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

संख्या: उ.क्षे.वि.स./ प्रचालन/106/01/2022/5770-5811 दिनांक: 11.07.2022

विषय**:** उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 196वीं बैठक का कार्यवृत |

Subject: Minutes of 196th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 196वीं बैठक दिनांक 22.06.2022 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 |

196th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 22.06.2022. 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

11/07/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की **196**वीं बैठक का कार्यवृत्त

196th meeting of OCC of NRPC was held on 22.06.2022 through video conferencing.

खण्ड-क: उ.क्षे.वि.स. **PART-A:NRPC**

1. Confirmation of Minutes

Minutes of 195th OCC meeting was issued on 10.06.2022. OCC confirmed the minutes.

2. Review of Grid operations of May 2022

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

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

- **Delhi**

The change in energy consumption was due to hot weather condition during the month of May 2022.

- **Punjab**

Actual maximum demand and actual energy requirement were more as compared to anticipated maximum demand and anticipated energy requirement respectively because of high demand of agricultural load and all other categories due to dry season and heavy temperature in the state of Punjab during month of May 2022.

- **Himachal Pradesh**

The anticipation in energy requirement in respect of Himachal Pradesh for the month of May 2022 came on the higher side due to a rise in demand which is attributable to the following:

a. Increased temperature compared to last year.

b. Dry weather

c. Heavy inrush of tourists

- **Uttar Pradesh**

Actual energy requirement was higher than anticipated due to high temperature; distribution network / supply not affected due to low wind speed and unusual absence of thunder storm/dust storm.

- **Uttarakhand**

The reasons for significant deviation of actual demand and anticipated figures during the month of May 2022 was due to unusual hot and humid weather conditions, increase in demand in comparison to historical data.

- **Rajasthan**

The energy consumption & peak demand increased by 11% & 18.1% respectively w.r.t. anticipated energy requirement & anticipated peak demand for May 2022 is because of unexpected load growth due to long spell of high heat wave in the state and overlapping of agriculture supply blocks in day hours for optimum utilization of state solar generation.

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 May 2022 was enclosed in the agenda and same was discussed in the meeting.

3. Planning of Grid Operation

3.1. Anticipated Power Supply Position in Northern Region for July 2022

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	200	430	No Revision submitted
	Requirement	200	440	
	Surplus / Shortfall	0	-10	
	% Surplus / Shortfall	0.0%	-2.3%	
DELHI	Availability	5076	8200	21-Jun-22
	Requirement	4030	8200	
	Surplus / Shortfall	1046	0	
	% Surplus / Shortfall	25.9%	0.0%	
HARYANA	Availability	5770	11700	No Revision submitted
	Requirement	6991	12700	
	Surplus / Shortfall	-1221	-1000	
	% Surplus / Shortfall	-17.5%	-7.9%	
HIMACHAL PRADESH	Availability	1104	1700	08-Jun-22
	Requirement	1109	1727	
	Surplus / Shortfall	-5	-27	
	% Surplus / Shortfall	-0.5%	-1.6%	
J&K and LADAKH	Availability	2150	3550	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Requirement	1690	2610	No Revision submitted
	Surplus / Shortfall	460	940	
	% Surplus / Shortfall	27.2%	36.0%	
PUNJAB	Availability	7650	14200	21-Jun-22
	Requirement	8590	15320	
	Surplus / Shortfall	-940	-1120	
	% Surplus / Shortfall	-10.9%	-7.3%	
RAJASTHAN	Availability	9250	18050	21-Jun-22
	Requirement	8630	14790	
	Surplus / Shortfall	620	3260	
	% Surplus / Shortfall	7.2%	22.0%	
UTTAR PRADESH	Availability	15810	26000	15-Jun-22
	Requirement	15500	26000	
	Surplus / Shortfall	310	0	
	% Surplus / Shortfall	2.0%	0.0%	
UTTARAKHAND	Availability	1333	2316	05-Jun-22
	Requirement	1380	2350	
	Surplus / Shortfall	-47	-34	
	% Surplus / Shortfall	-3.4%	-1.4%	
NORTHERN REGION	Availability	48342	77600	
	Requirement	47788	75800	
	Surplus / Shortfall	554	1800	
	% Surplus / Shortfall	1.2%	2.4%	

4. Submission of breakup of Energy Consumption by the states

4.1. 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	Apr-2022
Himachal Pradesh	Apr-2018	Apr-2022
Punjab	Apr-2018	Mar-2022
Rajasthan	Apr-2018	Apr-2022
Uttar Pradesh	Apr-2018	Apr-2022
Uttarakhand	Apr-2018	Dec-2021

4.2. OCC forum again raised expressed concern on non-submission of energy

breakup data by UTs of J&K & Ladakh, and Chandigarh despite repeated reminders.

5. Automatic Demand Management System

5.1. 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.

5.2. 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.

5.3. 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.

5.4. 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.

5.5. 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.

5.6. 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

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

5.8. 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.

5.9. 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.

5.10. 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.

5.11. 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.

5.12. 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.

5.13. 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.

