadla-II and Bikaner substations, load groups may be rearranged. On the request of POWERGRID, NRLDC has accepted the request for the study of load groups and to review the requirement of the SPS scheme.

13.5. Further, NRLDC representative suggested POWERGRID to review the sectionalization of ICT's at Bhadla Pooling station.

14. Load Flow Study of Bhakra Power House Complex. (Agenda by BBMB)

14.1. BBMB vide mail dated 13.04.2022 (copy of the letter is attached as **Annexure-A.II**) highlighted the need for requirement of comprehensive study for adequacy of transmission lines from Bhakra Power House Complex. BBMB requested that load flow study may please be carried out by NRLDC to identify possible constraints for evacuation of power of Bhakra Left Bank and Bhakra Right Bank Power House.

14.2. NRLDC representative requested BBMB to share the results of study they have got conducted from Himachal Pradesh for further examination.

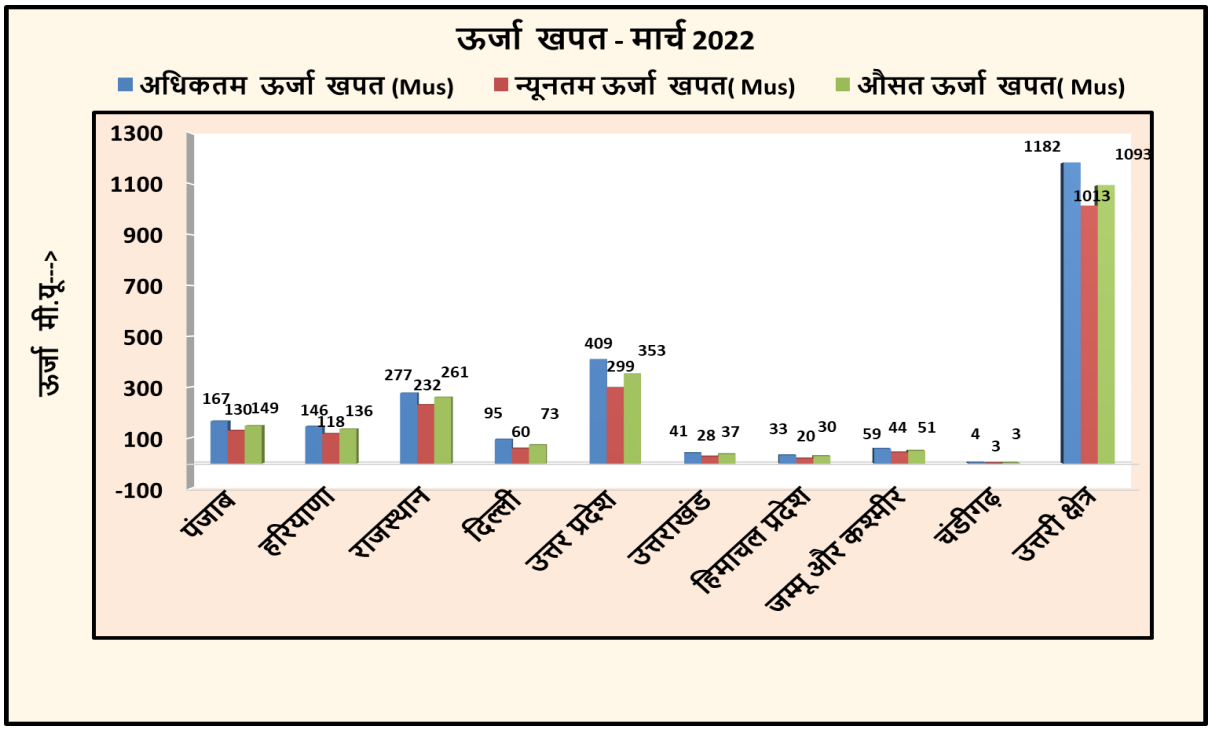
खण्ड-ख: उ.क्षे.भा.प्रे.के. **Part-B: NRLDC**

15. NR Grid Highlights for March 2022

NRLDC representative highlighted the following major grid highlights for March 2022:

- Maximum energy consumption of Northern Region was 1182.02 Mus on 31st Mar'22 and it was 10.65 % higher than Mar' 2021 (1068.28 Mus 11th Mar'21)
- Average energy consumption per day of Northern Region was 1093.38 Mus and it was 9.58 % higher than Mar'21 (997.79 Mus per day)
- Maximum Demand met of Northern Region was 53577 MW on 21st Mar'22@ 20:00 hours (Based on data submitted by Constituents) as compared to 52576 MW on 5th Mar'21 @ 10:00 hours
- Northern Region all time high value recorded in March'22:

Solar Generation	All Time High Record		Previous Record (upto Feb-22)	
	Value (MU)	Achieved on	Value (MU)	Achieved on
	103.67	31.03.22	91.5	12.02.22



Comparison of Average Energy Consumption (MUs/Day) of NR States for the Mar'21 vs Mar '22

क्षेत्र/राज्य	मार्च- 2021	मार्च-2022	% अंतर
चंडीगढ़	3.20	3.473	8.65
दिल्ली	67.00	73.156	9.19
हिमाचल प्रदेश	30.14	29.993	-0.50
हरियाणा	128.53	135.506	5.42
जम्मू और कश्मीर	50.20	51.087	1.77
पंजाब	130.45	148.942	14.17
राजस्थान	234.13	261.125	11.53
उत्तराखंड	36.82	37.397	1.56
उत्तर प्रदेश	317.32	352.702	11.15
उत्तरी क्षेत्र	**997.80**	**1093.380**	**9.58**

Rajasthan representative stated that agricultural supply is now being supplied in two blocks, therefore peak demand is much higher and new agricultural connections have been given which has also increased energy consumption. Load extension has also been done by industrial consumers.

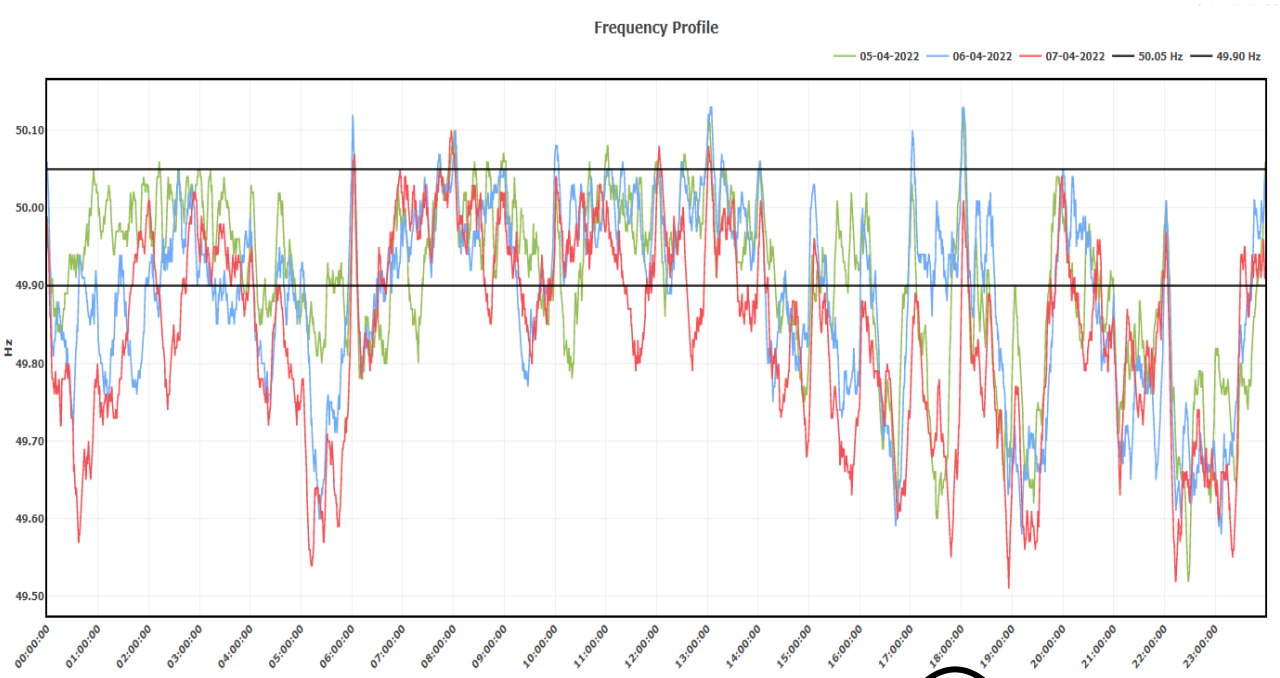
Punjab SLDC representative stated that higher demand is due to high temperature. Detailed presentation shared by NRLDC is attached as **Annexure- B.I**.

Frequency Data Comparison

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq.(Hz)	<49.90(%time)	49.90–50.05 (%time)	>50.05 (%time)
Feb'22	50.00	50.26	49.54	6.0	76.8	17.2
Mar'22	49.98	50.30	49.54	14.50	**73.42**	12.10

NRLDC representative stated that in Mar'22, frequency remained within IEGC band for only **73.42%** of the time. Many a times, frequency went below 49.60 Hz. During this time, large generation outage or any other contingency event, could result in further drop in frequency and therefore, overdrawals below IEGC band may be avoided to keep system secure. All utilities were requested to follow all the measures described subsequently in this agenda point.

As deliberated in 193 OCC meeting, NR demand has been increasing and is likely to increase further in coming days and therefore keeping system parameters within operational band is extremely important as any laxity could prove to be very costly for the Grid. For the last few days, system frequency is running below the operational band for considerable percentage of time especially during afternoon and night hours. Frequency profile for the few days of April (05-07 April 2022) was deliberated in the meeting:



Date	Min Freq	Min Freq Time	Max Freq	Max Freq Time	Avg Freq	FVI	SD	Below Band	Within Band	Above Band
09-04-2022	49.5	23:30:00	50.21	13:03:30	49.92	0.219	0.12	39.2	51.8	9.1
08-04-2022	49.58	05:25:30	50.24	13:05:50	49.94	0.162	0.11	35	54.3	10.7
07-04-2022	49.51	18:55:50	50.11	07:57:20	49.84	0.415	0.126	62.7	35.9	1.4

06-04-2022	49.58	23:07:10	50.14	13:03:10	49.89	0.269	0.118	48	47.9	4.2
05-04-2022	49.52	22:27:50	50.14	18:01:40	49.91	0.206	0.109	41.3	54.7	4
04-04-2022	49.58	19:15:20	50.16	08:02:50	49.95	0.107	0.089	25.6	68.1	6.3

As visible from above plots, frequency profile has sharply deteriorated in March/ and in first fortnight of April 2022. The main reason for the above poor frequency profile is over drawal by the some of the states in NR also such as J&K, HP, Rajasthan, Uttarakhand and Haryana. Accordingly, as a last resort radial feeders for these states were opened by NRLDC to restrict decline in frequency and limit over drawl of these states (details attached as **Annexure-B.II**).

The power prices in country have also gone very high in view of high demand & congestion. Therefore, maximizing all the internal generation as well as load management is necessary for safe and secure operation of the Grid.

All the concerned were requested to strictly take actions and avoid over drawal from Grid for safe & secure operation of the Grid. Therefore, following actions were requested:

1. Managing the demand portfolio and making prearrangements for procurement of power and ensuring portfolio balancing through STOA/RTM market segments
2. More units shall be kept on bar in order to meet the increased demand safely as well as maintaining reserves
3. Keeping sufficient coal stock and maintaining adequate reserves.
4. Restricting deviations from schedule and ensuring no under injection by the generators from schedule.
5. Advance action is required for bringing the units on bar to avoid situation such as encountered in March/ April 2022.
6. Ensure that ADMS is in service and expedite its implementation if not commissioned.
7. Ensure healthiness and availability of AUFLS and df/dt load shedding.
8. In case of inadequate margins in intrastate generators measures for emergency load regulation measures may be taken in interest of grid security.
9. Pursue generators to expedite revival of thermal units under forced outage wherever feasible.

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. It can be clearly seen from Annexure-B.I of agenda that the feeders are opened by NRLDC only in case of overdrawl and low frequency operation of the grid. Moreover, after some time when frequency is within the IEGC band and state is able to maintain its drawl as per schedule, these feeders are closed.

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.

JK SLDC vide their email dated 10.04.2022 have intimated that following 220kV lines are proposed to replace the existing list (attached) for physical regulation:

- 220kV D/C Samba-Hiranagar (upto 200MW)
- 220kV New Wampoh-Mirbazar (upto 200MW)

Uttarakhand SLDC vide email dated 13.04.2022 have intimated that list of radial feeders shall be:

- 132kV Sitarganj-ELDECO
- 132kV Pithoragarh(PG)-Pithoragarh

J&K representative stated that they are resorting to load shedding as they are not able to procure the required from power markets and generation from Baglihar is also not as per requirement. They have also received letters from NRLDC in this regard. But, due to Ramzan load has to be supplied during some hours and they may be overdrawing in some time blocks. However, they will make sure to minimise such over drawls in future.

UP representative stated that they are also trying to minimise overdrawl during low frequency however, as demand ramp is very high for UP state control area, there are some issues for managing overdrawls. It was also highlighted that schedule is getting updated after 6 blocks since the implementation of RTM, therefore managing actual drawl against schedule has become challenging.

HP, Rajasthan and Haryana representatives stated that they shall also try and minimise the overdrawls during the time of low frequency.

Uttarakhand representative stated that 132 kV Sitarganj -ELDECO is an industrial feeder and therefore opening may be avoided. He said that they would revise their list of radial feeders and submit to NRLDC.

All states need to make sure that the list attached as Annexure in agenda is correct, radial and actually provides relief in real-time. Same has also been repeatedly requested by written communication from NRLDC and discussions in OCC meetings. If no feedback is received, it would be assumed that the list attached at Annexure in agenda is ok. It was also advised that SLDCs take necessary actions at their end beforehand so that there is no overdrawl at low frequency and requirement of instructions from NRLDC for opening of feeders for physical regulation is not there.

Recently, the market prices have also started showing trends as per the solar generation pattern. Market prices for 8th April 2022 is shown below:

From the plot, it can be seen that the market prices in day-time are much lower than rest of the day. For some time, there is even in constraint in NR-WR export leading to market splitting and cheaper power in Northern region as compared to rest of the country. States need to take cues from this and try and shift their maximum load during day-time. In the coming years, with increasing solar generation, the prices during day are likely to dip further whereas they may be much higher during evening, night and morning hours. Therefore, a major portion of DISCOM load especially agricultural load may be shifted to day-time.

MS NRPC also expressed concern on the low frequency operation of the grid. He also appreciated Rajasthan for shifting their agricultural load during solar generation hours so that they are able to procure power at cheaper prices. All other states were also advised to follow this suit and shift their maximum load during solar generation hours. He also enquired whether feeders opened for physical regulation remain open for short duration or number of hours. It was informed by NRLDC representative that these opened feeders are closed as per grid frequency and overdrawl/ underdrawl by the grid.

16. Summer preparedness 2022

NRLDC representative stated that as discussed in 193 OCC meeting, due to extreme weather conditions, high demand is observed during summer/monsoon months in Northern region. 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 (recently in 193 OCC) and TCC/ NRPC meetings and are required to be followed by all:

- During summer, in anticipation of increasing demand, adequate reserves shall be maintained.

- All ISGS and state thermal generators need to back down upto 55% of their capacity.
- Apart from portfolio management based on proper forecast, re-starting of units under reserve shutdown at state as well as Inter-state level through appropriate transactions is required.
- Update & sharing coal stock position of thermal plants at least a week in advance as agreed earlier in TCC/NRPC meeting.
- In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states are advised to maximize their internal generation to avoid low frequency/low voltage operation or other related issues
- Extra precautions need to be taken care for important lines which have history of tripping during thunderstorm/ windstorm. ERS availability to be ensured.
- To maintain the voltage profile of Grid within IEGC band during summer, following known actions are suggested:
  - Switching ON Capacitor/Switching OFF reactor as per system requirement
  - 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.
  - Dynamic reactive support from Generator as per their capability curve.
  - SCADA Displays for better visualization during real-time
- 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
- All are requested to ensure the telemetry of all analog & digital points of all stations at respective control centers.
- All utilities are requested to regularly monitor advance weather information related websites and take necessary actions accordingly. POSOCO-IMD website available @ http://14.139.247.5/power/NRLDC/main/MAIN.html can also be utilised for advance weather information. Live thunderstorm monitoring along with RADAR images are available at website.

All utilities were advised to take actions to ensure above mentioned measures are implemented and share their action plan for demand management during summer 2022.

Members agreed to take necessary actions as discussed in the meeting.

17. Sharing of hourly Load shedding under different categories on NRLDC Reporting Software

As discussed in 189th OCC meeting, recently, Secretary, Ministry of Power, emphasized the importance of ensuring accuracy of the hourly load shedding (MW) and energy not met (MU) figures being received from various SLDCs on daily basis in respect of their own states, and classifying them under different heads like low availability, transmission constraints, financial constraints, planned maintenance of transmission / distribution system within state, etc.

Although SLDCs are uploading the hourly load shedding figures of the previous day on the web-based reporting software of NRLDC the next day, but reason for the shedding or unserved demand at any hour is not segregated into the possible different categories.

UP, Haryana, Rajasthan, Punjab, Uttarakhand and HP are providing reasons whereas some other states such as Delhi, J&K and Chandigarh are not furnishing the reasons for load shedding. In view of the above, it is once again requested to kindly classify the reason of shedding in the detail sheet of hourly load shedding, in the daily power supply report, before uploading it to the web-based reporting software on daily basis.

In 192 OCC meeting, Delhi, J&K and Chandigarh SLDC representative was not available for comments. NRLDC representative expressed concern and stated all SLDCs should immediately take necessary actions as the same is pending since long. As discussed in last OCC meeting, Delhi SLDC should communicate with DISCOMs to timely furnish the data as the same further needs to be shared with MoP. Delhi SLDC was also asked to share their communication to DISCOMs with POSOCO and MoP for taking further actions if DISCOMs are not ready to timely share the details as per the format.

In 193OCC meeting, Delhi SLDC representative stated they have started sharing the load shedding details are required from 20th March 2022 onwards. However, due to delay in receiving the data from DISCOMs, there might be some delay in reporting the data to NRLDC.

In 194 OCC meeting, Delhi SLDC representative again highlighted that there is delay in receipt of information from DISCOMs. NRLDC and NRPC representatives expressed concern and stated that same status is being given since last 3-4 meetings and no improvement is seen in this regard. Separate meetings need to be organised with DISCOMs and NRLDC and NRPC representatives would also join. Delhi SLDC representative agreed for the same.

18. TTC/ATC of state control areas for summer 2022

NRLDC representative stated that all NR states except J&K, Ladakh and Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC. However, it is observed that some states are still not regularly declaring the TTC/ATC for the import and export of power. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

SLDCs were requested to go through the tentative ATC/TTC limits for May 2022 assessed by NRLDC/SLDCs in consultation (Annexure-B.II of agenda) 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.

Punjab

Punjab was requested to provide update on the following works which are likely to enhance ATC/TTC of Punjab state control area:

- Augmentation of 1 No. 315 MVA ICT with 500 MVA ICT at Ludhiana by shifting of 500 MVA ICT lying spare at Malerkotla to Ludhiana *(expected by May'2022).*
- Commissioning of new 500MVA ICT at Rajpura *(expected by May'2022)*.
- Augmentation of Kartarpur-Jalandhar PGCIL line with HTLS conductor to make 2 No. 315 MVA ICTs N-1 complaint at Nakodar. The loading of these ICTs to be controlled by shifting of Kartarpur load to Jalandhar PGCIL (presently running from Nakodar ICTs) (*expected by Apr'2022*).

In 194 OCC meeting, it was discussed that all these elements are expected before paddy 2022. Punjab SLDC has shared their ATC/TTC assessment with NRLDC on 30.03.2022. NRLDC is reviewing the ATC/TTC limits shared and there have been several discussions between NRLDC and Punjab SLDC on the subject. It was discussed that ATC/TTC of Punjab state control area is likely to be 8500/9000MW after commissioning of above elements. However, enhancement is possible only after commissioning of all of these transmission elements.

UP

SPS for Sohawal and Lucknow to be expedited.

In 191 OCC meeting, UP SLDC representative stated that :

- Exploring possibility of shifting SPS from Bareilly(UP) to Sohawal.
- Constraint at 400/220kV Lucknow(PG) is likely to be relieved with full commissioning of 400/220kV Jehta S/s.