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

5.15. In 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.

5.16. In 195th OCC, Rajasthan SLDC representative informed that in consultation with state STU, ADMS implementation schedule in their state has been extended till Dec'22.

5.17. In the meeting (196th OCC), Rajasthan SLDC representative informed that due to the power crises, the scheduled trials could not be done. Likely completion schedule for ADMS project is 31.12.2022.

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

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

6.2. In 195th OCC, SLDCs were requested to 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.

7. NR Islanding scheme

8.1. 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.

8.2. 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.

8.3. 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.

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

8.5. 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.

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

8.7. 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.

8.8. 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.

8.9. 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.

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

8.11. 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.

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

8.13. 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.

8.14. 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.

8.15. 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.

8.16. 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.

8.17. 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.

8.18. 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.

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

8.20. 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.

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

8.22. 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.

8.23. 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.

8.24. 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.

8.25. 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.

8.26. 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.

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

8.28. 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.

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

8.30. 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.

8.31. 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.

8.32. 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.

8.33. 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.

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

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

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

8.37. 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.

8.38. In the 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.

8.39. 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.

8.40. 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 analyzing load-generation balance and conducting steady state study.

8.41. 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.

8.42. In the 195th OCC, NRLDC representative intimated that steady state study for Rajasthan islanding scheme has been completed. It was decided that Rajasthan may go ahead for implementing the scheme.

8.43. NRPC representative informed that a sub-group will be formulated shortly that would review all proposed islanding schemes of NR and assess the reason for delay.

8.44. In the meeting (196th OCC), MS NRPC asked UP representative to take up the matter with CPRI for Agra islanding scheme and ask them to complete the work in one month time from the date of acceptance of offer by CPRI.

8.45. UP representative informed that steady state study along with load generation balancing is complete for Unchahar-Lucknow Islanding scheme and the same would be submitted to NRLDC in one week time.

8.46. Rajasthan representative informed that for Jodhpur-Barmer-Rajwest and Suratgarh islanding scheme work of DPR preparation is under progress and same would be submitted to NLDC to avail PSDF funding before next OCC meeting.

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

8.48. MS NRPC asked Himachal Pradesh representative to coordinate with NRLDC officials to converge the study carried out by them.

8.49. Further, MS NRPC also asked Punjab representative to coordinate with NRLDC officials in order to converge the steady state study carried out by them.

8. Coal Supply Position of Thermal Plants in Northern Region

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

9. Revised Islanding Schemes for the Rajasthan Atomic Power Station (RAPS-A & B) (Agenda by RRVPNL)

9.1. RRVPNL representative presented the matter to the forum and submitted the revised islanding schemes for the Rajasthan Atomic Power Station (RAPS-A & B) due to changes in network topology.

9.2. NRLDC representative mentioned that they will examine the revised islanding scheme and thereby submit its observation, within a week's time.

9.3. Further, RRVPNL was requested to submit the changes in the configuration of transmission lines and load of the GSS for further analysis.

9.4. Rajasthan representative intimated that ADMS will be implemented for its system by 31.12.2022.

9.5. OCC was of view that scheme shall be implemented for minimum load and the scheme may initially be carried out for manual settings of block / operative operations (for taking care of load variation) and later on scheme can be migrated to automatic system after the implementation of ADMS system.

9.6. OCC decided that after the final analysis of the revised islanding scheme, the same would be taken up for concurrence in the NRPC meeting.

10. Review of planned outages proposed from 1st September'22 to 15th October'22 (Agenda by POSOCO)

10.1. NRPC representative informed that POSOCO vide letter dated 08.06.2022 (copy enclosed as Annexure-A.IV. of agenda) has communicated the need to

review the planned outages proposed from 1st September'22 to 15th October'22 to ensure bare minimum planned outage of thermal units in aforesaid months so that all India electricity demand in the upcoming months could be met without any constraint.

10.2. OCC was of view that a LGBR sub-committee meeting may be conducted, wherein the planned outages proposed from 1st September'22 to 15th October'22 may be reviewed.

10.3. Further, MS, NRPC was of opinion that GM Division, CEA may be invited as a special invite in the proposed LGBR meeting.

11. Reducing load on 400kV Tikrikalan-Bawana and 400kV TikrikalanJhatikara Lines at 400kV S/Stn Tikrikalan (Erstwhile Mundka) (Agenda by DTL)

11.1. DTL representative presented the matter to the forum and mentioned that peak load on 400kV lines associated with 400kV Tikrikalan is very high almost on daily basis. DTL representative requested OCC forum to review the optimal loading of 400kV lines in the region so that high loading of Tikrikalan to Jhatikara and Tikrikalan to Bawana lines may be addressed and reliability of 400kV Ring around NCT of Delhi may be improved.

11.2. NRLDC representative stated that interconnector from DTL Bawana to PPCL Bawana is open from 01.06.2022 due to high fault level at Bawana sub-station and not due to line loading as reported by DTL representative. He further mentioned that there seems no issue of high loading as lines are Quad-Bersimis (2000MVA capacity).

11.3. Further, NRLDC representative stated that with commissioning of already planned Narela ISTS S/s and Gopalpur S/s, loadings of 400kV Jhatikara-Mundka are likely to reduce.