In 192 OCC meeting, UP SLDC informed the following:

- No progress on works for SPS of Sohawal(PG). NRPC and NRLDC expressed concern on the same.
- Mock-testing would be carried out in Anpara-Unnao complex.

In 193 OCC meeting, UP SLDC informed the following:

- No progress on works for SPS of Sohawal(PG). NRPC and NRLDC expressed concern on the same (UP-STU).
- Loading of 400/220kV Sohawal ICTs is expected to be lower this year due to commissioning of nearby substations such as Basti and outage of 220kV lines.

UP SLDC had shared their assessment with NRLDC vide letter dated 31-03-2022.

Intra–State Generation(w/o Solar and Co-Gen)	TTC	RM	ATC
10000	15100	600	14500
11000	14400	600	13800
12000	13800	600	13200
13000	13300	600	12700

In 194 OCC meeting, it was discussed that:

- As per assessment done by NRLDC, the TTC computation pertaining to UP state control area seems to be in order. However, local load management would be required at Mau, Azamgarh, Nehtaur, Obra, Sarnath, Moradabad & Gorakhpur (UP) to arrive at these figures. Azamgarh ICTs should also be mentioned in the limiting constraints. Also, the actual load-generation scenario can change the TTC quantum based on the assumed local load distribution.
- UP SLDC was asked to share plan for load management at constained ICTs and also update on progress of underlying network at new stations such as 400/220kV Sambhal, Rasra, Sahupuri, Rampur, Jaunpur etc.

UP SLDC representative stated that 400/220kV Rasra substation is expected to be commissioned shortly. Many constrained ICTs are likely to be relieved with commissioning of Rasra sub-station. Moreover, revised ATC/TTC assessments along with load management plan would be shared shortly. It was also agreed that mock testing of SPS may be carried out before summer season as most of the constrained ICTs have SPS. SPS for 400/220kV Obra and Nehtaur substation would also be planned and commissioned before summer season.

Rajasthan

Rajasthan had shared ATC/TTC calculations with NRLDC on 22.10.2021. On 28.10.2021, NRLDC has shared their observations on basecase as well as simulation studies carried out by Rajasthan.

In 193 OCC meeting, Rajasthan SLDC representative informed there were some changes yet to be incorporated in basecase shared by NRLDC. NRLDC representative stated same may be carried out by Rajasthan before assessment of ATC in basecase shared. It was also informed by Rajasthan that proposal for SPS at constrained locations is under approval and would be brought for discussion in next OCC meeting. ICT Loadings observed above N-1 contingency limits were also discussed in the meeting.

Accordingly, Rajasthan SLDC has proposed SPS at 400/220kV Ajmer, Merta and Chittorgarh (Annexure-B.III of agenda).

In 194 OCC meeting, NRLDC representative stated following were comments from NRLDC side on the proposal:

- Ajmer: Proposed SPS seems to be in order in general as per NRLDC.
- Merta: 220/132kV Merta ICTs not shown in diagram.
- Chittorgarh: Other 220kV line may also need to be added as sought relief may not be provided.

Rajasthan representative agreed to look into the comments from NRLDC side. Rajasthan was given in-principle approval for implementation of SPS at 400/220kV Ajmer, Merta and Chittorgarh, expedite implementation of SPS, and share revised ATC/TTC assessment of Rajasthan state control area.

Delhi

ATC is not being uploaded in website, only violation of ATC is being shown.

Delhi representative was not present in 192 OCC meeting for comments.

In 193 OCC meeting, Delhi SLDC was asked to implement SPS at Mundka and Bamnoli to save supercritical loads under N-1 contingency of one ICT. Delhi representative stated SPS at Mundka would be implemented before summer season. However, same is yet to be confirmed by DTL. NRLDC asked DTL and Delhi SLDC to coordinate and expedite shifting of ICT from Bamnauli to Mundka and implementation of SPS at 400/220kV Mundka. Delhi SLDC was asked to share the revised ATC/TTC limits for summer/monsoon 2022 along with anticipated generation scenario, basecase and reports with NRLDC at the earliest.

In 194 OCC meeting, it was informed that works for Mundka ICT are in place and ICT is expected before 30th April 2022. It was informed that SPS has been implemented at 400/220kV Mundka ICTs. NRLDC representative stated that SPS logic needs to be shared with NRLDC/ NRPC beforehand so that same can be discussed and approved in OCC/TCC/NRPC meeting before implementation. DTL was asked to share the logic and mock-testing exercise & ATC/TTC assessment with NRLDC/ NRPC at the earliest. Moreover, Delhi SLDC should immediately start uploading their ATC/TTC limits on their website.

Haryana

In 194 OCC meeting, Haryana SLDC was once again asked to expedite implementation of SPS and ICT capacity augmentation at 400/220kV Deepalpur and Kurukshetra (PG) to enhance their ATC/TTC limits at the earliest. Haryana SLDC informed SPS works are in process and would be implemented at Deepalpur by May'2022. For Kurukshetra, they have taken up the matter with STU to further take up with POWERGRID.

Haryana SLDC was asked to share the revised ATC/TTC limits for summer/monsoon 2022 along with anticipated generation scenario, basecase and reports with NRLDC at the earliest. Network arrangement for managing loading at Kurukshetra also needs to be shared. Haryana was also asked to expedite utilisation of underlying network at Bhiwani.

HP

HP has started sharing its ATC assessment since last 3 months in consultation with NRLDC. It was discussed that mostly intrastate constraints were highlighted by HP and the studies were done for lesser import values. HP was advised to assess possible tie-line/ICT constraints with import close to real-time values. One to one meeting was organized on 03.12.2021 between NRLDC and HP SLDC officials to overcome the challenges being faced by SLDC in ATC/TTC assessment and other issues in PSSe.

ATC for summer 2022 to be shared.

Evacuation issue of Bajoli Holi generation was discussed. It was discussed that due to delay in commissioning of 400kV Lahal-Chamera line, issue in evacuation from Bajoli Holi generating station. HP SLDC representative informed line is expected to be commissioned by Sep 2022.

Uttarakhand

Uttarakhand has shared its ATC assessment with NRLDC for summer 2022.

J&K

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/Tsare 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 after procurement of PSSe software.

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

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

Since from April onwards, demand of most of the NR states has increased sharply, it was requested that the revised ATC/TTC limits for summer2022 along with anticipated generation scenario may be shared with NRLDC at the earliest**.**

It was again advised 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.

19. Grid operation related issues

(i) Long outage of transmission elements/ generating units

Reasons and revival date for elements under long outage are being discussed regularly in OCC meetings. Any update on the status of these elements from last OCC meeting may be shared with the forum (Annexure-B.IV of agenda).

All utilities were requested to make it a practice to update status of elements under long outage in the NRLDC outage software portal. Utilities were requested to take necessary actions to revive elements which are under long outage.

NRLDC representative stated that as deliberated and agreed in OCC-185th meeting (refer clause 17 (iii) in MoM), Utilities were asked to advise the concerned to ensure timely intimation for processing the consent and charging of elements within stipulated time as per new element charging procedure. It was also discussed that protection settings should be shared by both utilities in case of LILO to NRLDC to ensure smooth process during first time charging. However, in some cases listed below, the remote end utilities have not submitted the documents on time resulting in delay in charging of transmission lines after completion of LILO work.

S No	ELEMENT NAME	REASON OF OUTAGE	NRLDC Remarks
1	220 kV Fatehpur (UP)-Unchahar (NTPC) -2	for LILO of 220KV Fatehpur -Unchahar-II at newly constructed 220KV S/s Malwan.	Document yet to received from Unchahar (NTPC) end. In view of the same, approval for charging of 220kV Malwan-Unchahar line still pending.
2	400 KV MANDOLA(PG)-BAWANA(DV) (DV) D/C	for LILO arrangement at maharanibagh	DTL did not submit the documents timely resulting in delay.
3	400KV Jhatikara-Bamnoli-I	for LILO of 400KV Jhatikara-Bamnoli-I at Dwarka(PG)	

Utilities were requested to make sure that similar to other elements, protection settings should be shared by both utilities in case of LILO to NRLDC to ensure smooth procedure during first time charging as it leads to delay in allowing first-tine charging of line. NRLDC representative also stated that separate session would be once again organized on First-time charging procedure for benefit of utilities shortly.

POWERGRID representative expressed concern on the delay from some utilities especially DTL. Some other utilities also expressed concern that there is delay from other utilities in case of LILO of lines. DTL representative stated that required support has been provided from DTL end to POWERGRID end.

MS NRPC also expressed the concern and stated that the requesting utility should timely take up the issue with other utility beforehand so that before requesting for charging clearance from NRLDC all clearances are obtained.

Information about new transmission elements/ generating units to be commissioned in next 45 days

In 176th OCC meeting, it was discussed that first time charging procedure is not being diligently followed by some entities. The documents are being submitted at the last minute and thereafter it is being urged to NRLDC to give the code for charging. In the meeting it was also requested that utilities should inform about elements expected for first time charging in the next one month in advance in OCC meeting. This information would be helpful in carrying out studies, SPS requirement/modification etc in time.

Utilities are also requested to make sure that list of 220kV and underlying intra-state lines and ICTs is readily available with them, so that the same can be shared with NRLDC/NRPC as and when required. This data is to be shared with NRLDC/NRPC for timely updation of Powermaps, PSSebasecase, Protection analysis etc.

UP SLDC vide their email dated 13th April 2022 has communicated the following:

1.LILO of 765 kv Mainpuri- Greater Noida Line at Jawaharpur TPS.

2.LILO of 220 kv Sohawal (pg) - New tanda line at 220 kv Ayodhaya.

3.LILO of 220 kv Gorakhpur (pg)- Bansi line at 220 kv Dulhipar.

4.765 kv s/c Ghatampur TPS - Hapur line (including 330 MVAr line reactor at Hapur end)

5.125 MVAR bus reactor at 400 kv mau.

6.LILO of 220 kv Fatehpur- Unchahar ckt-II at 220 KV malwan

7.125 MVAr bus reactor at 400 KV panki

8.500 MVA ICT-I at 400 KV Rasra along with bay no 402,408,409 at 400 kv Rasra.

9.400 KV D/C Obra - Jaunpur line

10.LILO of 765 KV Anpara D- Unnao line at Obra C (with line reactor).

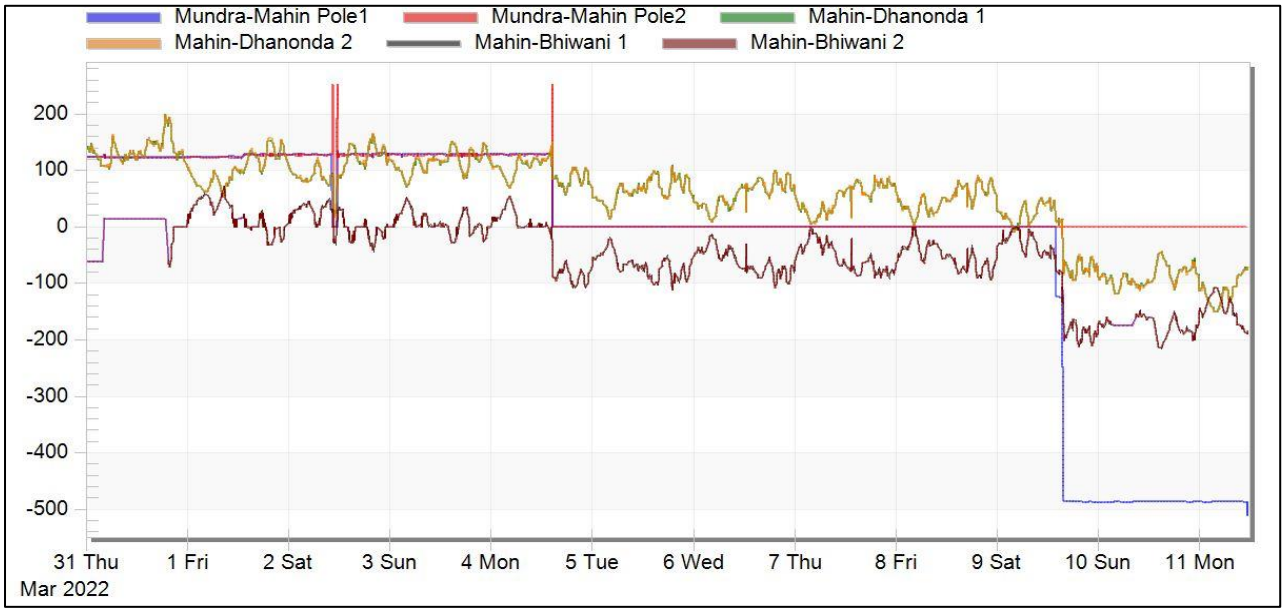
11.765 KV Main bus -I& II at 765 KV Obra C

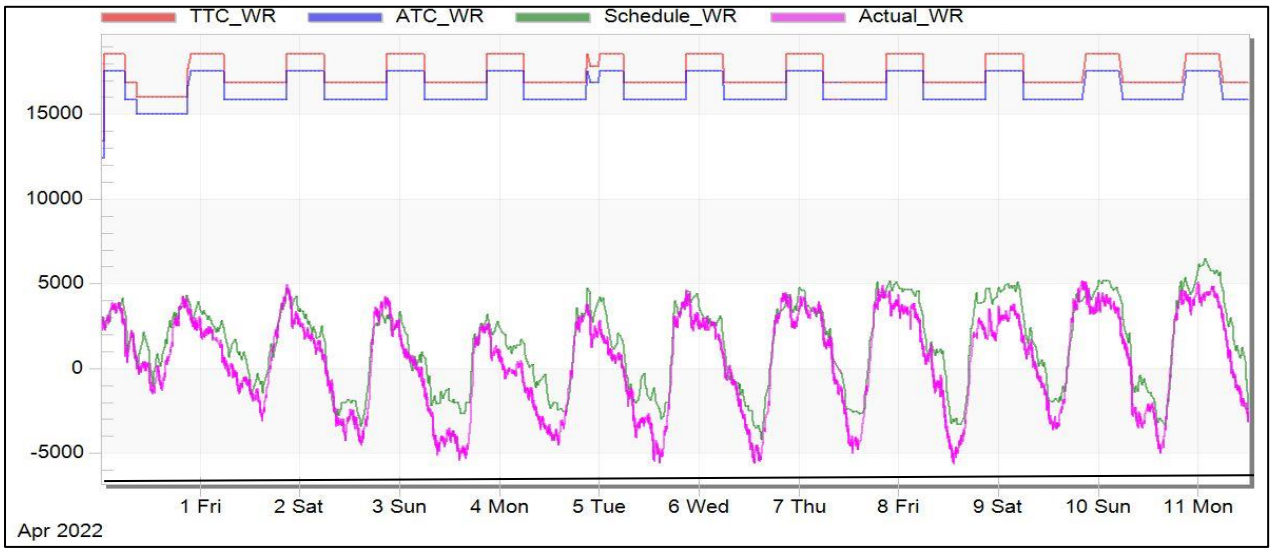
In line with the above decisions, all utilities were requested to share the information about transmission elements/ generating units which are expected to be first time charged in the next 45 days.

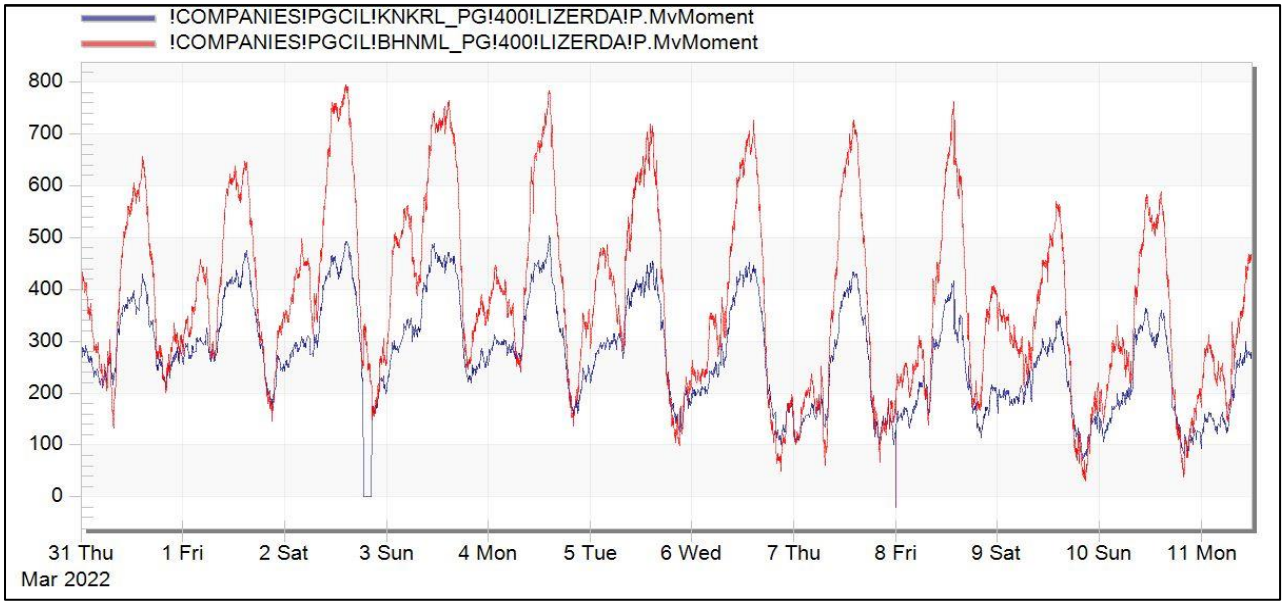
(ii) NR-WR export violations and operation of HVDC Mundra-Mahendragarh with flow from NR-WR

NRLDC representative stated that reverse operation of HVDC Mundra-Mahendragarh i.e. from NR to WR has started from 9th April 2022 onwards. Presently,

the same has been tested for 500MW from NR to WR. As discussed in 51 NRPC meeting, the loading on NR-WR corridor is very high especially during afternoon hours even leading to violation of NR-WR ATC on few occasions. However, with reverse operation of HVDC Mundra-Mahendragarh it is expected that more power could be transferred from NR to WR without N-1 compliance of 400kV Bhinmal-Zerda and Kankroli-Zerda. NR-WR ATC has also been increased by 1100MW due to change in LGB and operation of HVDC Mundra - Mahendragarh in NR-WR direction (500 MW). Limiting constraint for NR-WR export is now in Western region i.e. N-1 Contingency of 400 kV Banaskantha - Veloda D/C







MS NRPC appreciated the efforts of POSOCO for making this reverse operation of Mundra-Mahendragarh possible. He said after continuous persuasion from POSOCO side, the NR-WR export ATC has increased and would benefit all the utilities across the country. He also enquired why NR is exporting power to WR. It was informed by NRLDC representative stated that most of the ISGS solar generators from Rajasthan have PPAs with Western and Southern states, therefore flow is towards WR during peak solar generation hours.

(iii) Calculation of Drawal points based on SLDC end data

As discussed in the 6thTeST meeting all SLDCs shall maintain its own drawal calculation (alternate calculation based on the SLDC drawal points) for proper monitoring and SLDC also shall be responsible for calculation of its own drawl based on their drawal points at their respective feeders/ICTS. SLDC shall use its own calculated value of monitoring real-time drawal from the grid along with ISTS drawal to ensure the correctness and corrective measures shall be taken accordingly. UP and Delhi are using their end calculation as primary calculation for monitoring of drawal whereas Rajasthan is entirely dependent on STU data.

However, Punjab, Haryana, Jammu and Kashmir, Uttarakhand are dependent on RLDC end drawal values. All concerned are requested to please compute drawal values at SLDC end also, so that same can be verified with NRLDC end value and any discrepancy can be rectified immediately.

In 188th OCC meeting, MS NRPC expressed concern and asked all the states which are only dependent on RLDC end data to take necessary actions and compute drawl values at SLDC end also. It was also suggested that the agenda be continued in OCC meeting till resolution of issue by all states.

In 189th OCC meeting, MS NRPC stated that NRLDC may request all SLDCs to confirm the status via email. Based on the feedback received, issue may be discussed in next OCC meeting.

Accordingly, an email was circulated to respective SLDCs on 10.12.2021. However, response from SLDCs is yet to be received.