12. Addl. Agenda: Issue of Deemed Availability Certification for shutdowns availed by POWERGRID for shifting of transmission lines for NHAI Projects

12.1. NRPC representative presented the matter to the forum and communicated that recently a meeting was held by NRPC Sect with POWERGRID, NRLDC and CEA wherein it was decided that presently diversion cases of NHAI for the FY 2021-22 may be taken up first for the certification of deemed availability and it may be confirmed if beneficiaries are not affected due to these shutdowns.

12.2. MS, NRPC was of view that beneficiaries may confirm by 30.06.2022 to seo-nrpc@nic.in whether they were affected or have faced any transmission constraint due to outages taken by POWERGRID for diversion cases related to NHAI from April, 2021 to September, 2021 (copy of the outages attached as Annexure-AA.II of additional agenda).

12.3. Further, MS, NRPC stated that if no comment is received from beneficiaries in regard to these outages within stipulated time, then it will be presumed that

there was no restriction in regard to these outages and thereafter NRPC Sectt. would go ahead with the certification of these outages as provisionally deemed available.

12.4. NRPC representative informed that outages taken by POWERGRID for diversion cases related to NHAI from January, 2022 to April, 2022 was already circulated to beneficiaries vide mail and despite reminder also, no observation from any beneficiary state for these outages is received. The forum was of the view that for the outages from January, 2022 to April, 2022 NRPC Sectt. shall go ahead with the certification of these outages as provisionally deemed available and certification process for remaining period of 2021-22 may be done after 30th June 2022.

13. Addl. Agenda: Third party protection audit at PTCUL sub-stations (Agenda by PTCUL)

13.1. PTCUL vide mail dated 20.06.2022 has intimated that they have submitted a DPR for renovation and up-gradation of protection system (stage-II) of various substations / switchyards in Uttarakhand under PSDF scheme to PSDF - NLDC secretariat through PUTCUL (the nodal agency under PSDF scheme of Uttarakhand state). This DPR covers upgradation of 02 nos. of 400 kV S/s and 08 nos. of 220 kV S/s, having served more than 10 years.

13.2. PTCUL representative requested the OCC forum to constitute third party audit team for 400 kV / 220 kV S/s of Rishikesh / Haldwani, so that the desired Audit Report may be submitted to PSDF-NLDC for the approval of project.

13.3. OCC forum was of view that two officers from NRLDC, POWERGRID (NR-1 & NR-3), UPPTCL/UPSLDC, THDC and PTCUL shall submit two nominations each for the said protection audit, latest by 27th June to NRPC Sectt.

13.4. Moreover, it was decided that PTCUL/UJVNL shall submit the name and details of the coordinator for this activity and also the details (name, location, distance from Dehradun) of all sub-stations (to be audited), latest by 27th June to NRPC Sectt.

13.5. OCC forum was of view that after receipt of nominations and S/s details, 5 groups (from different organization) may be formed for 2 S/s by NRPC Sectt so that each group may complete its activity within 5 days.

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

14. NR Grid Highlights for May 2022

NRLDC representative presented the grid highlights for May 2022:

- Maximum energy consumption of Northern Region was 1539.80 Mus on 20th May'22 and it was 35.04 % higher than May' 2021 (1140.26Mus 29th May'21)

- Average energy consumption per day of Northern Region was 1381.11Mus and it was 34.77% higher than May'21 (1024.79Mus per day)
- Maximum Demand met of Northern Region was 68398 MW on 13thMay'22 @23:00 hours (*based on data submitted by Constituents)* as compared to 52885 MW on 26th May'21 @23:00 hours.

Northern Region all time high value recorded in May'22:

State (Maximum Demand Met)	All Time High Record		Previous Record (upto Apr-22)	
	Value (MW)	Achieved on	Value (MW)	Achieved on
Rajasthan	15898	19.05.22 at 12:30	15749	01.03.22 को 08:30 बजे
Uttar pradesh	25046	15.05.22 at 22:00	24795	16.07.21 को 23:00 बजे

State (Max Energy Consumption)	All Time High Record		Previous Record (upto Apr-22)	
Rajasthan	Value (MU)	Achieved on	Value (MU)	Achieved on
	311.080	20.05.22	310.79	19.08.21
Uttarakhand	50.370	31.05.22	49.68	10.07.21

Frequency Data Comparison

Month	Avg.Freq.(Hz)	Max.Freq.(Hz)	Min. Freq.(Hz)	<49.90(%time)	49.90–50.05(%time)	>50.05(%time)
May'22	50.00	50.35	49.50	9.8	72.2	17.9
May'21	50.00	50.28	49.63	6.6	74.5	18.9

Detailed presentation shared by NRLDC in the meeting is shown as Annexure-B.I.

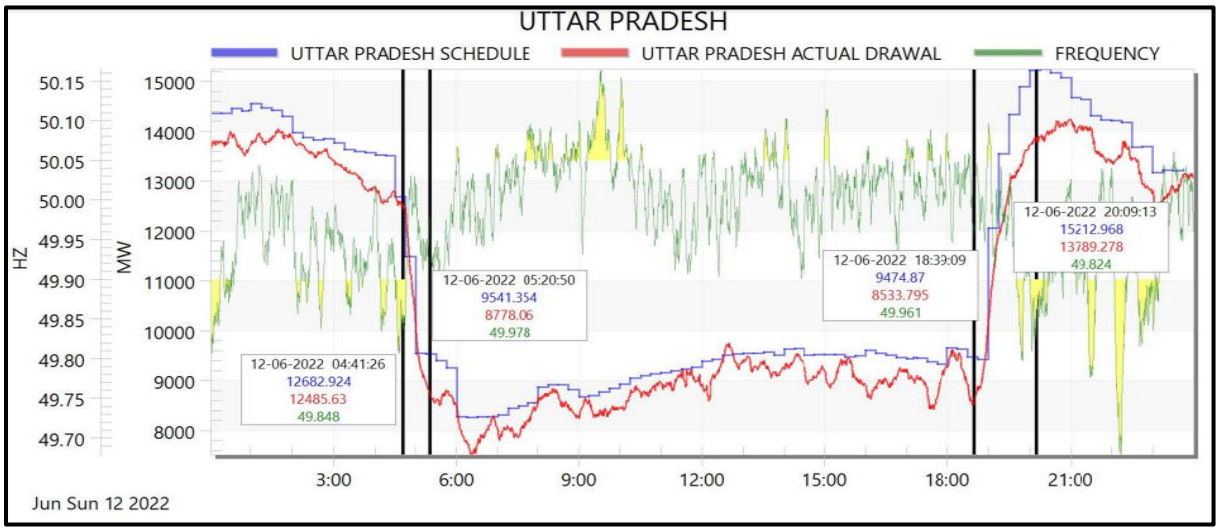
In May'22, frequency remained within IEGC band for only ***72.2%*** *of the time. All utilities were requested to take all the measures described in subsequent agenda points.*

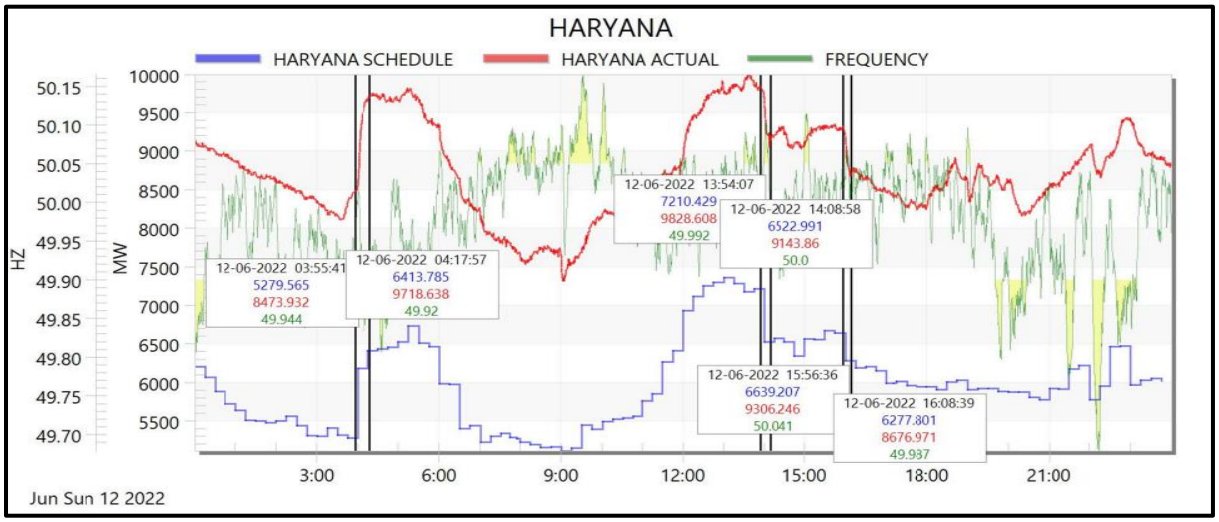
All the concerned were advised to strictly take actions and restrict under-drawl/ over-drawl from Grid for safe & secure operation of the Grid. Therefore, the following was requested:

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 April/May 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.

It is being observed that some of the states such as Haryana and UP are changing drawl by large quantum for few days in Jun2022 as shown below.