In 190th OCC meeting, Punjab SLDC representative informed that data calculation from SLDC end data is complete and display for difference between the values from NRLDC end and Punjab SLDC end data is also available at SLDC control room. Punjab SLDC will share screen shot of display available at their control center with NRLDC.

Haryana SLDC representative stated that data from some stations such as 220kV Bawal is not available at SLDC. It was also informed that drawl data is being monitored from both NRLDC and HVPN end data. Data from 56 points out of 101 points of Haryana end data is telemetered while for remaining data they are using NRLDC end data only due to telemetry issues and other issues such as 220/66kV station being BBMB station, 66kV data is not available.

Uttarakhand SLDC representative stated that at 2-3 stations, RTU is faulty and replacement work is being carried out which would ensure availability of SLDC end data for drawl calculation. Till the replacement work, they are relying on NRLDC end data. NRLDC representative asked Uttarakhand to expedite replacement of faulty RTUs and ensure drawl data availability from SLDC end data also.

CGM(SO) NRLDC had stated that SLDCs should maintain separate lists of points from which both end or single end data is available and regularly monitor all these points. They should also take necessary actions for the points for which telemetry issues are observed.

HP SLDC vide their letter dated 8th March 2022 has intimated that:

- For calculation purpose, interstate drawl points have been mapped in SCADA from both ends keeping in view healthiness of communication media at both ends and other end has been mapped for redundancy, which seems to be more purposeful.
- DISCOMs of HP is in process of installation of new RTUs at 48no.s locations and providing fibre optic communication media on 66kV and above stations. It is anticipated that with these installations, reliability of SCADA data at various drawl points shall be maintained. Till such time the work is completed, it is proposed to utilise the SCADA end data of other end for calculation purpose. The existing work of installation of RTUs and Fibre Optic is likely to be completed within three months as confirmed from HPSEBL.

SLDCs were requested to provide update on the agenda point. However, no new information was received from states.

(iv) Update of Important grid element document in line with IEGC

In line with section 5.2. (c) of IEGC, list of important grid elements in Northern region would be compiled by NRLDC shortly. Such elements shall be opened/closed only on instructions from NRLDC. NRLDC has requested utilities to submit the list of all elements with details charged under their jurisdiction from 1.4.2020 till date including those expected to be commissioned till May 2021 so that the same could be included in the list vide email dated 23rd March 2022.

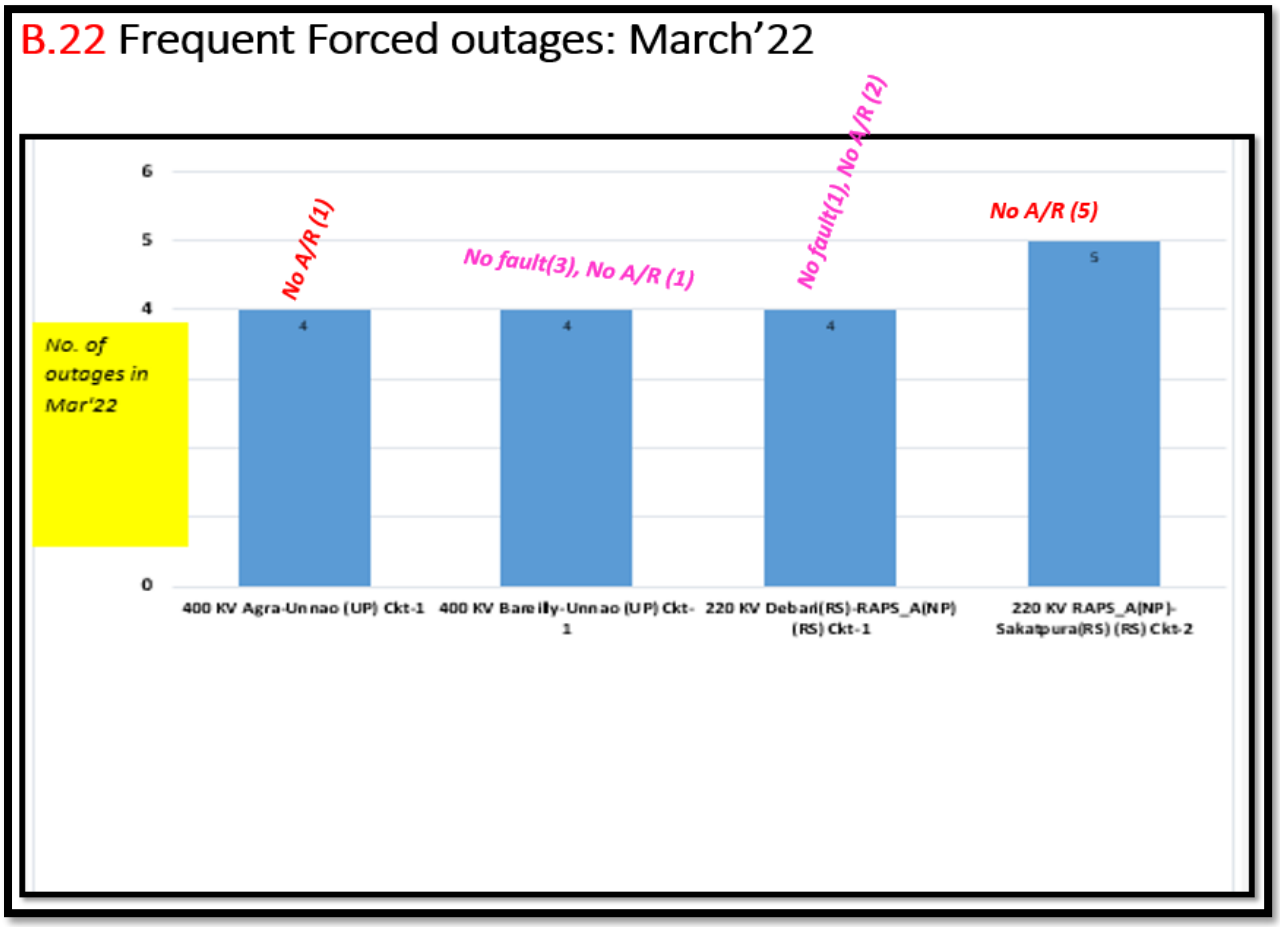
However, response from most of the utilities is still pending. It is requested to provide details before 30th April 2022. Last updated document is available at following link https://nrldc.in/download/nr-important-grid-elements-may-2021/?wpdmdl=9167. Any other feedback related to inclusion/deletion of elements may also be provided.

Utilities were requested to provide update. OCC agreed for the same.

20. Frequent forced outages of transmission elements in the month of Mar'22

The following transmission elements were frequently under forced outages during the month of **Mar'22**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Agra-Unnao (UP) Ckt-1	4	UP
2	400 KV Bareilly-Unnao (UP) Ckt-1	4	UP
3	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	4	Rajasthan/NPCIL
4	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	5	Rajasthan/NPCIL



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

Discussion during the meeting:

- **400 KV Agra-Unnao (UP) Ckt-1**: *UPPTCL representative informed that in the tripping of 22nd March, 2022 fault was in 400kV Unnao - Bareilly line. 400kV Unnao - Bareilly ckt-1 successfully auto reclosed. Same fault was sensed by 400kV Agra and line tripped at 400kV Agra end while no intertripping carrier was sent by 400kV Unnao end. 400kV Agra end had informed that they are taking up matter and analysing the tripping in detail. He said that other three tripping occurred due to persistent nature of line fault.*

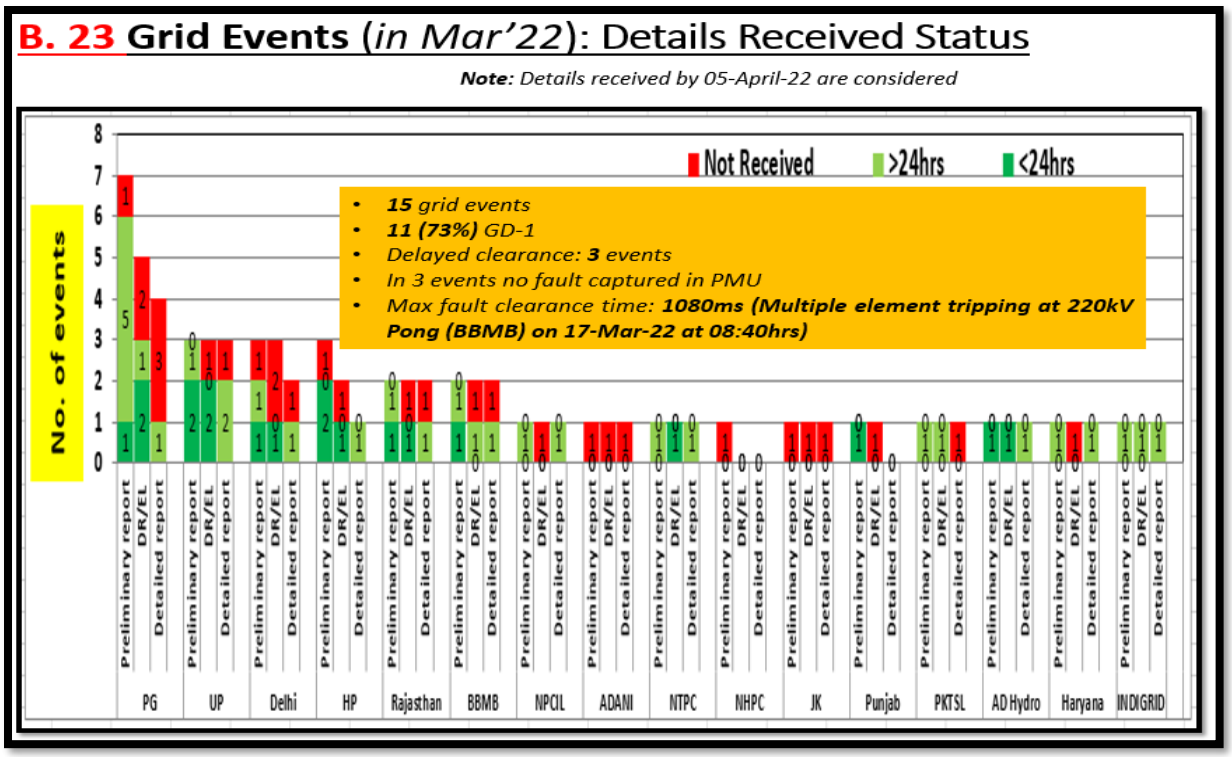
- **400 KV Bareilly-Unnao (UP) Ckt-1**: *UPPTCL representative informed that tripping on 02nd March, 2022 occurred on line fault and other three tripping occurred due to operation of Stage -1 Over Voltage protection at 400kV Unnao end. He further informed that that testing had been done at 400kV Unnao end, settings reviewed and nothing abnormal was found. Also from PMU, voltage was in the range of operation of Stage -1 Over Voltage protection.*

  220 KV Debari (RS)-RAPS_A (NP) (RS) Ckt-1 & 220 KV RAPS_A (NP)-Sakatpura (RS) (RS) Ckt-2: *Rajasthan representative informed that frequent transient fault occurring in these line as it passes through forest area. He further informed that A/R was in off condition in these line due to connection of RAPS generation. He said that RAPS informed that line CVT is not available at their end and due to limitation of Generator it is not possible to enable A/R operation at RAPS end. RAPS representative was not available in the meeting for any comment. However, in email dated 20.04.2022, NPCIL has informed that "*At RAPS-A, the turbine is manufactured by English Electric co. ltd. Rugby, ENGLAND and is of 1960s design having one high pressure cylinder and two low pressure double flow cylinders. As per the available documents "capability of RAPS-2 Turbine to withstand torsional fatigue, resulting from high speed reclosure/ switching operation" could not be ascertained. On further query, NPCIL -HQ had indicated that TG Manufacturer's clearance was obtained in all the stations prior to implementation of Single-Phase Auto Reclosure. Regarding RAPS-A, in the absence of such clearance, it not possible to implement the Single-Phase Auto Reclosure. Considering the vintage design of turbine generator and absence of clearance from OEM of turbine, provision of Single-Phase Auto Reclosure for lines emanating from RAPS-1&2 may kindly be exempted." …. NRLDC representative emphasized that A/R (auto reclosure) 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 endeavour to keep auto reclosure 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.

21. Multiple element tripping events in Northern region in the month of Mar'22

A total of **15** grid events occurred in the month of Mar'22 of which **11** are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of detailed report received by NRLDC till 05-April-2022 is attached at **Annexure-B.VI of the 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 **1080ms** in the event of multiple element tripping at 220kV Pong (BBMB) on 17-Mar-22 at 08:40hrs.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **3** events out of **15** grid events occurred in the month. In 3 number of events, fault signature couldn't be captured from PMU data.

NRLDC representative stated that in the event of tripping at 220kV Pong (BBMB) on 17-Mar-22 at 08:40hrs delayed clearance of around 1080ms is observed in the system. He further informed that as per report received, some lines tripped in zone-3 and it seems that protection did not operate correctly at 220kV Pong (BBMB). BBMB representative said that tripping occurred at 220kV Pong (BBMB) will be analyzed in detail and they will share the detail report with NRLDC/NRPC office.

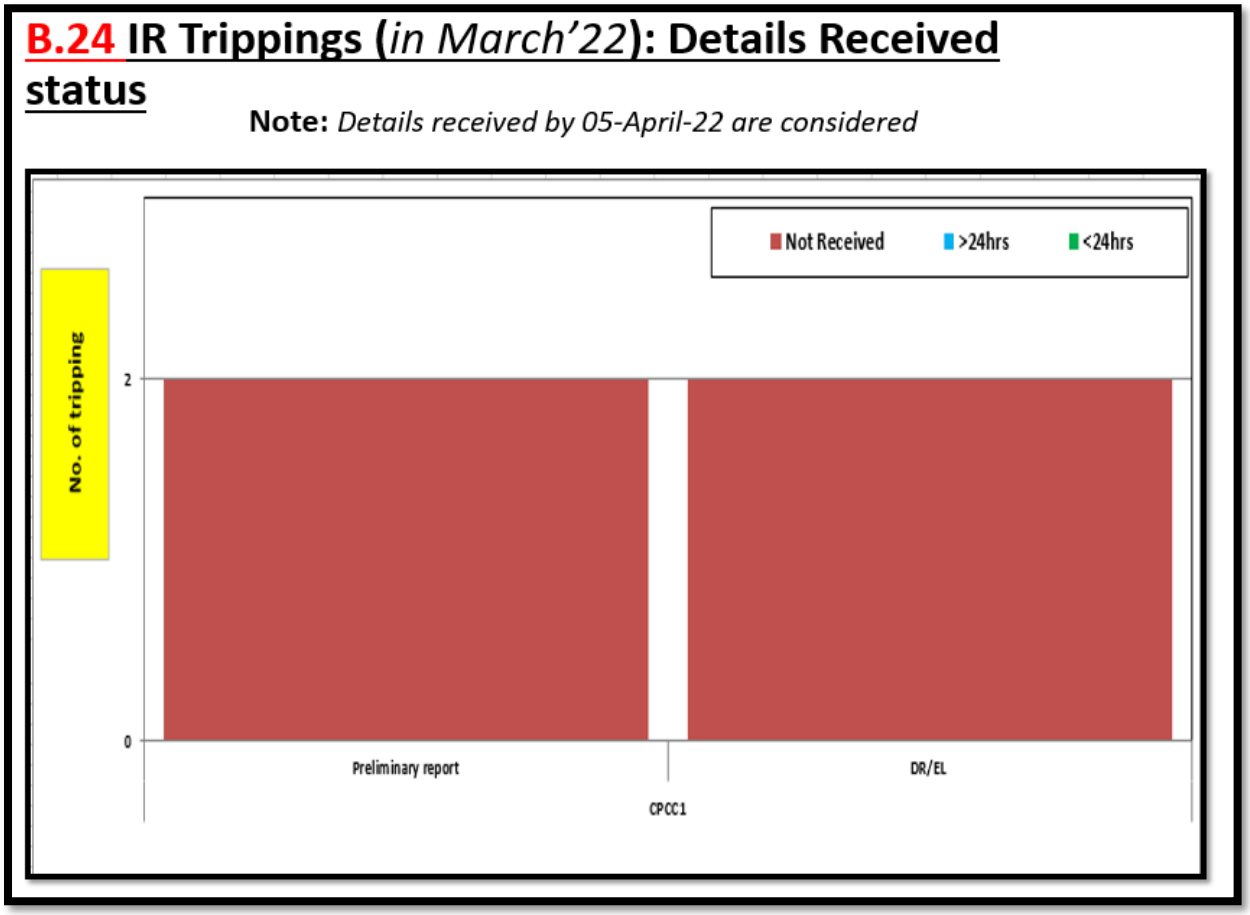
NRLDC representative raised concern about poor status of report updation by POWERGRID, UP, Delhi, Adani and J&K on the tripping portal. He further stated that timely report submission is an important activity and all constituents are advised to take this on priority and upload the reports.

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.

22. Details of tripping of Inter-Regional lines from Northern Region for Mar'22

A total of 2 inter-regional lines tripping occurred in the month of Mar'22. The list is attached at **Annexure-B.VII of the Agenda.**



The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

NRLDC representative raised concern about poor status of report updation by POWERGRID CPCC1 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.

Members may please note and advise the concerned for taking corrective action to avoid such tripping as well as timely submission of the information.

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

NRLDC representative informed the current status (as on 05th April 2022) of DR/EL and tripping report of utilities for the month of March 2022. Consolidated information is tabulated below:

S. No.	Utility	1st Mar 2022 - 31st Mar 2022											
		Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
1	AD HYDRO	2	0	0	0	0	0	0	0	0	0	0	0
2	AHEJ3L	2	2	100	2	0	100	2	0	100	2	0	100
3	AHEJ4L	1	1	100	1	0	100	1	0	100	1	0	100
4	ANTA-NT	3	3	100	1	0	33	1	0	33	3	0	100
5	APFOL	2	2	100	2	0	100	2	0	100	2	0	100
6	AREPRL	2	2	100	2	0	100	2	0	100	2	0	100
7	AVAADA RJHN	1	1	100	1	0	100	1	0	100	1	0	100
8	BAIRASUIL-NH	1	1	100	0	0	0	0	0	0	1	0	100
9	BBMB	42	3	7	6	14	21	5	22	25	3	8	9
10	CLEANSOLAR_JODHPUR	3	2	67	2	1	100	2	1	100	2	1	100
11	CPCC1	41	14	34	18	6	51	18	9	56	16	4	43
12	CPCC2	24	3	13	5	3	24	3	4	15	12	0	50
13	CPCC3	21	2	10	3	1	15	2	1	10	2	1	10
14	DADRIGAS-NT	1	1	100	1	0	100	1	0	100	1	0	100
15	DADRI-NT	4	0	0	0	2	0	0	2	0	0	2	0
16	DULHASTI-NH	2	2	100	2	0	100	2	0	100	2	0	100
17	FARIDABAD-NT	1	1	100	1	0	100	1	0	100	1	0	100
18	KARCHAM	2	0	0	0	1	0	0	1	0	2	0	100
19	KOLDAM-NT	1	0	0	0	0	0	0	0	0	1	0	100
20	NJPC	1	0	0	0	0	0	0	0	0	1	0	100
21	PARBATI-III-NH	1	1	100	1	0	100	1	0	100	1	0	100
22	PARBATI-II-NH	1	1	100	1	0	100	1	0	100	1	0	100
23	PKTSL	2	1	50	1	0	50	1	0	50	1	0	50

S. No.	Utility	1st Mar 2022 - 31st Mar 2022											
		Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
24	RAILWAYS	2	2	100	2	0	100	2	0	100	2	0	100
25	RAPPA	13	12	92	12	0	92	13	0	100	12	0	92
26	RAPPB	5	0	0	1	0	20	1	0	20	1	0	20
27	RAPPC	1	1	100	1	0	100	1	0	100	1	0	100
28	SALAL-NH	1	1	100	1	0	100	1	0	100	1	0	100
29	SBSRPC-11	1	1	100	1	0	100	1	0	100	1	0	100
30	SINGOLI	1	1	100	1	0	100	1	0	100	1	0	100
31	SINGRAULI-NT	2	0	0	1	0	50	1	0	50	1	0	50
32	SLDC-DV	18	0	0	8	3	53	8	6	67	10	0	56
33	SLDC-HP	7	0	0	0	5	0	1	3	25	0	0	0
34	SLDC-HR	4	0	0	2	0	50	2	0	50	0	0	0
35	SLDC-JK	8	0	0	8	0	100	8	0	100	8	0	100
36	SLDC-PS	13	2	15	8	2	73	8	2	73	12	0	92
37	SLDC-RS	54	0	0	14	0	26	14	0	26	18	0	33
38	SLDC-UK	12	4	33	4	2	40	5	7	100	4	1	36
39	SLDC-UP	93	12	13	20	12	25	20	14	25	16	1	17
40	INDIGRID	5	0	0	0	0	0	0	0	0	0	1	0
41	TANAKPUR-NH	1	1	100	1	0	100	1	0	100	1	0	100
42	TANDA-NT	3	2	67	2	1	100	2	1	100	2	1	100
43	UNCHAHAR-NT	1	1	100	1	0	100	1	0	100	1	0	100
44	URI-I-NH	1	1	100	1	0	100	1	0	100	1	0	100

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 CPCC3, Haryana, Rajasthan and Himachal Pradesh in Mar, 2022 compared to the previous month.

NRLDC representative raised concern about poor status of report updation by CPCC1, CPCC2, Punjab & Uttarakhand on the tripping portal.

Punjab representative informed that they have taken the matter with STU and report updation status is expected to improve in future.

All the members were once again requested to provide timely details of the grid events, detailed report in desired format along with remedial measure report. DR/EL of all the tripping needs to 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.

Members agreed for the same.

24. Frequency response characteristic

Two FRC based event occurred in the month of **Mar-2022**. Description of the event is as given below:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	15-Mar-22	15:30hrs	At 15:30 Hrs Dated 15th-March-2022,As reported bus bar protection operated at 220 KV Raigarh CG S/S of Western Region and resulted in tripping of all elements at 220 KV Raigarh CG S/S.Load loss of around 936 MW reported in the event.	49.94	50.00	0.06
2	27-Mar-22	12:47hrs	At 12:47 Hrs Dated 27th-March-2022,As reported due to multiple element tripping at 400kV Lapanga station 562 MW(Unit-3) Generation loss at OPGC and 1900 MW load loss at 400kV Sterlite(Vedanta) occurred. Effective Load loss of around 1338 MW has been considered in the event for FRC Calculation.	49.99	50.02	0.03

Status of Data received:

Status of Field Data received of FRC of Grid event occurred at Raipur (Chhattisgarh) at 15:30 Hrs on 15.03.2022			
Data Received from		**Data Not Received from**	
Singrauli NTPC	Tehri HEP	HP	Rihand NTPC
Kawai (Adani)	Nathpa Jhakri	UK	APCPL Jhajjar
UP		Punjab	Unchahar TPS
		BBMB	Koteshwar
		Rajasthan	Others
		Delhi	
		Haryana	

Status of Field Data received of FRC of Grid event occurred at Sterlite(Vedanta, Odisha) at 12:47 Hrs on 27.03.2022			
Data Received from		Data Not Received from	
Singrauli NTPC	NHPC	HP	Rihand NTPC
Kawai (Adani)	UP	UK	APCPL Jhajjar
Unchhahar TPS	Dadri TPS	Punjab	Others
		BBMB	
		Rajasthan	
		Delhi	
		Haryana	

PFR as per generators field data:

Primary Frequency Response by Generators during Grid Event at Raipur (Chhattisgarh) at 15:30 Hrs on 15.03.2022

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**N. Jhakri Unit-6**	65.1%	Unsatisfactory PFR Response
2	**Kawai (Adani) Unit-1**	97.2%	Satisfactory Response
3	**Kawai (Adani) Unit-2**	0.8%	Poor PFR Response
4	**Singrauli Unit-6**	8%	Unsatisfactory/Poor PFR Response
5	**Singrauli Unit-7**	0%	Poor PFR Response
6	**Tehri HEP Unit-1**	81.3%	Satisfactory Response
7	**Harduaganj TPS**	42.5%	Unsatisfactory PFR Response
8	**Anpara C Unit-1**	-13%	Poor PFR Response
9	**Anpara C Unit-2**	-21%	Poor PFR Response

Primary Frequency Response by Generators during Grid Event at Sterlite(Vedanta, Odisha) at 12:47 Hrs on 27.03.2022

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	Kawai (Adani) Unit-1	362%	Satisfactory Response
2	Kawai (Adani) Unit-2	3.2%	Poor PFR Response
3	Singrauli Unit-6	35%	Unsatisfactory PFR Response
4	Singrauli Unit-7	8%	Poor PFR Response
5	Chamera III	13%	Unsatisfactory/Poor PFR Response
6	Harduaganj TPS	135%	Satisfactory PFR Response
7	Lalitpur TPS Unit-1	-12%	Poor PFR Response
8	Lalitpur TPS Unit-1	-5%	Poor PFR Response
9	Paricha Unit-5	70%	Satisfactory PFR Response
10	Paricha Unit-6	122.5%	Satisfactory PFR Response
11	Unchhahar Unit-1	17.5%	Unsatisfactory/Poor PFR Response
12	Unchhahar Unit-2	27.2%	Unsatisfactory PFR Response
13	Unchhahar Unit-3	49.3%	Unsatisfactory PFR Response
14	Unchhahar Unit-4	0%	Poor PFR Response
15	Unchhahar Unit-5	26.7%	Unsatisfactory PFR Response
16	Unchhahar Unit-6	87.4%	Satisfactory PFR Response

In line with the decisions taken during various OCC meetings, the time and date of the FRC events were e-mailed to respective utilities**.** Constituents may submit the FRC of their control areas for the above event and reason of poor response, if observed.

NRLDC representative informed that during the event of 15th March.2022 satisfactory response has been observed from units of Kawai (Adani) Unit1 and Tehri HEP Unit 1. It was further added that units of Jhakri, Chamera, Anpara, Harduaganj, Unchahar and Singrauli plant are showing poor/unsatisfactory response. He further emphasised that utilities are requested to collect field data having visualization of around 1 sec so that more precise analysis may be carried out.

NTPC representative informed that there was some disturbance around Singrauli area due to which response was low. He said that they will further analyse the response of Singrauli units. He further informed that during event of 27th March, 2022, Unit 4 of Unchahar was under shutdown.

UP representative informed that PFR testing of Bara unit and Harduaganj unit will be carried out in April, 2022.

BBMB representative informed they are awaiting approval of PFR test of Pong machines from higher authorities. NRLDC representative stated that Solvina was

given contract including Pong units, therefore if other agency is hired, Solvina needs to be given other units for PFR testing.

All the concerned utilities may please go through the details and share the detailed reply considering all the points and supporting plant wise data to check the FRC response of the generator within week time to RPC/ RLDC.

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

In last 13 OCC meetings, 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.IX of the Agenda.**

It may be noted that Tehri HEP conducted PSS tuning/ Step response test of their units and submitted report. In UP Control area, Step response test of Rosa Unit#1 & Unit#4 done on 5th Oct, 2021, test of Lalitpur Unit#2 on 30th March 2021, unit#1 on 23rd February, 2022 & Unit#3 on 15th January 2022. Step response test of Bara Unit#2 done on 1st February, 2022, Anpara A unit#1 & Unit#2 done on 27th September, 2021, Harduaganj Unit#7 & Unit#9 done on 16th July, 2021.

In Rajasthan control area, Step response test of Unit#1, 3, 4, 5&6 of STPS, Suratgarh carried out on 05.02.22, 06.02.22 & 14.03.22 and step response test of Generators of Unit #1, 2,3,4,6 & 7 of KTPS, Kota carried out during the period 02.03.22 to 04.03.22.

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.

Members agreed for the same.

26. Multiple element tripping at 400kV Noida Sec 148(UP) on 06th April 2022

Multiple element tripping occurred at 400kV Noida Sec 148(UP) on 06th April 2022. As reported, 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1 & 2 and 400 KV Gr.Noida-2(UPC)-Noida Sec 148(UP) Ckt-1 & 2 tripped due to failure of DC Source-I at 400kV S/S Noida Sector-148.As per PMU, No fault is observed in the system. In antecedent conditions, 400 KV Gr.Noida-2(UPC)-Noida Sec 148 (UP) Ckt-1 & 2 carrying 126MW & 127MW respectively.

As per flash report received from UP, there is only one source of DC supply at 400kV Noida Sec 148(UP) instead of double source, for the protection of 400kV side system. Failure of DC supply source leads to operation of Bus Bar protection thereby tripping of all connected elements.

As per detail analysis received from UP, one cell of DC source-I gets dead and there was some time delay in changeover DC source 2 which initiate GD trip signal to bus bar protection resulting 400 KV bus bar tripping at substation. During the bus bar tripping load of substation has been feed from 220 KV Bus through 220 KV sector 148 - 129 line.

Discussion points:

- Status of DC Source at 400 KV Noida Sec 148-Noida i.e whether there is single source of DC or Two source of DC supply?
- Reason of failure of DC source 1? Status of periodic testing of healthiness of DC supply?
- Reason of time delay in switchover to DC Source 2 and remedial action taken by UP to avoid such incidence in future.

UP representative informed that there was two DC source at 400 KV Noida Sec 148 and the tripping occurred due to delay in changeover from one DC supply to another DC supply. He further informed that they are analysing the tripping in detail and will share the detail report with NRLDC/NRPC office as early as possible.

27. Mock testing of System Protection Scheme (SPS) for 765 kV Agra-Gwalior D/C

SPS scheme for 765 kV Gwalior-Agra D/c was last tested in May 2019. As the NR peak demand is approaching, it is desirable to get the Gwalior-Agra SPS re-tested to confirm its healthiness. Testing would require readiness of the generation, transmission and distribution utilities. Implementation of the actions identified in the last year test may be reviewed and a convenient date for coordinating the testing in April 2022 may be proposed.

POWERGRID CPCC 3 representative informed that date will be intimated after internal discussion. Later on, he proposed that testing of System Protection Scheme (SPS) for 765 kV Agra-Gwalior D/C may be carried out on 27th April, 2022.

Members agreed for the same.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Mar-2022
◎ HARYANA — Aug-2021
◎ HP — Jan-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Aug-2021
◎ RAJASTHAN — Mar-2022
◎ UP — Mar-2022
◎ UTTARAKHAND — Mar-2022
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Dec-2021
◎ HARYANA — Mar-2022
◎ HP — Mar-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Mar-2022
◎ RAJASTHAN — Dec-2021
◎ UP — Dec-2021
◎ UTTARAKHAND — Mar-2022
◎ BBMB — Mar-2022
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>4</td><td>Status of FGD installation vis-à-vis installation plan at identified TPS</td><td>List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed.</td><td>Status of the information submission (month) from states / utilities is as under:
◎ HARYANA — Mar-2022
◎ PUNJAB — Apr-2022
◎ RAJASTHAN — Apr-2022
◎ UP — Mar-2022
◎ NTPC — Feb-2022</td></tr>
</table>

		Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.	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	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: July 2022 (90% supplies received from GE and rest is expected by Feb'22)
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection (delay due to pending supply of reactor bushings). 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 stage inspection (delay due to pending supply of rector bushings). 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.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Tender has been invited in first week of Jan'22.

xi	RAJASTHAN	Akal	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. 2nd instalment has been received on dt. 30.07.2021. The erection work of 3 Reactors is under progress and shall be commissioned by 30.06.2022.
xii	RAJASTHAN	Bikaner	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. 2nd instalment has been received on dt. 30.07.2021. The erection work of 3 Reactors is under progress and shall be commissioned by 30.06.2022.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. 2nd instalment has been received on dt. 30.07.2021. The erection work of 3 Reactors is under progress and shall be commissioned by 30.06.2022.
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.
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.

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.	-	PDD, J&K to update the status.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	-	PDD, J&K to update the status.
				• 220 kV New Wanpoh - Mattan D/c Line	-	PDD, J&K to update the status.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 6 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	-	PDD, J&K to update the status.
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: 3 Unutilized: 3 (2 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	-	UPPTCL to update the status.
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG) – under commissioning	21.02.2022	Updated in 192nd OCC by UPPTCL.
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	Mar'22	Updated in 192nd 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: 4 Unutilized: 4	• 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.	-	RRVPNL to update the status.
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	-	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	-	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	-	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	-	HVPNL to update the status.
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	Jan'23	Updated in 192nd 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.	-	HVPNL to update the status.
				• 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	-	HVPNL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	-	HVPNL to update the status.
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	HVPNL to update the status.
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status.
				• 220kV D/C for Sector78, Faridabad	-	HVPNL to update the status.
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	Jul'22	Updated in 192nd OCC
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)	Oct'22	In Tendering stage as updated in 192nd OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	RVPNL to update the status.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	-	PSTCL to update the status.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	-	PTCUL to update the status.
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	UPPTCL to update the status.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	UPPTCL to update the status.
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 4 bays	-	UPPTCL to update the status.
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	May'22	Updated in 194th 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	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	31.12.2022	Updated in 194th 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	-	PSTCL to update the status.
				• 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)	-	PSTCL to update the status.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	·• Bagpat - Modipuram 220kV D/c line	-	UPPTCL to update the status.
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.		HVPNL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:6 Unutilized: 2	• Network to be planned for 2 bays.	-	RVPNL to update the status.
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 6	• Sohawal - Barabanki 220kV D/c line	-	UPPTCL to update the status.
				• Sohawal - New Tanda 220kV D/c line	-	UPPTCL to update the status.
				• Network to be planned for 2 bays	-	UPPTCL to update the status.
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	HVPNL to update the status
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	-	UPPTCL to update the status
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	-	PSTCL to update the status
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	-	HPPTCL to update the status
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	-	UPPTCL to update the status
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	-	PSTCL to update the status

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 (25.02.2022)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (21.03.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (12.04.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (07.04.2022)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (15.02.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (15.02.2022)
ANPARA-C TPS

HGPCL (21.03.2022)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (15.02.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (15.02.2022)
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: 30-09-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2022), INDIRA GANDHI STPP U#3 (Target: 30-09-2022)
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: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021)

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

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: 31-12-2024), LALITPUR TPS U#2 (Target: 30-09-2024), LALITPUR TPS U#3 (Target: 30-06-2024)
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: 31-10-2024), PRAYAGRAJ TPP U#2 (Target: 31-10-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)

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

Annexure-A.II

निदेशक / विद्युत विनियम
भाखड़ा ब्यास प्रबन्ध बोर्ड
Director / Power Regulation
Bhakra Beas Management Board
SLDC Complex, Industrial Area, Phase – I
Chandigarh - 160002. Tel.: 0172-2652820 (Tel. FAX)
E-mail: dirpr@bbmb.nic.in

ईमेल द्वारा प्रेषित

अधीक्षण अभियन्ता/ ऑपरेशन सर्कल
एनआरपीसी नई दिल्ली। (ईमेल: seo-nrpc@nic.in)

क्रमांक सं 947-51 /पीसीटी -82 दिनांक 13-4-22

विषय: **Inclusion of agenda BBMB for discussion in 194th OCC meeting of NRPC.**

In reference of above please find herewith attached **"Agenda note for load flow study of Bhakra Power House Complex"** with a request that the same may please be included in the agenda(s) for discussion in 194th OCC meeting to be held on 20-04-2022.

यह आपको सूचनार्थ एवं अग्रिम कार्यवाही हेतु प्रेषित है जी ।

संलगन: उपरोक्तनुसार

निदेशक/विद्युत विनियम
बीबीएमबी, चण्डीगढ़ ।

प्रतिलिपि:

1. मुख्य अभियन्ता/ प्रणाली परिचालन, बीबीएमबी, चण्डीगढ़ ।
2. मुख्य अभियन्ता/पारेषण प्रणाली, बीबीएमबी, चण्डीगढ़ ।
3. निदेशक/ यो.एवं रु. (पारे. प्र.), बीबीएमबी, चण्डीगढ़ को उनके कार्यालय पत्र क्रमांक सं: 1757-59/पीएनटी-449 भाग 2 दिनांक 12/04/2022 के संधर्भ में एनआरपीसी की 20-04-2022 को होने वाली 194वीं ओसीसी बैठक में उपरोक्त चर्चा में संबधित अधिकारी द्वारा भाग लेने हेतु।
4. मास्टर फाईल कार्या: निदेशक/विद्युत विनियम, बीबीएमबी, चण्डीगढ़ ।

Agenda Note for load flow study of Bhakra Power House Complex

Subject: Adequacy of Transmission Lines emanating from Bhakra Power House Complex post uprating of Bhakra Left Bank Power House

1. After completion of uprating of Bhakra Left Bank Power House and addition of 15 MW solar plant to be connected with Bhakra Left Bank Power House, the installed capacity of Bhakra Power House complex would be as under:-

   Bhakra Right Bank : 157x5 +126x1 =911 MW
   Bhakra Left Bank : 126 x 4 + 15 MW =519 MW
   Ganguwal Power House : 27.99 + 24.20 x 2 = 76.39 MW
   Kotla Power House : 28.94 x 1 + 24.20 x 2 = 77.34 MW

   In the above, the evacuation of unit no. 1 (post uprating capacity of 126 MW) of Bhakra Left Bank Power House is proposed through 220 KV sub station of Bhakra Right Bank Power House. Additional 15 MW of solar power plant is proposed to be connected at 66 kV sub station of Bhakra Left Bank Power House.

2. The detail of 220KV Circuit emanating from Bhakra left and Right Bank Power House is as under :

   a) Bhakra (R) – Jamalpur : 504A ACSR Zebra Conductor
   b) Bhakra (R) – Ganguwal : 262A ACSR Zebra Conductor
   c) Bhakra (R) – Mahilpur : 554A ACSR Zebra Conductor
   d) Ganguwal – Jamalpur : 426A ACSR Zebra Conductor
   e) Bhakra (L) – Ganguwal Ckt. I & II : 434A ACSR Goat Conductor
   f) Bhakra (L) – Ganguwal Ckt. III : 461A ACSR Zebra Conductor

3. On account of proposed uprating of machines of Bhakra Left Bank Power House from 108 MW to 126 MW, load flow study was carried out necessitating evacuation of unit no. 1 of Bhakra Left Bank Power House to 220 KV sub station of Bhakra Right Bank Power House. Subsequently reconductoring of Bhakra-Jamalpur double circuit had also been approved.

4. In subsequent development, a proposal of LILO of 220KV D/C Bhakra - Jamalpur line at 220 kV Tahliwala substation of HPSEBL (Una) has been approved by BBMB. A load flow study in this regard has recently been conducted by HPPTCL which revealed overloading of 220kV Bhakra (Right) – Ganguwal circuit and recommended strong need of reconductoring of the same .

5. Over the time considerable load changes has occurred in state control areas of Punjab, Himachal Pradesh and Haryana (connectivity through 220kV S/Stn MISS Ganguwal) as well as NFL (i.e common pool consumer of BBMB drawing its share at 66 KV substation of Bhakra Left Bank Power House) leading to requirement of comprehensive study for adequacy of transmission lines from Bhakra Power House Complex.

Since state load control areas of i.e. Punjab, Haryana and Himachal Pradesh are linked with evacuation of power from Bhakra Complex, it is requested that load flow study may please be carried out by NRLDC to identify possible constraints for evacuation of power of Bhakra Left Bank and Bhakra Right Bank Power House.