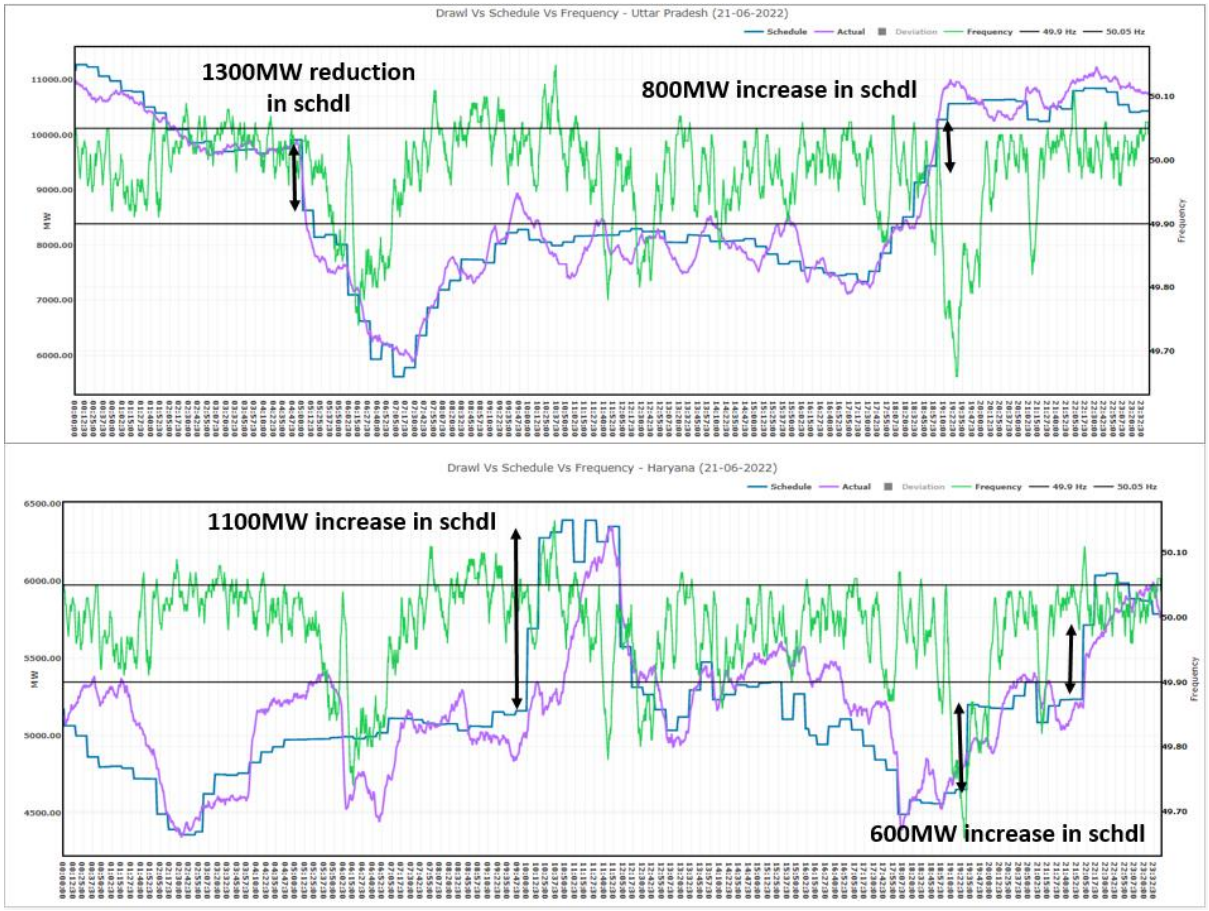




As per IEGC 5.2(j),

No User / SEB shall cause a sudden variation in its load by more than one hundred (100 MW) without prior intimation to and consent of the RLDC.

Plots were also presented for 21.06.2022 of Haryana as well as UP state and it was discussed that such pattern is still persisting.



The above issues have been communicated to the respective SLDCs vide NRLDC letters dated 14.06.2022 attached as Annexure-B.I of agenda. Haryana and UP SLDC representatives were asked to ensure smooth changes in drawl schedule and demand of state avoiding sudden increase/ decrease in load in coordination with respective DISCOMs.

UP representative stated that the same has been taken up with UPCL through written communication.

Haryana SLDC representative stated that DISCOM is taking power regulatory measures for drawl management and the matter has been highlighted to them. It has also been advised that power procurement is done such that there is no need to change drawl suddenly.

NRLDC representative asked UP and Haryana to share the communication and status with NRLDC and NRPC also. This would also serve as reply to the letter issued by NRLDC. UP and Haryana SLDC representatives agreed for the same.

A meeting was organized by NRLDC on 06.05.2022 with participation from all SLDCs to review the list of feeders for physical regulation after most of the states had not submitted their feedback. Following is the updated status as per discussions held in the meeting.

In 195th OCC meeting, Uttarakhand representatives stated that they shall share updated list of radial feeders before next OCC meeting.

Haryana representative stated that the list of radial feeders has been sent for approval to management and would be shared after approval. These feeders are

220kV Kaithal-Neemwala D/C and 220kV Sec 72 Gurgaon- Sec 33 D/C. These would be in addition to Schedule A & B feeders already identified.

NRLDC representative urged Haryana and Uttarakhand representatives to share the updated list at the earliest. NRLDC representative also stated that since some of the feeders are being opened manually by UP and Punjab and it would be better if the same is automated (ADMS)

In 196th OCC meeting, SLDC Haryana representative confirmed that feeders are same and approval is pending from higher management and same can be updated in list of radial feeders. Uttarakhand representative stated that feedback has been sent on 07.06.2022. Updated list as received from Uttarakhand is attached as Annexure-B.II.

Other SLDC were asked to explore possibility of automatic feeder opening in case of low frequency and over drawl.