12/4/2022

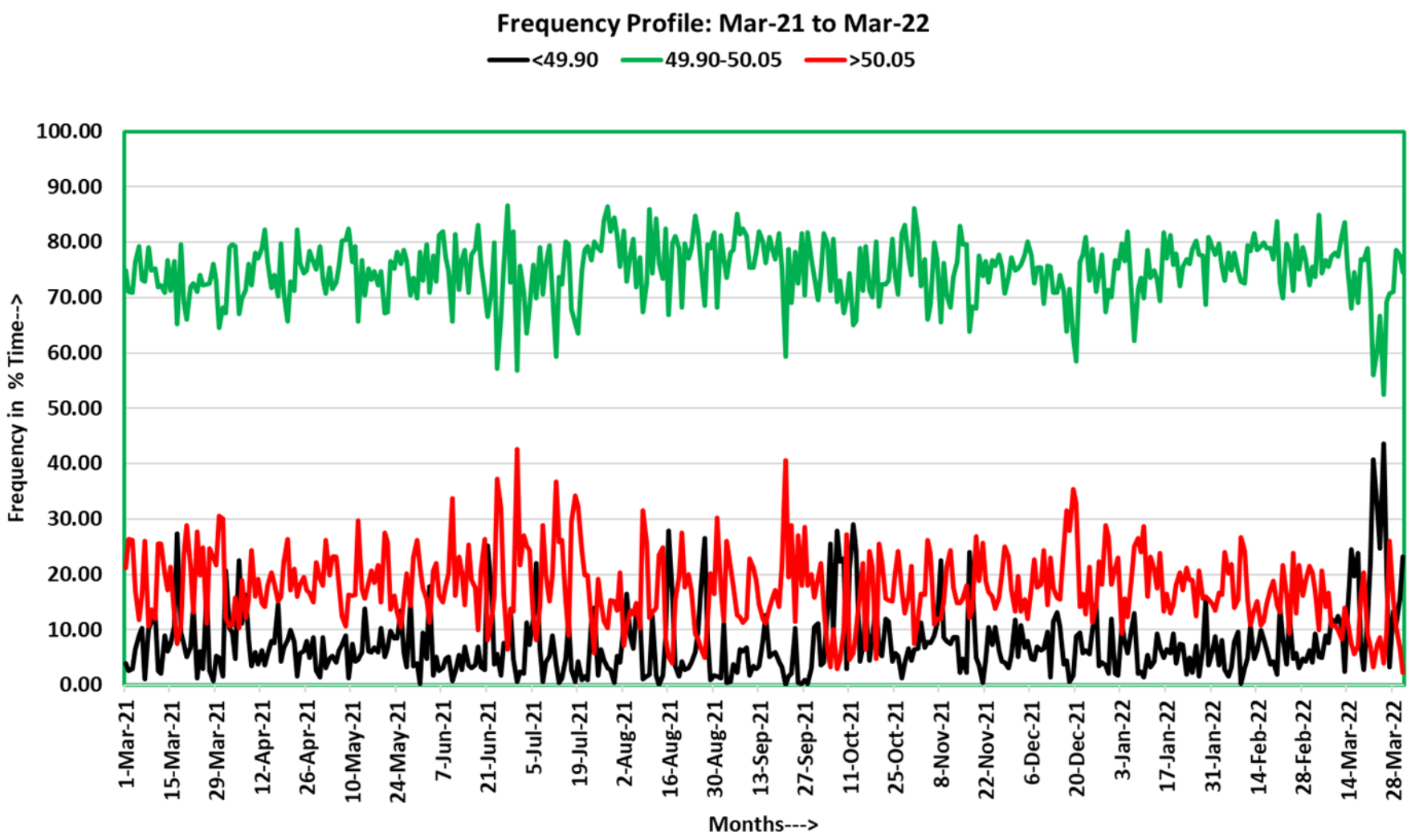
निदेशक/योजना एवं रूपांकन (टी एस),
बी बी एम बी, चण्डीगढ़ ।

प्रचालन समन्वय उपसमिति की बैठक
मार्च - 2022

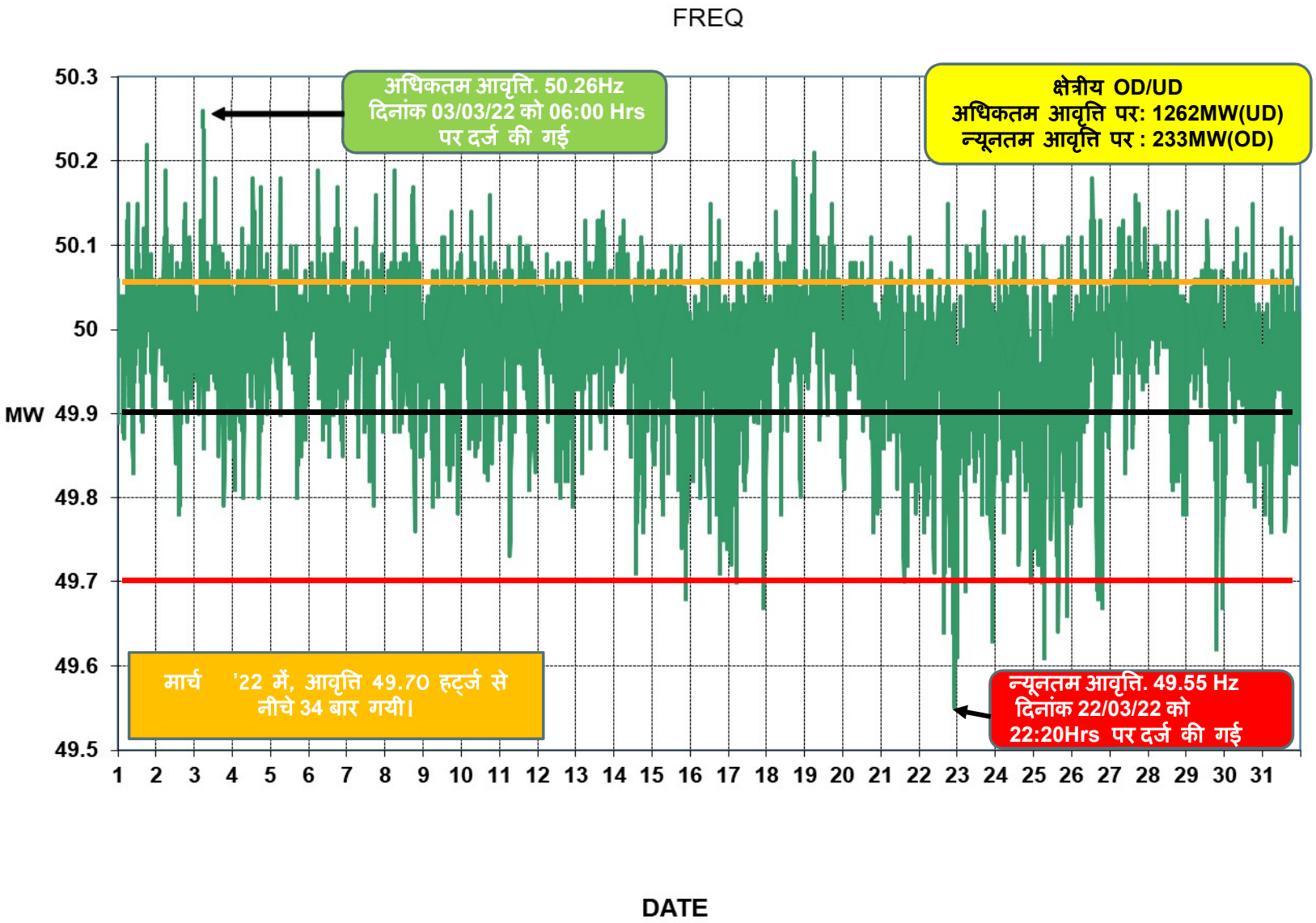
पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	मार्च 2021	अप्रैल 2021	मई 2021	जून 2021	जुलाई 2021	अगस्त 2021	सितम्बर 2021	अक्टूबर 2021	नवम्बर 2021	दिसम्बर2021	जनवरी 2022	फ़रवरी 2022	मार्च 2022
< 49.7 Hz(%)	0.01	0.00	0.02	0.07	0.04	0.17	0.21	0.31	0.09	0.03	0.02	0.08	0.46
<49.8 Hz(%)	0.65	0.93	0.50	1.06	0.67	1.3	0.69	2.43	1.17	0.71	0.53	0.55	2.92
<49.9 Hz(%)	7.13	7.96	6.63	6.12	5.35	7.67	4.18	11.10	8.02	6.92	5.84	5.99	14.50
49.90-50.05 Hz(%)	**72.78**	**75.06**	**74.49**	**74.81**	**75.06**	**76.93**	**77.01**	**74.38**	**74.10**	**73.14**	**75.66**	**77.06**	**73.42**
50.05-50.10 Hz(%)	16.78	13.51	15.41	14.74	16.71	14.14	15.83	12.70	14.77	15.09	15.17	14.36	10.28
>50.10 Hz(%)	3.21	2.49	2.89	3.18	2.78	1.25	2.26	1.81	3.05	3.89	3.21	2.51	1.72
>50.20 Hz(%)	0.10	0.04	0.07	0.09	0.10	0.01	0.03	0.06	0.07	0.25	0.11	0.08	0.08
औसत आवृत्ति	50.00	50.00	50.00	50.00	50.01	50.00	50.00	49.99	50.00	50.00	50.00	50.00	49.98

आवृत्ति की स्थिति: मार्च -2021 से 2022



मार्च -2022 के दौरान आवृत्ति की स्थिति
(As per 5 Minute SCADA data)

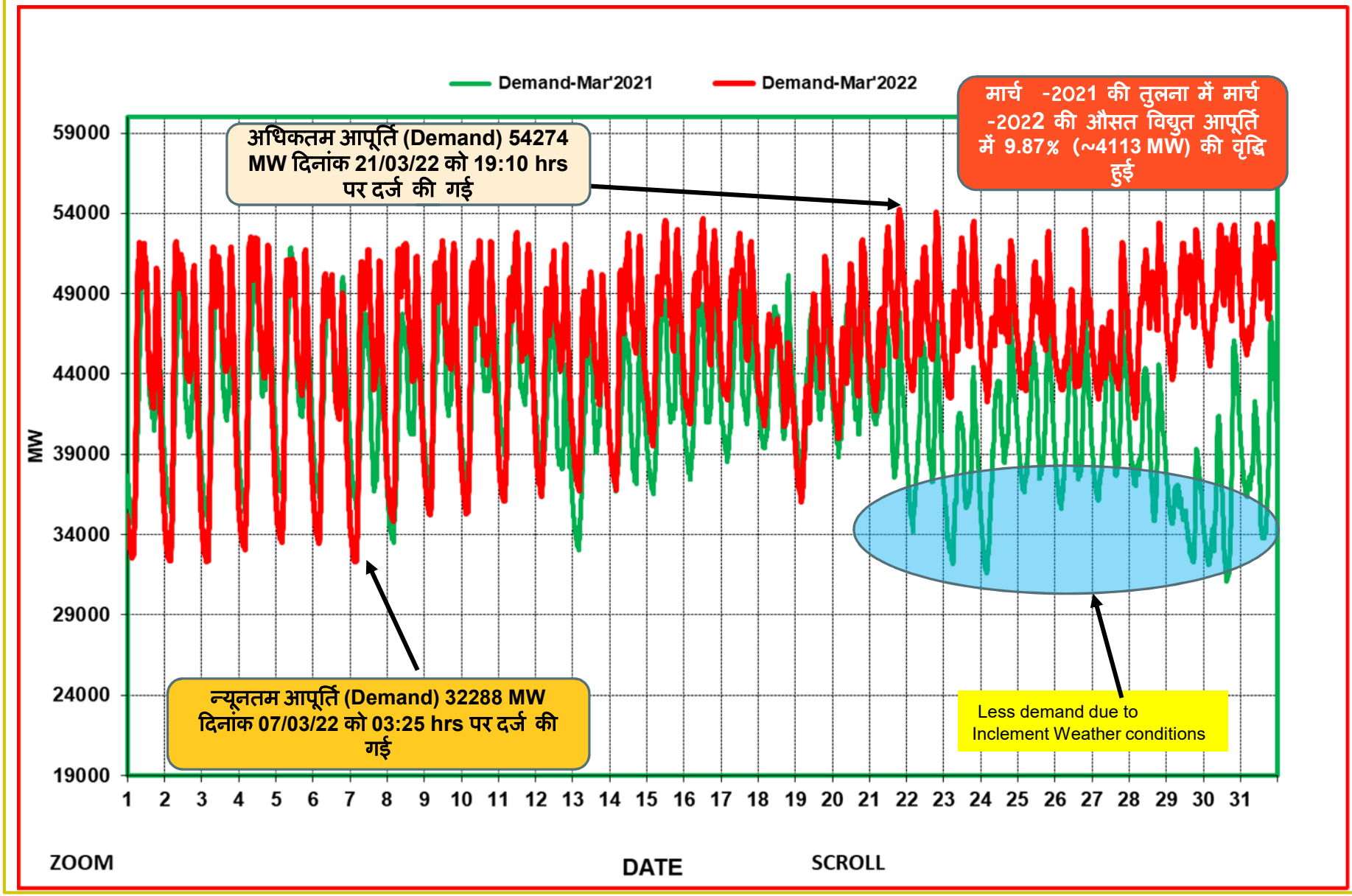


मार्च -2022 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

राज्य	अधिकतम मांग (MW) (in Mar'22)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Feb'22)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in Mar'22)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Feb'22)	दिनांक
पंजाब	8475	17.03.22 at 10:00	13633	01.07.19 को 12:00 बजे	167.08	17.03.22	306.09	01.07.21
हरियाणा	7792	08.03.22 at 14:00	12120	07.07.21 को 14:45 बजे	146.20	15.03.22	266.15	07.07.21
राजस्थान	15749	01.03.22 at 08:30	15696	24.12.21 को 10:00 बजे	277.48	01.03.22	310.790	19.08.21
दिल्ली	4588	31.03.22 at 17:00	7409	02.07.19 को 15:35 बजे	94.87	31.03.22	147.10	02.07.19
उत्तर प्रदेश	20479	21.03.22 at 20:00	24795	16.07.21 को 23:00 बजे	409.27	31.03.22	514.49	07.07.21
उत्तराखंड	2162	01.03.22 at 08:00	2468	24.01.22 को 09:00 बजे	41.48	30.03.22	49.68	10.07.21
हिमाचल प्रदेश	1879	08.03.22 at 08:00	2030	07.01.22 को 10:00 बजे	32.99	03.03.22	36.90	29.12.20
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2795	05.03.22 at 8:00	2826	03.02.22 को 19:00 बजे	58.62	02.03.22	59.95	17.01.22
चंडीगढ़	220	31.03.22 at 19:00	426	08.07.21 को 15:00 बजे	4.32	31.03.22	8.41	08.07.21
उत्तरी क्षेत्र #	54274	21.03.22 at 19:10	73191	18.08.21 को 13:00 बजे	1182.0	31.03.22	1650.07	07.07.21

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

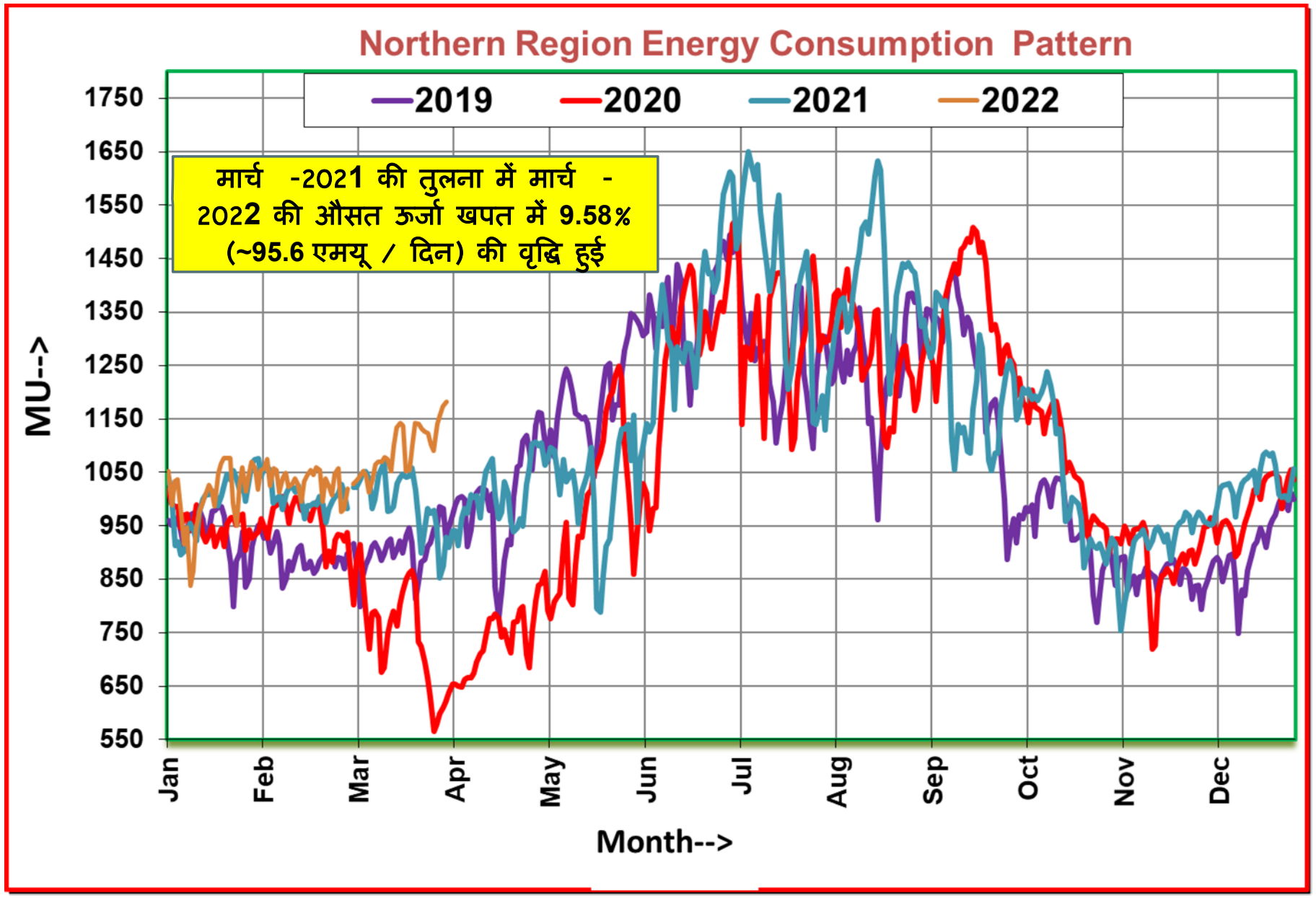
क्षेत्रीय विद्युत आपूर्ति (Demand) मार्च 2021 बनाम मार्च 2022 (As per 5 Minute SCADA data)



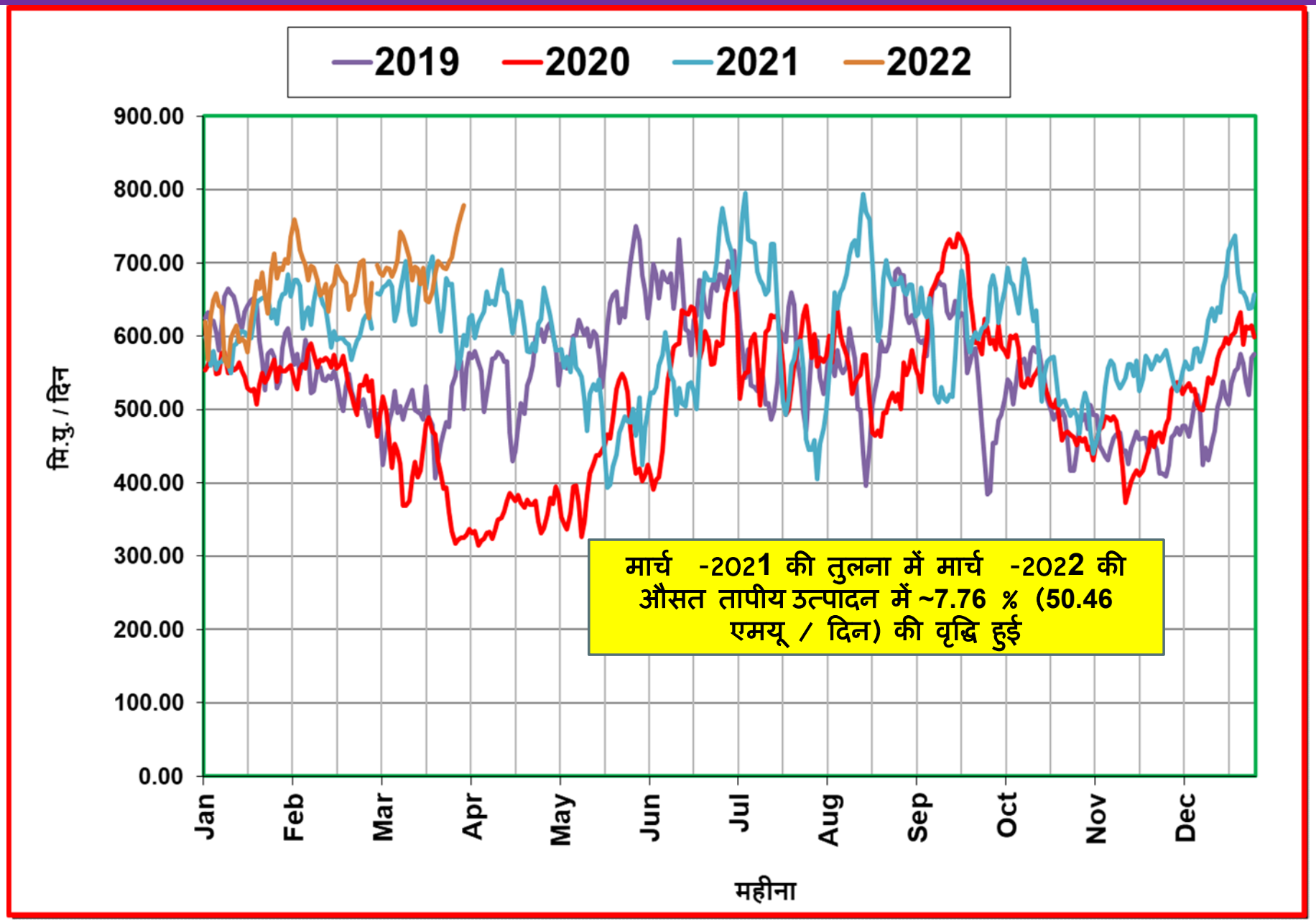
उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) मार्च -2022/ मार्च -2021 / मार्च -2020