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

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

SLDCs were requested to go through the tentative ATC/TTC limits for July 2022 (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.

Loading of 400/220kV ICTs observed above or close to N-1 contingency limits is also attached as **Annexure-B.III**.

Punjab

In 196 OCC meeting, NRLDC representative stated that N-1 contingency of 500 MVA ICT at Ludhiana, Patran, Malerkotla, Moga, Patiala and N-1 contingency of 315 MVA ICT at Nakodar and Nallagarh will critically load other ICTs and thus, these contingencies are the limiting constraints for import capability of Punjab. Punjab SLDC should ensure loading of these 400/220kV ICTs below contingency N-1 limits.

Increased generation at 220 kV level (Ropar, Lehramohabbat, Goindwal) will help in meeting the high demand, expected at the time of paddy season as well as improvement in reliability due to increased voltage support. Thus, full generation at 220kV generating stations such as Goindwal, Ropar and Lehramohabbat is recommended to maintain this ATC/TTC limit for Punjab.

Although simulation studies suggest no major low voltage issues, Punjab SLDC needs to monitor continuously the voltage profile, load power factor and availability of shunt compensation.

In 196th OCC meeting, it was discussed that with import close to 7000MW, severe n-1 non-compliance was observed at 400/220kV Nakodar ICTs while the loading of 400/220kV Ludhiana ICTs was just below the N-1 contingency limits.

Punjab SLDC representative informed that since reconductoring work of 220kV Jalandhar-Kartarpur was going on therefore, load of Kartarpur was fed from Nakodar thereby leading to N-1 non-compliance at Nakodar. After completion of reconductoring work, loading of 400/220kV Nakodar would be manageable to safe limits.

Loading of Ludhiana was also high due to this shutdown of 220kV Jalandhar-Kartarpur and also with sufficient generation at Ropar TPS loading of 400/220kV Ludhiana ICTs would be managed below N-1 contingency limits.

Punjab SLDC was asked to take up the matter for selling power in Real Time Market in case of load crash events on priority. It was also mentioned that proposal may be put up for approval by Punjab SLDC with their higher officials to effectively develop and implement the procedure. Punjab SLDC agreed for the same.

UP

UP SLDC vide mail dated 16.05.2022 has shared their revised assessments as follows:

Intra–State Generation(w/o Solar and Co-Gen)	TTC	RM	ATC
11000	15100	600	14500
12000	14500	600	13900
13000	14000	600	13400

Limiting

In 195 OCC meeting, NRLDC representative stated that comments from NRLDC side have been mailed on 20.05.2022.

UP representative stated that 765kV AnparaD- Unnao line would be revived shortly and thereafter this issue would not be faced afterwards. Moreover, it was discussed that if required 220kV lines from Obra may be opened if loading of 400kV Anpara-Obra is higher than safe limit if they are not able to ensure sufficient generation at Obra TPS.

In 196 OCC meeting, it was discussed that in the month of May-June 2022, when import of UP was in the range of 13000MW, loadings close to N-1 limit (slightly beyond even) were observed at 400/220kV Sarnath, Obra, Gorakhpur, Nehtaur and Allahabad(PG) ICTs. UP SLDC was advised to restrict loadings of these ICTs below their N-1 contingency limit.

UP representative informed following:

- SPS implemented at Nehtaur and mock test would be completed on 2 July 2022.

- SPS is to be implemented at Obra. Budgetary offer to be received from Siemens.
- UP will share mock-testing report of existing SPS
- UPPTCL and Obra representatives stated that LILO of 765kV AnparaD-Unnao which were to be terminated at Obra have been reversed i.e. the bay in which AnparaD was to be installed, Unnao line has been commissioned and vice-versa. The issue is there because reactor was to be commissioned in Obra-Unnao section whereas as per this scheme it is physically for AnparaD-Obra section.
- UPPTCL and Obra representatives stated that enquiry has been set up to investigate in the matter and matter is being taken up at the highest level.
- SPS at Sohawal would be implemented after shifting from Bareilly (UP). The works are in progress in this regard.

NRLDC and NRPC representatives expressed concern on the negligence observed and stated that the matter needs to be resolved at the earliest as the line is very critical for safe power evacuation from Singrauli-Anpara complex in case of shutdowns/ contingency. Moreover, UP should have informed about this issue in previous OCC meetings.

It was also informed that SPS requirement at 400/220kV Allahabad may be explored by UP. At all stations it may be ensured that loading of all 400/220kV ICTs may be ensured below N-1 contingency limits. For stations having SPS, it may be ensured that loading is restricted up to such limits that SPS relief is able to manage loading of ICTs within safe limits. UP SLDC agreed for the same.

Rajasthan

In 195th OCC meeting, it was discussed that in the month of April-May 2022, severe N-1 non-compliance was observed at 400/220kV Ajmer, Chittorgarh, Merta, Bhinmal and Bikaner ICTs. Rajasthan SLDC representative was asked to provide the plan to ensure loadings at these 400/220kV ICTs below their N-1 contingency limits. Rajasthan SLDC was also asked to expedite implementation of SPS as agreed in last OCC meeting.