राज्य	मार्च -2020	मार्च -2021	मार्च -2022	% वृद्धि (मार्च -2021 vs मार्च -2020)	% वृद्धि (मार्च -2022 vs मार्च -2021)
पंजाब	87.18	130.45	148.94	49.64%	14.17%
हरियाणा	92.61	128.53	135.51	38.79%	5.42%
राजस्थान	186.16	234.13	261.12	25.77%	11.53%
दिल्ली	53.52	67.00	73.16	25.19%	9.19%
उत्तर प्रदेश	232.01	317.32	352.70	36.77%	11.15%
उत्तराखंड	27.60	36.82	37.40	33.42%	1.56%
चंडीगढ़	2.92	3.20	3.47	9.43%	8.65%
हिमाचल प्रदेश	21.77	30.14	29.99	38.45%	-0.50%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	45.22	50.20	51.09	11.03%	1.77%
उत्तरी क्षेत्र	748.98	997.80	1093.38	33.22%	9.58%

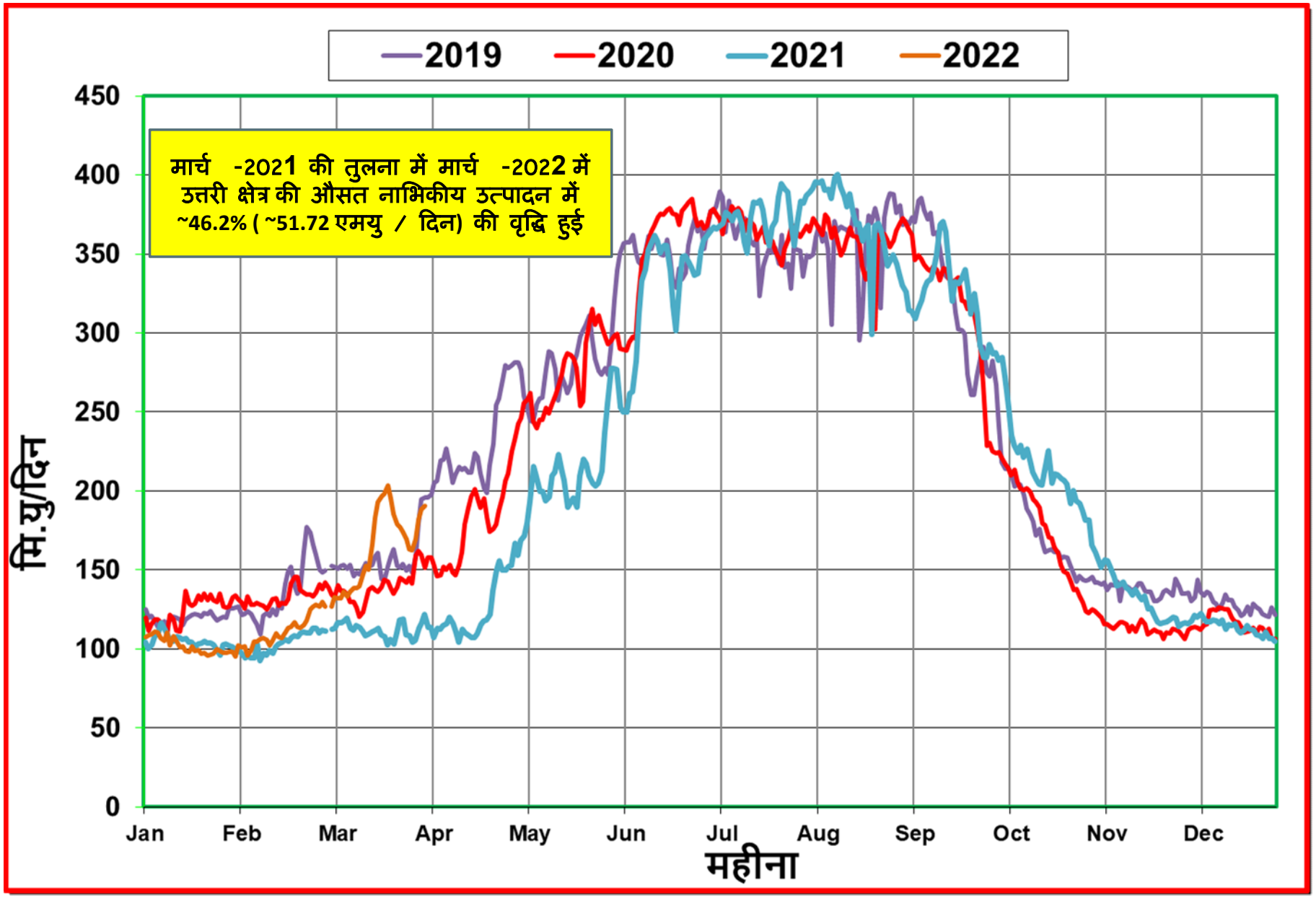
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



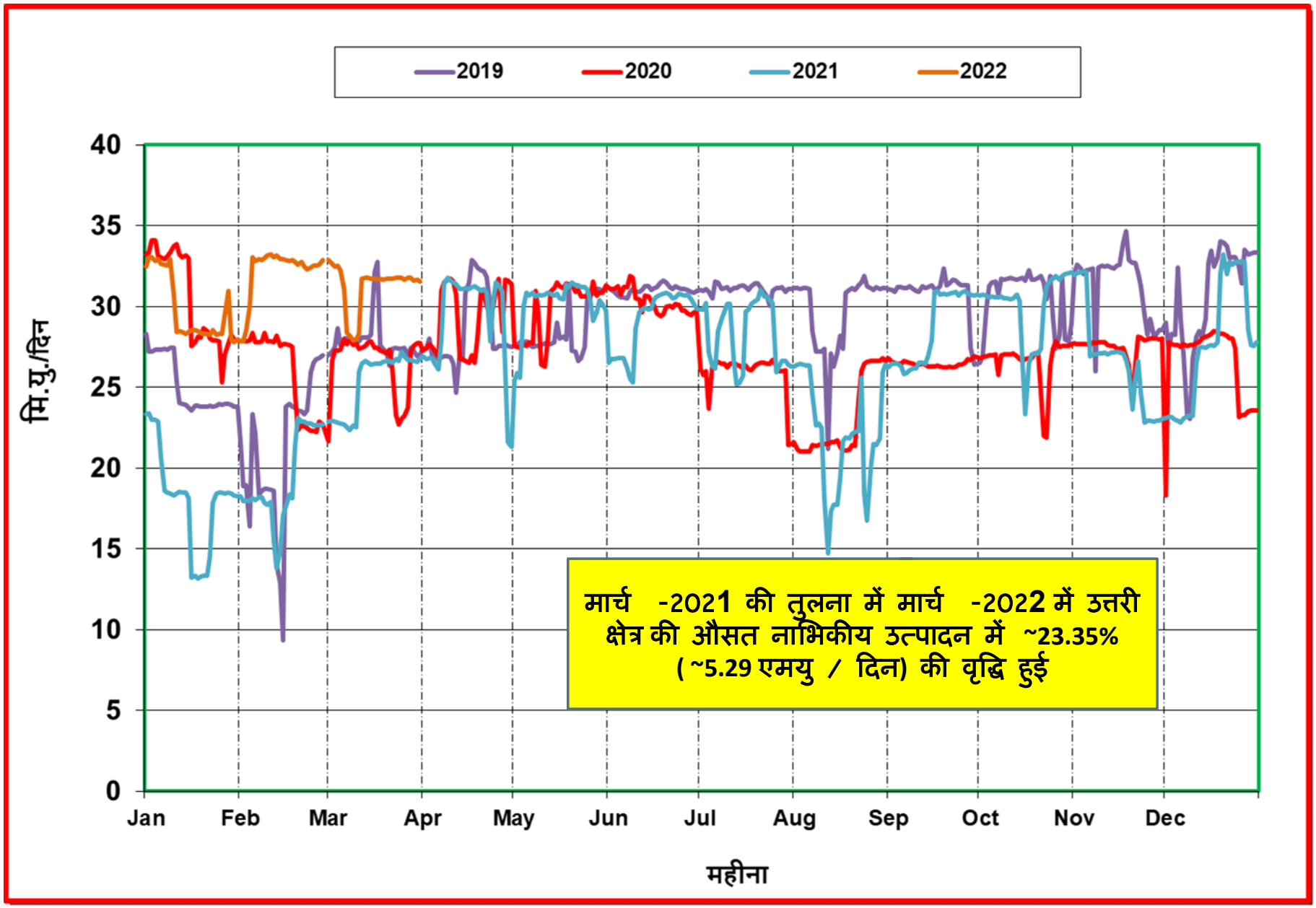
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



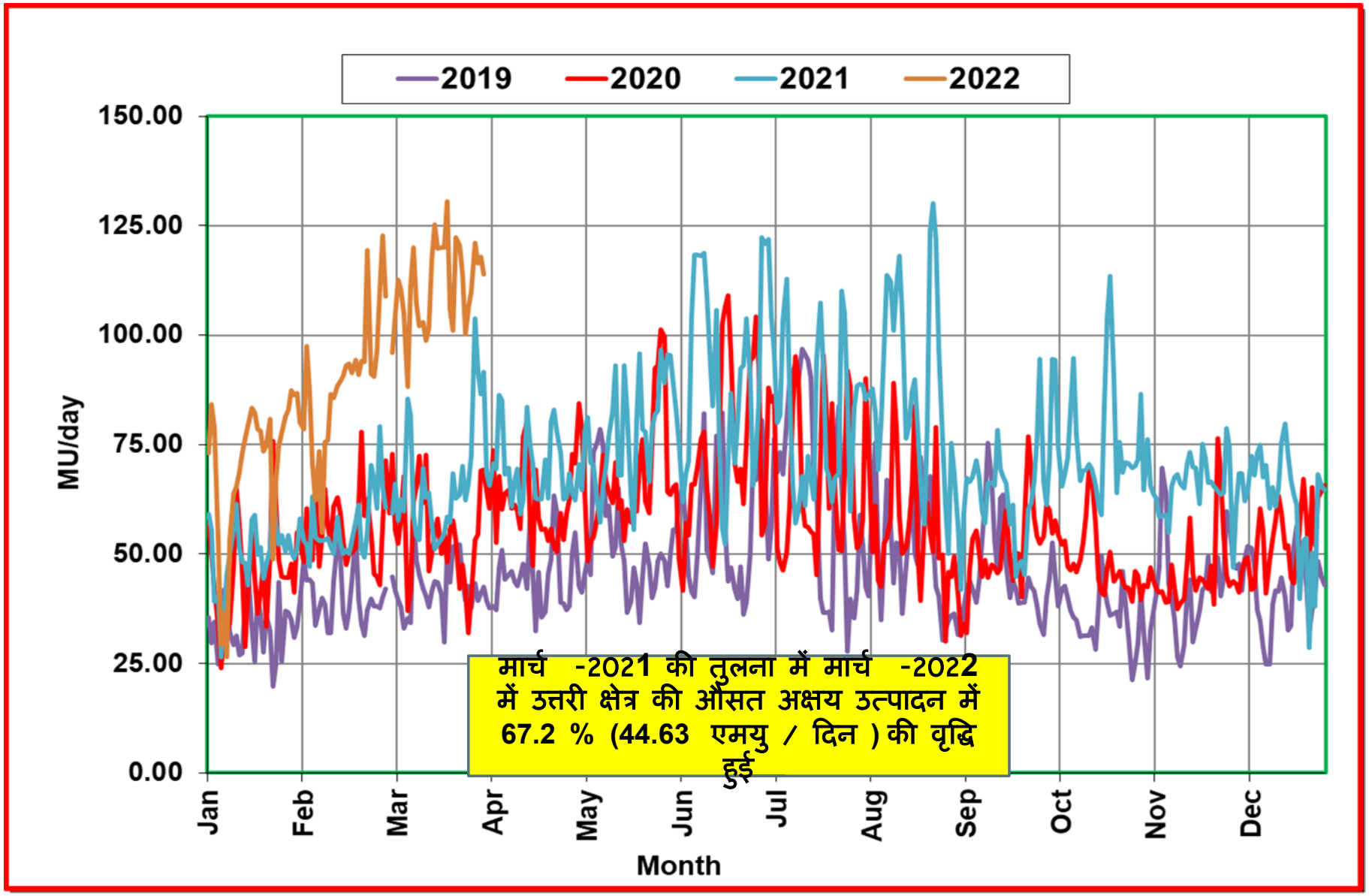
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



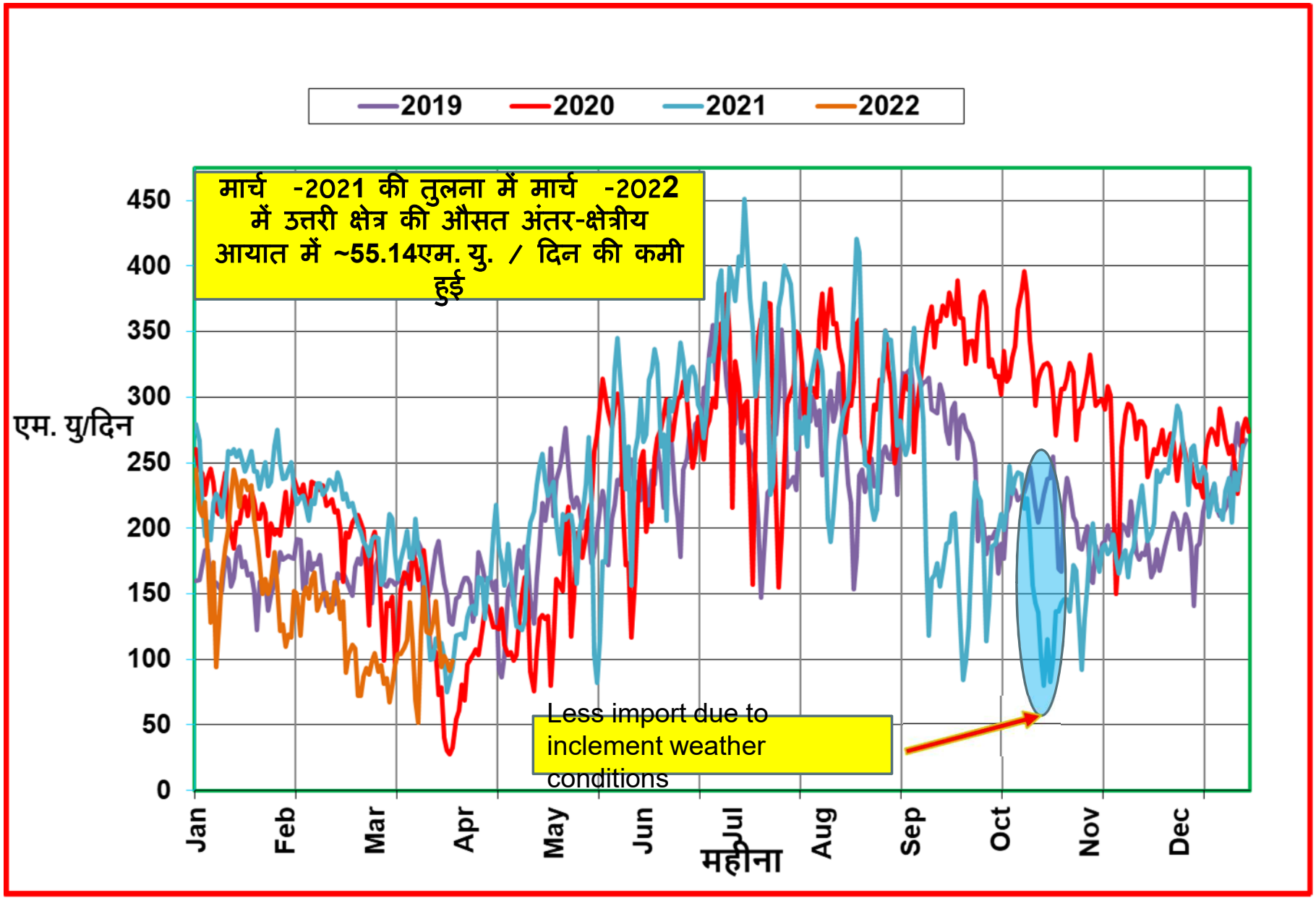
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



(Mus/Day)


2019
2020
2021
2022
150.00
125.00
100.00
75.00
50.00
25.00
0.00
MU/day
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month
मार्च -2021 की तुलना में मार्च -2022 में उत्तरी क्षेत्र की औसत अक्षय उत्पादन में 67.2 % (44.63 एमयु / दिन) की वृद्धि हुई

अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



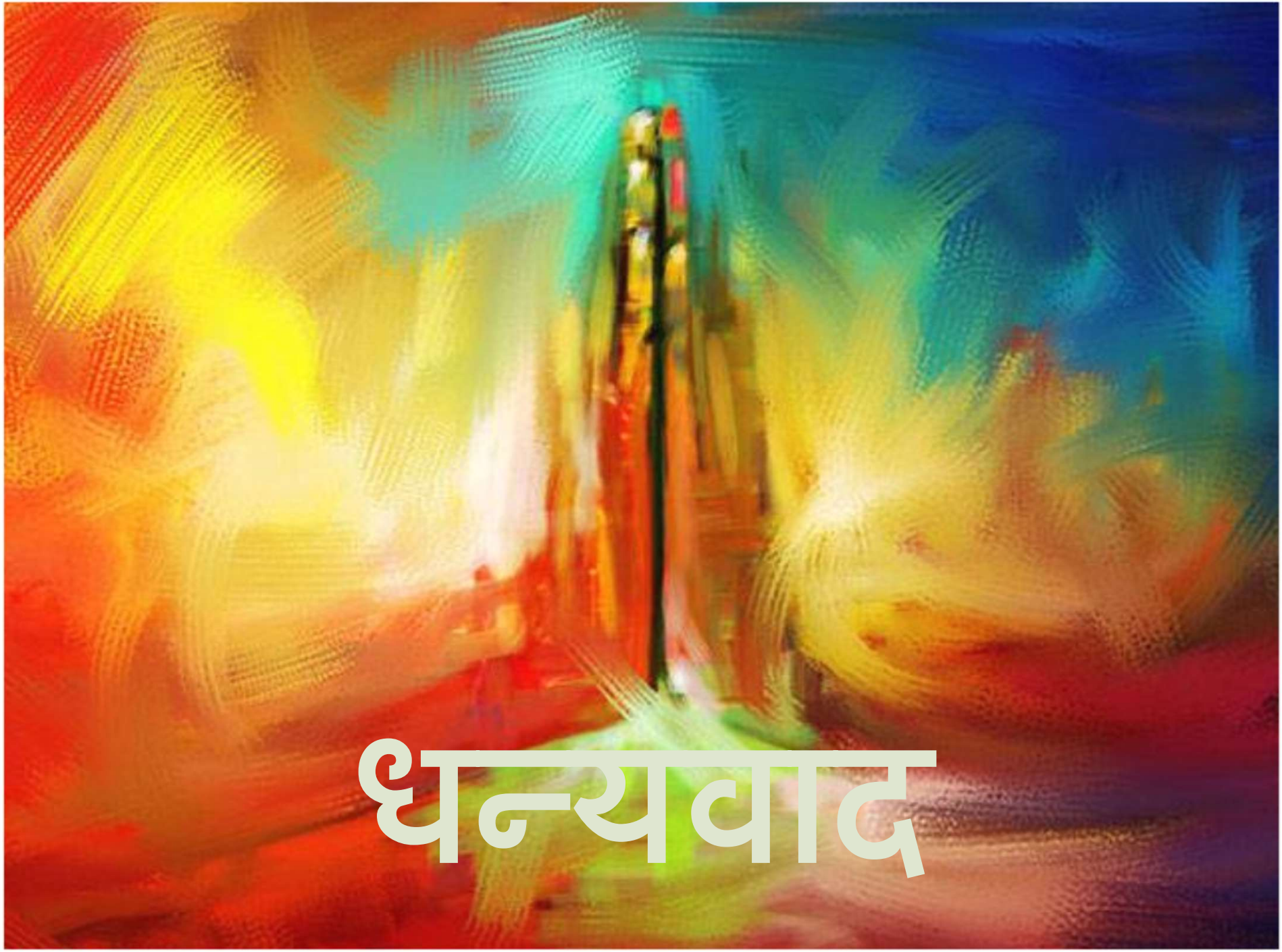
RE Penetration

	Maximum Daily MU Penetration			
	March '2022		Record upto February'2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	6.30	04-03-2022	12.28	01-04-2020
Rajasthan	21.25	19-03-2022	36.47	22-10-2021
UP	3.68	01-03-2022	4.07	30.10-2021
NR	12.39	19-03-2022	12.77	22-10-2021