In 196th OCC meeting, it was discussed that N-1 non-compliance was observed at 400/220kV Merta, Ajmer, Chittorgarh and Bikaner ICTs.Rajasthan SLDC representative wasasked to provide the plan to ensure loadings at these 400/220kV ICTs below their N-1 contingency limits and also status of implementation of SPS as agreed in last OCC meetings.In the meeting, it was discussed that SPS would be commissioned at Merta, Ajmer and Chittorgarh in June 2022. Proposal for SPS at Bikaner, Bhadla and Ratangarh would be shared shortly. New ICT would also be added at 400/220kV Bikaner.

Delhi

In 195 OCC meeting, DTL was asked to share ATC/TTC assessment and basecase with NRLDC/ NRPC at the earliest. Delhi SLDC representative informed that the ATC/TTC assessment was done and same is sent for approval by management. It was informed

that constraints observed are 400/220kV Harsh Vihar and Mandola ICTs at ATC/TTC of 6800/7100MW. After approval, ATC/TTC figures would also be uploaded on Delhi SLDC website.

Delhi SLDC vide email dated 27.05.2022 has shared their ATC/TTC assessments with NRLDC. NRLDC vide email dated 14.06.2022 has shared their observations (also mentioned below):

- Severe N-1 non-compliance at 400/220kV Bamnauli ICTs, after shifting of one ICT to Mundka
- Loading of 400/220kV Mundka ICTs not matching with real-time (less than 400MW in basecase whereas more than 600MW in real-time)
- Bus split at Jhatikara to be incorporated.
- Please also check n-1 compliances of 765kV Jhatikara-Dwarka (high loading of Jhatikara-Bamnauli) and 765/400kV ICTs at Jhatikara (two ICTs on one 400kV bus)
- 220kV bus voltages at some of the buses are getting low
- Some 220kV lines ae highly loaded in basecase itself

In 196th OCC meeting, it was discussed that loading of 400/220kV Mundka, Bawana (section having two ICTs) and Harshvihar ICTs was close to N-1 contingency limits during last few weeks.

DTL representative informed that SPS has been implemented at Mundka on 22.06.2022.

Delhi SLDC representative informed that issue of N-1 non-compliance at Bawana would be there since inter-connector is opened. Delhi SLDC was asked to explore requirement of SPS for these two ICTs to avoid loss of critical supplies during tripping of one ICT. Delhi SLDC agreed for the same. Delhi SLDC was also asked to display ATC/TTC on their websites.

Haryana

In 195th OCC meeting, Haryana SLDC representative stated that they have implemented SPS at 400/220kV Deepalpur. For Kurukshetra, they shall take up the matter for implementing SPS with POWERGRID. During shutdown of Samalkha-Chhajpur line due to highway crossing works, additional loading had to be kept on 220kV Sonepat-Mohana, therefore higher loading was observed.

For N-1 compliance of 400/220kV Panipat ICTs, drawl of Delhi also needs to be restricted as both Haryana and Delhi are drawing power from Panipat substation. Delhi SLDC representative stated that the line is connected since previous years and the line flow is normal.

In 196th OCC meeting, it was discussed that N-1 non-compliance was observed at 400/220kV Deepalpur and Panipat (BBMB) ICTs. It was discussed that Haryana and Delhi may mutually discuss and resolve the issue of loading of 400/220kV Panipat ICTs

and in case same is not resolved it could be discussed in separate meeting or next OCC meeting after agenda by Haryana/ Delhi.

Haryana representative stated that Delhi SLDC representative informed that same would be discussed in Delhi's internal OCC meeting and if issues persist same shall be further taken up by Haryana and Delhi mutually.

In the meeting, it was discussed that SPS may be proposed jointly by Haryana and Delhi for short-term and as long-term measure new ICT may be commissioned after discussions with CTU/CEA/Haryana/BBMB/DTL/POSOCO.

NRLDC representative expressed concern on the slow progress of SPS implementation at 400/220kV Kurukshetra and asked HVPN to coordinate with POWERGRID and expedite SPS implementation. HVPN representative agreed for the same and stated they would also try and shift some load if possible to Kaithal(PG) till commissioning of SPS.

HP and Uttarakhand have shared their ATC/TTC assessment for summer 2022.

For Uttarakhand, N-1 compliance was observed at 400/220kV Kashipur ICTs along with high loading of 220kV CBGanj-Pantnagar. Uttarakhand SLDC was also asked to explore requirement of SPS at Kashipur.

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.

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**

It was again requested that SLDCs 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.

16. 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. Update on the status of these elements from last OCC meeting to 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.

Revival of following critical transmission elements needs to be expedited:

- 400/220 kV 315 MVA ICT 2 at Mundka(DV)
- 400/220 kV 240 MVA ICT 3 at Moradabad(UP) (would help to ensure N-1 compliance)
- 765 KV ANPARA_D-UNNAO (UP) CKT-1
- 400 KV Kadarpur (GPTL) - Bus 1
- 220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1
- 220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1
- 400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)
- 400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)
- 220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1
- 400KV Bus 1 at Vishnuprayag(JP)

Members agreed to expedite revival of these transmission elements.