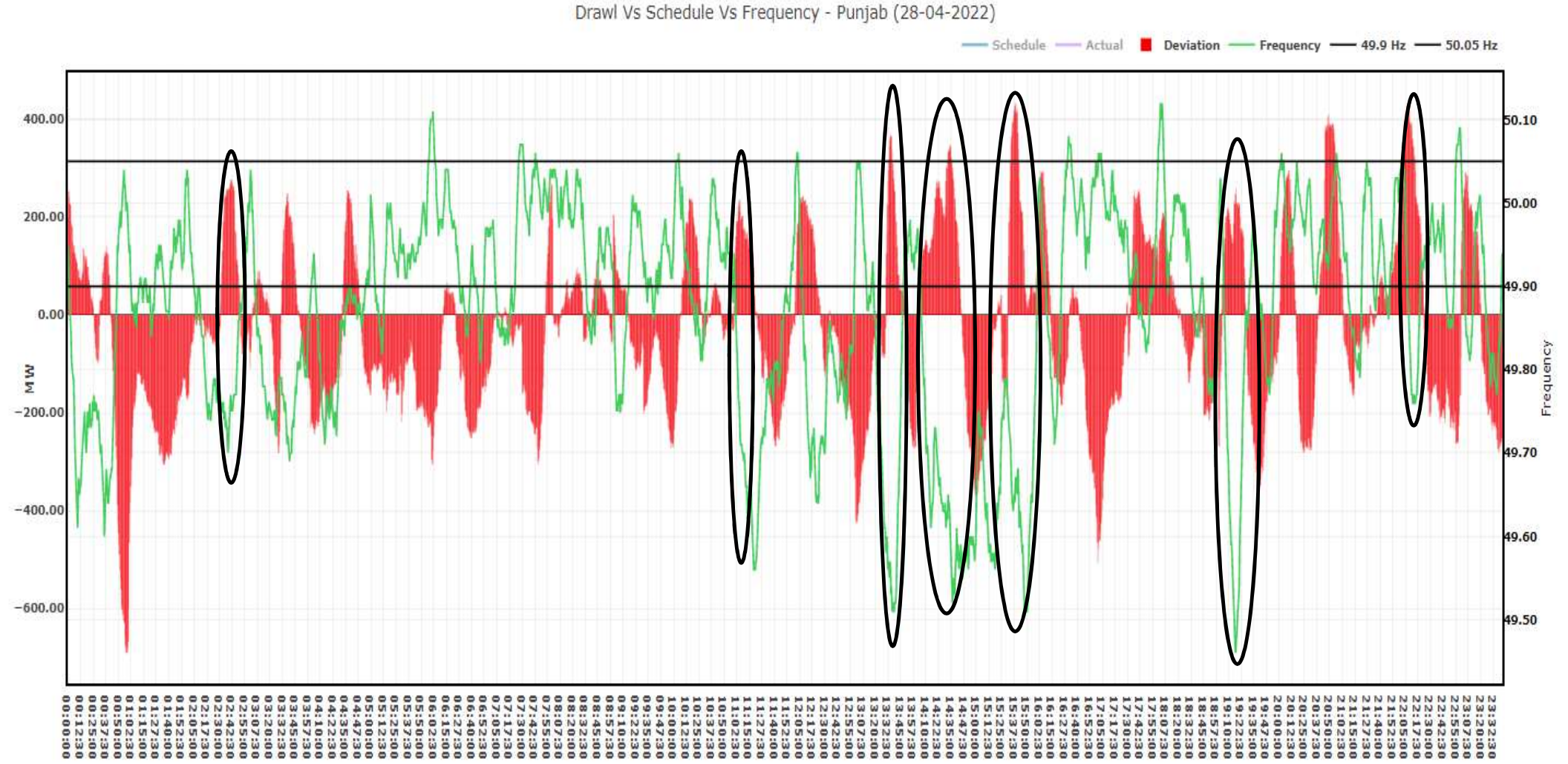
	Maximum Instantaneous Penetration in MW			
	March '2022		Record upto February'2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	8.83	07-03-2022	26.87	22-04-2020
Rajasthan	36.73	18-03-2022	68.38	31-03-2020
UP	14.63	26-03-2022	15.13	01-04-2021
NR	28.18	19-03-2022	32.84	22-02-2022

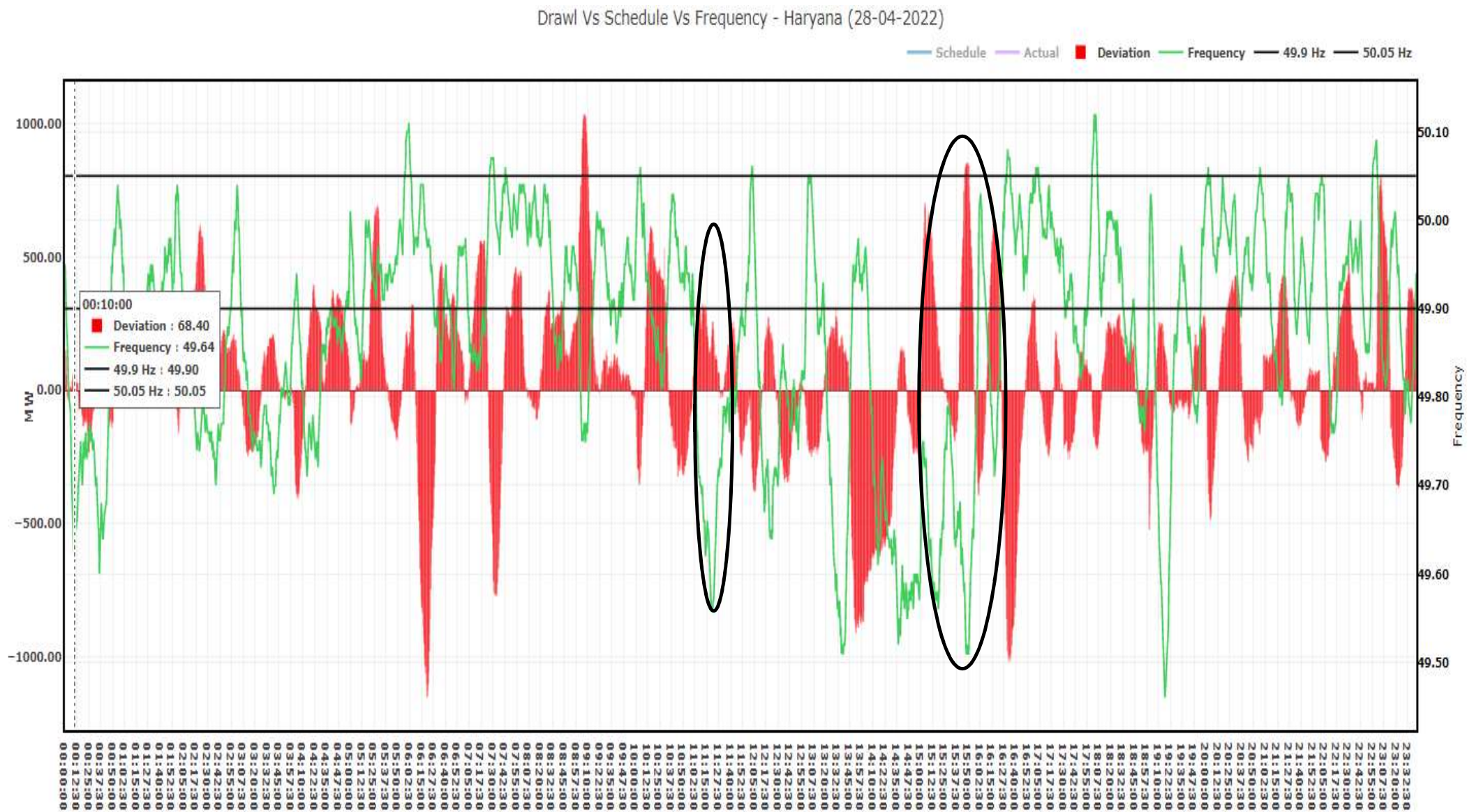
वास्तविक सारांश -
मार्च -2021 वनाम मार्च -2022

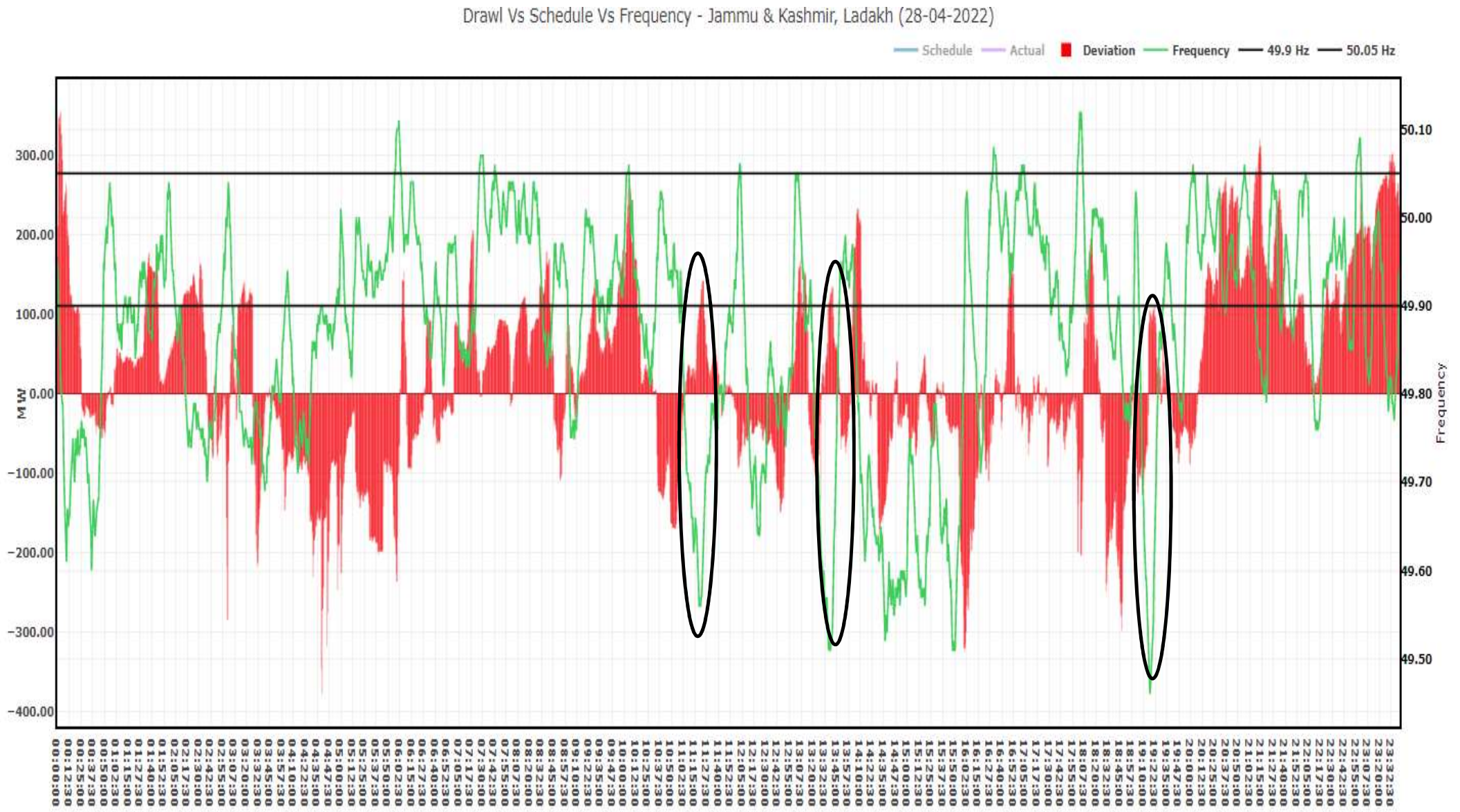
	मार्च -2021 (मि.यु. /दिन)	मार्च -2022 (मि.यु. /दिन)	मार्च माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	**650.56**	**701.02**	**50.46**
जलीय (Hydro) उत्पादन	**111.92**	**163.65**	**51.72**
नाभिकीय (Nuclear) उत्पादन	**25.34**	**31.26**	**5.92**
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	**157.71**	**102.57**	**-55.14**
अक्षय (Renewable) उत्पादन	**66.43**	**111.06**	**44.63**
कुल उपलब्धता	**1011.96**	**1109.56**	**97.59**

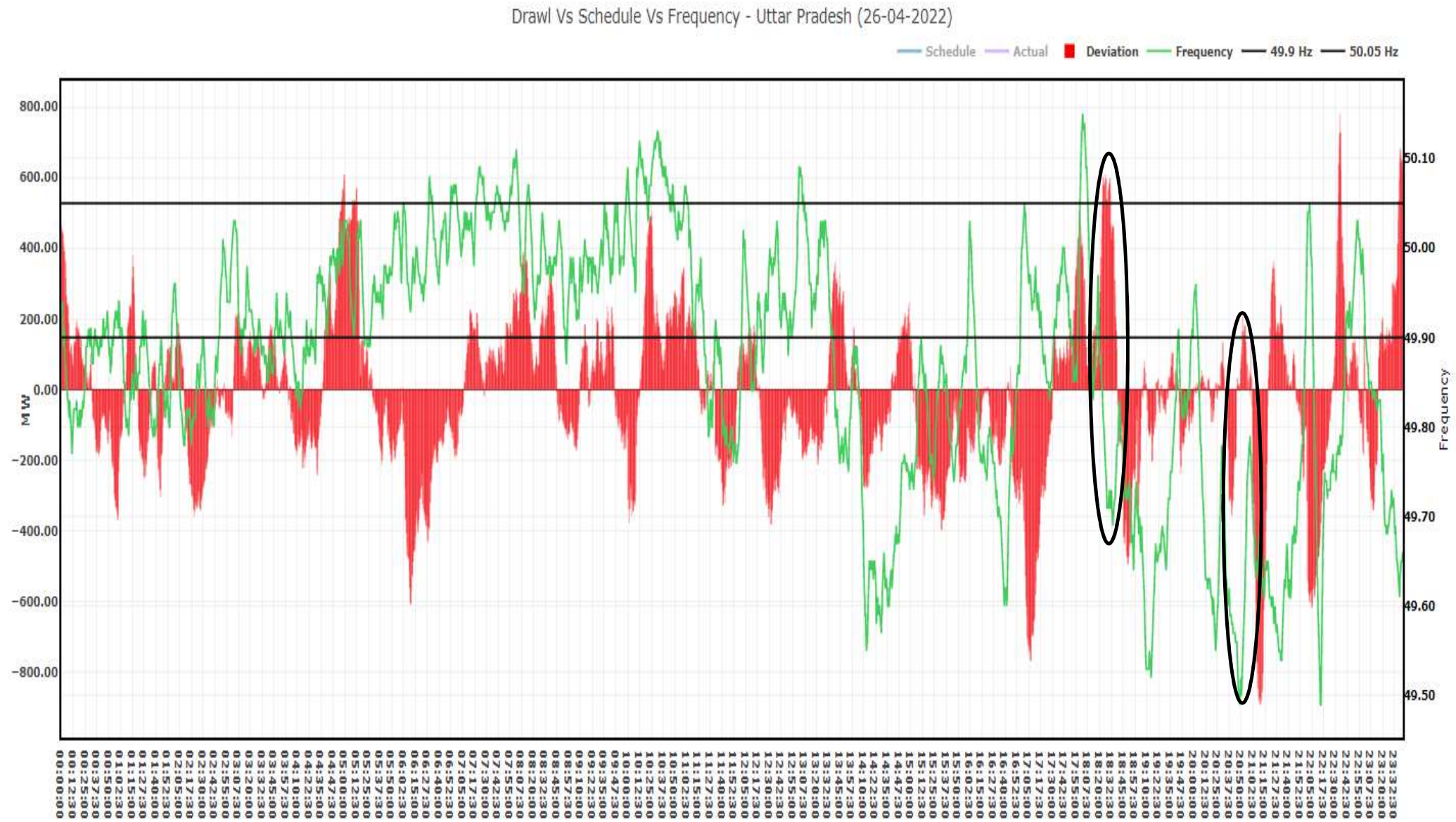

धन्यवाद

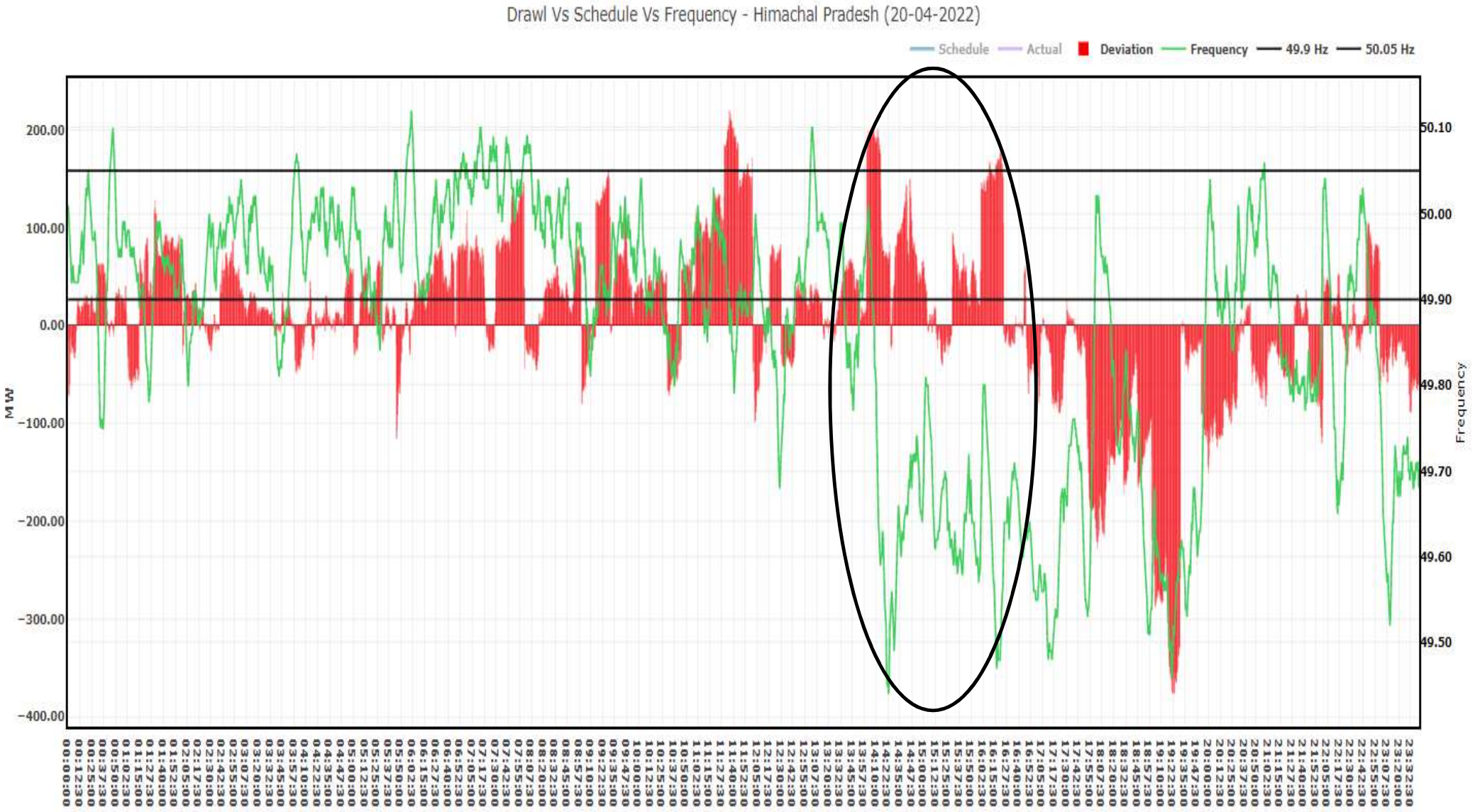
Overdrawl by states in last one week

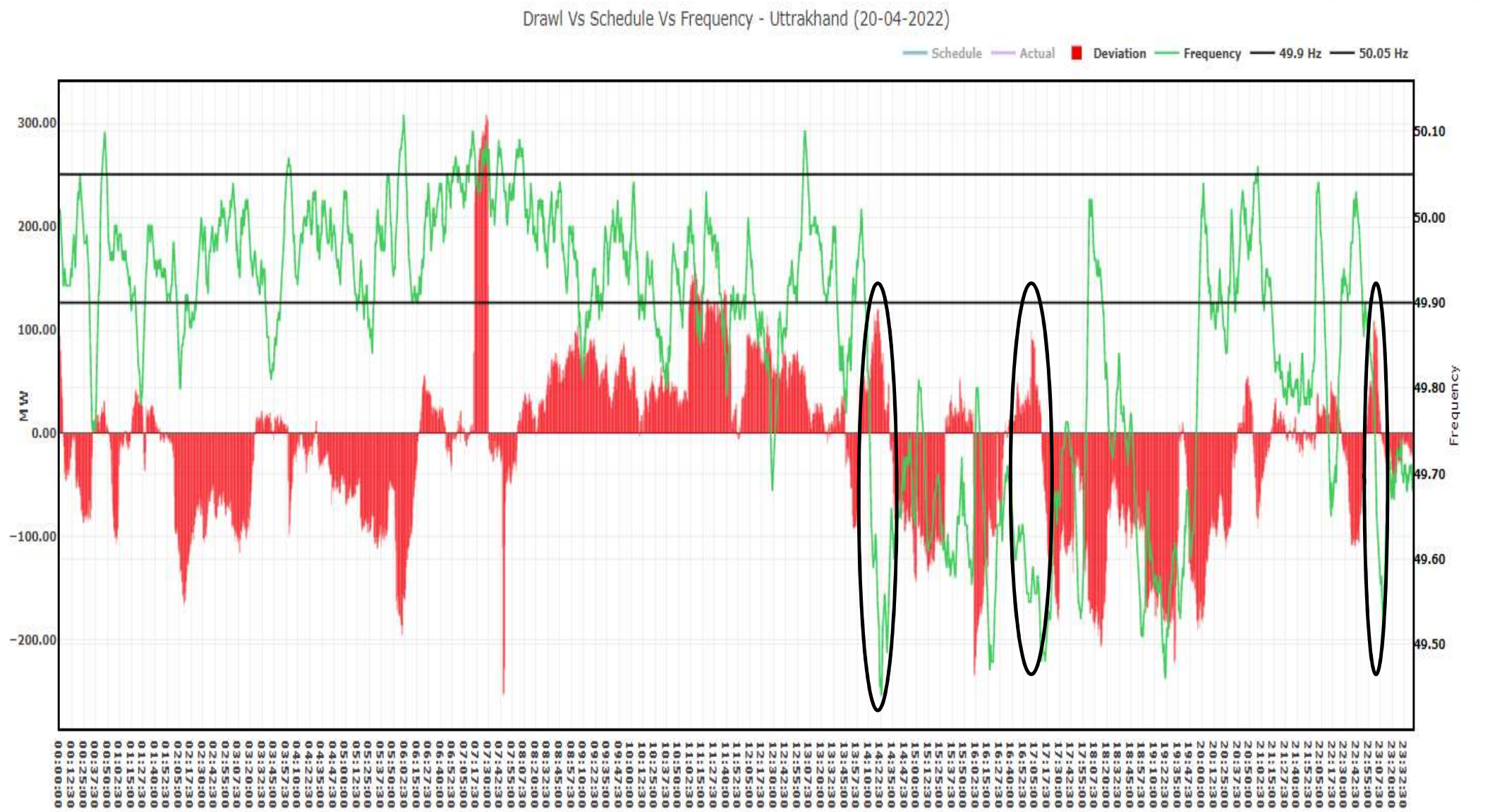


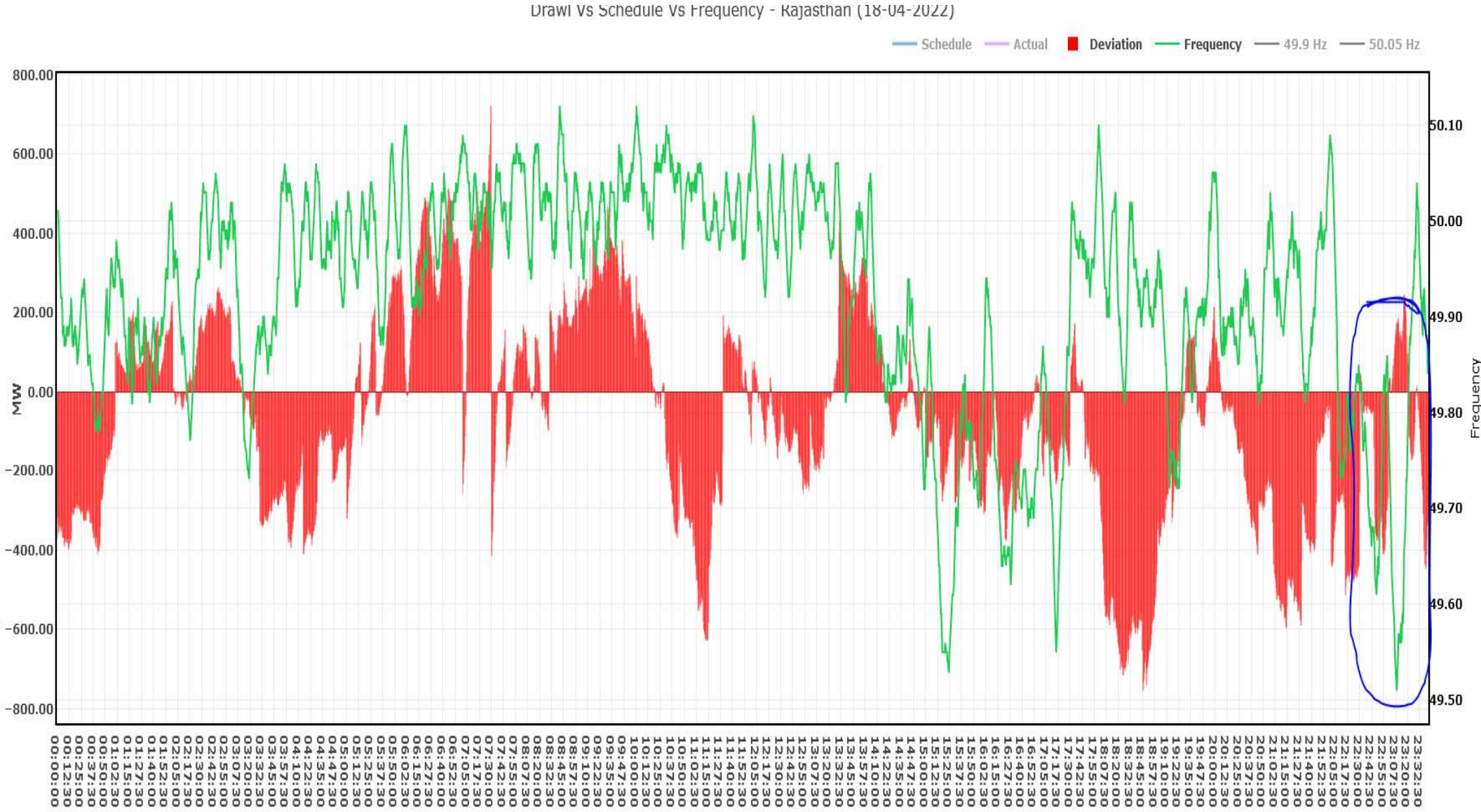

Drawl Vs Schedule Vs Frequency - Haryana (28-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
1000.00
500.00
0.00
-500.00
-1000.00
MW
50.10
50.00
49.90
49.80
49.70
49.60
49.50
Frequency
00:10:00
Deviation : 68.40
Frequency : 49.64
49.9 Hz : 49.90
50.05 Hz : 50.05


Drawl Vs Schedule Vs Frequency - Jammu & Kashmir, Ladakh (28-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
300.00
200.00
100.00
0.00
-100.00
-200.00
-300.00
-400.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Uttar Pradesh (26-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Himachal Pradesh (20-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
200.00
100.00
0.00
-100.00
-200.00
-300.00
-400.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Uttrakhand (20-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
300.00
200.00
100.00
0.00
-100.00
-200.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50


Drawl Vs Schedule Vs Frequency - Rajasthan (18-04-2022)
Schedule
Actual
Deviation
Frequency
49.9 Hz
50.05 Hz
MW
Frequency
800.00
600.00
400.00
200.00
0.00
-200.00
-400.00
-600.00
-800.00
50.10
50.00
49.90
49.80
49.70
49.60
49.50

List of radial feeders opened since 8 Apr 2022

Sr. No.	Name of Over-Drawing State	Over-Drawl (MW)	Frequency (Hz)	Name of Feeder opened on Physical Regulation	Time/Date of Opening	Time/Date of Restoration	Load Relief (MW)
1	J&K	130 MW	49.54 Hz	220kV Kishenpur - Barn Ck-1	17:47Hrs/08.04.2022	18:01Hrs/08.04.2022	
2	Haryana	200 MW	49.53 Hz	Schedule-A feeders(33kV) from Panipat(BBMB)	19:14 Hrs/09.04.2022	19:34Hrs/09.04.2022	25 MW
3	J&K	188 MW	49.51Hz	220kV Kishenpur-Barn Ckt-1	19:17Hrs/09.04.2022	20.11Hrs/09.04.2022	137 MW
				220kV Kishenpur-Barn Ckt-2	19.18Hrs/09.04.2022	20.11Hrs/09.04.2022	137 MW
4	Haryana	271 MW	49.51 Hz	Schedule-A feeders(33kV) from Panipat(BBMB)	23:28Hrs/09.04.2022	00:51Hrs/10.04.2022	25 MW
				Schedule-B feeders(33kV) from Kurukshetra (BBMB) and Dhulkote (BBMB)	00:10Hrs/10.04.2022	00:43Hrs/10.04.2022	
				132kV Kundli – Narela line	00:25Hrs/10.04.2022	01:00Hrs/10.04.2022	
				132kV Sonipat – Panipat line	00:08Hrs/10.04.2022	00:46Hrs/10.04.2022	
5	Himachal Pradesh	100 MW	49.51 Hz	132kV Dehar -Kangoo line from Dehar(BBMB)	23:35Hrs/09.04.2022	00:51Hrs/10.04.2022	
6	Himachal Pradesh	100 MW	49.51 Hz	220kV Dehar-Kangoo line from Dehar(BBMB)	23:35Hrs/09.04.2022	00:54Hrs/10.04.2022	
7	Punjab	250 MW	49.54 Hz	132kV Jamalpur-Ghulal D/C from Jamalpur(BBMB)	00:12Hrs/10.04.2022	00:49Hrs/10.04.2022	
8	J&K	150 MW	49.49Hz	220kV Kishenpur-Barn Ckt-1	18:44Hrs/11.04.2022	19:37Hrs/11.04.2022	125 MW
				220kV Kishenpur-Barn Ckt-2	18:44Hrs/11.04.2022	19:37Hrs/11.04.2022	125 MW
9	Haryana	90 MW	49.49 Hz	Schedule-A feeders(33kV) from Panipat(BBMB)	19:01Hrs/11.04.2022	19:55Hrs/11.04.2022	29 MW
		98 MW	49.47 Hz	Schedule-B feeders(33kV) from Kurukshetra (BBMB) and Dhulkote (BBMB)	19:22Hrs/11.04.2022	19:58Hrs/11.04.2022	38 MW
10	Punjab	103 MW	49.49Hz	220 KV JALANDHAR(PG)-KANJAL(PS) (PSTCL) CKT-1	18:46Hrs/11.04.2022	20:06Hrs/11.04.2022	30 MW
				220 KV JALANDHAR(PG)-KANJAL(PS) (PSTCL) CKT-2	18:46Hrs/11.04.2022	20:10Hrs/11.04.2022	30 MW
11	Haryana	100 MW	49.54 Hz	Schedule-A feeders(33kV) from Panipat (BBMB)	19:23Hrs/12.04.2022	20.46Hrs/12.04.2022	70 MW
				Schedule-B feeders(33kV) from Kurukshetra (BBMB)	19.25Hrs/12.04.2022	20.42Hrs/12.04.2022	
				Schedule-B feeders(33kV) from Dhulkote (BBMB)	19.27Hrs/12.04.2022	20.43Hrs/12.04.2022	
12	Himachal Pradesh	100 MW	49.55 Hz	132kV Dehar -Kangoo line from Dehar(BBMB)	17.19 Hrs/18.04.2022	17.44/18.04.2022	20
13	Himachal Pradesh	100 MW	49.55 Hz	220kV Dehar-Kangoo line from Dehar(BBMB)	17.19 Hrs/18.04.2022	17.44/18.04.2022	25
14	J&K	150 MW	49.55 Hz	220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-1	17.23 Hrs/18.04.2022	18.02 Hrs/18.04.2022	73
				220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-2	17.23 Hrs/18.04.2022	18.02 Hrs/18.04.2022	73
15	J&K	150 MW	49.51 Hz	220KV New Wanpoh - Mirbazar -I	23.15Hrs/18.04.2022	23.33Hrs/18.04.2022	150
				220KV New Wanpoh - Mirbazar -II	23.15Hrs/18.04.2022	23.34Hrs/18.04.2022	150
16	Rajasthan	150 MW	49.44 Hz	220KV Bhiwadi(PG) - Kushkhera	23.13Hrs/18.04.2022	23.34Hrs/18.04.2022	140
				220KV Neemrana(PG) - Kushkhera	23.17Hrs/18.04.2022	23.34Hrs/18.04.2022	140
17	J&K	150 MW	49.44 Hz	220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-1	14:09 Hrs/19.04.2022	16.33 Hrs/19.04.2022	90
				220 KV SAMBA(PG)-HIRANAGAR(PDD) (PG) CKT-2	14:09 Hrs/19.04.2022	17:07 Hrs/19.04.2022	90

18	UP	200 MW	49.44 Hz	220 KV ALLAHABAD(PG)-JHUSI(UP) (PG) CKT-1	14:12 Hrs/19.04.2022	14:32 Hrs/19.04.2022	144
			49.44 Hz	220 KV SOHAWAL(PG)-BARABANKI(UP) (UP) CKT-1	14:14 Hrs/19.04.2022	14:45 Hrs/19.04.2022	145
19	UP	120 MW	49.44 Hz	220 KV SOHAWAL(PG)-BARABANKI(UP) (UP) CKT-2	14:14 Hrs/19.04.2022	14:48 Hrs/19.04.2022	145
20	Haryana	100 MW	49.44 Hz	Schedule-A feeders(33kV) from Panipat (BBMB)	14:22Hrs/20.04.2022	18:22 Hrs/20.04.2022	29
				Schedule-B feeders(33kV) from Kurukshetra (BBMB)	14:30Hrs/20.04.2022	19:16 Hrs/20.04.2022	32
21	Himachal Pradesh	100 MW	49.44 Hz	132kV Dehar -Kangoo line from Dehar(BBMB)	14:25Hrs/20.04.2022	18:05 Hrs/20.04.2022	
		100 MW		220kV Dehar-Kangoo line from Dehar(BBMB)	14:25Hrs/20.04.2022	18:29 Hrs/20.04.2022	
22	UTT	100MW	49.44 Hz	220 KV PANTNAGAR(UK)-BAREILLY(UP) (UP) CKT-1	14:30Hrs/20.04.2022	18:19Hrs/20.04.2022	
23	Himachal Pradesh	163MW	49.47 Hz	220 KV KHODRI(UK)-MAJRI(HP) (UK) CKT-1	16:22Hrs/20.04.2022	18:18 Hrs/20.04.2022	150MW
				220 KV KHODRI(UK)-MAJRI(HP) (UK) CKT-2	16:22Hrs /20.04.2022	18:21 Hrs/20.04.2022	
24	UTT	40MW	49.47 Hz	132 KV PITHORAGARH(PG)-PITHORAGARH(PTCUL) (PTCUL) CKT-1	17.34 Hrs/20.04.2022	18:25 Hrs/20.04.2022	40MW
	J&K	80MW	49.54 Hz	220 KV KISHENPUR(PG)-BARN(JK) (PDD JK) CKT-1	17.52 Hrs/20.04.2022	18:40 Hrs/20.04.2022	
25				220 KV KISHENPUR(PG)-BARN(JK) (PDD JK) CKT-2	17.52 Hrs/20.04.2022	18:40 Hrs/20.04.2022	70 MW
26	Haryana	112 MW	49.53 Hz	Schedule-A feeders(33kV) from Panipat (BBMB)	19:10 Hrs/26.04.2022		28 MW
	Rajasthan	179 MW	49.52 Hz	220KV Bhiwadi(PG) - Kushkhera	Not Opened O/D Control by rajasthan		
27				220KV Neemrana(PG) - Kushkhera	19.14Hrs/26.04.2022	19.35 Hrs/26.04.2022	
	Punjab	250	49.45	220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-1	14:43 Hrs/27.04.22	15:51 Hrs/27.04.22	33
				220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-2	14:43 Hrs/27.04.22	15:53 Hrs/27.04.22	31
28	Punjab	500	49.58	220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-1	20.55 Hrs/27.04.22	21.43 Hrs/27.04.22	33
29				220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-2	20.55 Hrs/27.04.22	21.43 Hrs/27.04.22	31
30	Punjab	500	49.52 Hz	220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-1	23.13 Hrs/27.04.22		32
31				220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-2	23.14 Hrs/27.04.22		32
32	Punjab	282 MW	49.51 Hz	220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-1	13.49 Hrs/28.04.22	14.05 Hrs/28.04.22	
				220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-2	13.49 Hrs/28.04.22	14.05 Hrs/28.04.22	
33	Haryana	181 MW	49.51 Hz	Schedule-A feeders(33kV) from Panipat (BBMB)	13.41 Hrs/28.04.22	13.51 Hrs/28.04.22	
				Schedule-B feeders(33kV) from Kurukshetra (BBMB)	Hrs/28.04.22	Hrs/28.04.22	Not Executed
34	Punjab	ACE -296 MW	49.52 Hz	To open 66 kV Jamalpur Chandigarh road,Ludhiana on physical regulation	14.39 Hrs./28.04.22	15.27 Hrs./28.04.22	
35	Haryana	ACE -645 MW	49.57 Hz	To open schedule A and B feeders of Haryana through BBMB on physical regulation	15.17 hrs. and 15.20 hrs. respectively on 28.04.22	16.42 and 16.43 hrs. respectively/28.04.22	
36	Haryana	ACE-913 MW	49.56 Hz	To open 132 kV Narela BBMB -Kundi on physical regulation	15.51 hrs./28.04.22	16.30/28.04.22	
37	Haryana	ACE-913 MW	49.56 Hz	To open 220/132 kV ICT at Hissar BBMB on physical regulation	15.53 hrs./28.04.22	16.28/28.04.22	
38	Punjab	240 MW	49.45 Hz	220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-1	19.17/28.04.22	19.56/28.04.22	66 MW
39	Punjab	240 MW	49.45 Hz	220 KV AMRITSAR(PG)-NARAINGARH(PS) (PSTCL) CKT-2	19.17/28.04.22	19.56/28.04.22	