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 were 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 Power maps, PSSe base-case, Protection analysis etc.

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) Calculation of Drawal points based on SLDC end data

Haryana and Uttarakhand SLDCs were requested to provide update on the agenda point. No update was received on this agenda point.

(iii) Update of Important grid element and Operating Procedure document in line with IEGC:

In the meeting it was discussed that:

Based on the inputs received from utilities and discussions held in 194th and 195th OCC meetings, in line with section 5.2. (c) of IEGC, list of important grid elements in Northern region has been updated and uploaded on NRLDC website @https://nrldc.in/download/important-grid-element-of-northern-region-may-2022/?wpdmdl=10389.

Operating Procedure document would also be updated by NRLDC in mid-July 2022. Latest available document is available @ https://nrldc.in/download/operation-procedure-of-northern-region-2021-22/?wpdmdl=9306.

***Utilities were requested to provide update/ their inputs at the earliest*.**

(iv) Installation of Bird Divertor on Power Lines as directed by Hon'ble Supreme Court of India

In the meeting, it was discussed that Hon'ble SC has directed that " *In all cases where the overhead powerlines exist as on today in the priority and the potential GIB area the respondents shall takes steps forthwith to install divertors pending consideration of the conversion of overhead cables into underground power lines. In all such cases where itis found feasible to convert the overhead cables into underground powerlines the same shall be undertaken and completed within a period of one year and till such time the divertors shall be hung from the existing powerlines."*

CEA has released the technical specifications of Bird flight divertor in January 2021 which is available on https://cea.nic.in/wpeontent/uploads/pse td/202110 I/Technical Specifications for Bird Flight Diverter.pdf. CTU has furnished the list of powerlines falling under potential habitats of GIB as a part of submission in CERC order no. l 36/TL/2021. NLDC letter regarding the issue is attached as Annexure-B.V of agenda.

In this regard, it was requested to furnish the status report on compliance of order of Hon'ble SC regarding installing bird divertors on the EHV lines which are already commissioned. Compliance of the above order shall be ensured for the transmission systems under commissioning before seeking approval for first-time charging.

All members agreed for the same.

(v) Delay in charging and revival of 765kV Bikaner-Khetri D/C

NRLDC representative stated that 765 kV Bikaner-Khetri-Circuit 1 was under forced outage since 1850 hours of 23rd May 2022 on account of collapse of top cross arm of tower. The Outage of 765 kV Bikaner Khetri ckt-2 was being facilitated on daily basis since 26th May 2022 for restoration of 765 kV Bikaner-Khetri-Circuit 1. It may be noted that the 765 kV Bikaner-Khetri-double circuit lines are important for evacuation of wind/solar based generation from RE complexes in Rajasthan/Gujarat. The

prolonged outage of Circuit-1 had caused alarming conditions in the system during high RE generation.

Further, Shutdown of 765 kV Bikaner – Khetri ckt-2 was planned from 1600 hrs of 09.06.2022 to 0700 hrs of 10.06.2022 for restoration work of ckt -1. However, it was observed that line charging was delayed for 4 hours and 23 minutes. Line could only be restored at 11:23 Hours. Due to which, heavy voltage oscillations were seen in Bikaner – Bhadla complex (Annexure-B.VI of agenda). The outage of 765 kV Bikaner-Khetri-D/C during high solar hours caused the overloading of 400 kV Bikaner(PG)-Bikaner(RS) line and high voltage fluctuations.

Bikaner-Khetri Transmission Limited representative stated following:

- Tower cross-arm of transposition tower was damaged and since there was phase change at tower, there was significant induction therefore work could only be done in case of shutdown of other ckt.
- Height of top cross arm was 75m and during this season sandstorms are also observed in the area making the work more challenging.
- On 10.06.2022, crossarm was being lifted and heavy sand storm was observed therefore shutdown could not be timely returned.

NRLDC representative stated since line is planned for evacuation of solar generation, therefore shutdown would always be given during low solar generation, thus all transmission licensees need to plan accordingly. Utilities need to stick to the timeline for which shutdown is approved and in case there is likely to be delay in revival of transmission elements then, same needs to be communicated to NRLDC timely so that generation rescheduling and other actions can be taken at NRLDC end. All utilities were asked to make sure that in future such instances are not repeated as it become challenge for safe and secure operation of grid. All transmission licenses were also advised to increase their working capability so that in future in case of shutdowns in this pocket maximum work is possible to be done during less/non-generation hours.

All members agreed for the same.

(vi) Observation of low voltage &oscillations in the grid

NRLDC representative stated that on the days of high wind generation coinciding with high solar generation following issues are being faced in Rajasthan:

- High MVAr drawals were observed at intra-state network of Rajasthan
- Voltages at all RE stations & nearby substations are low and fluctuating
- Oscillations in the grid with high magnitudes in RE pockets
- Very high loading of 220kV lines in Western Rajasthan
- Very high export of power from Rajasthan state transmission system to ISTS network namely 400kV Barmer-Bhinmal loading (N-1 non-compliant)

Recently, on 27.05.2022 and 10.06.2022, oscillations were observed dominantly in RE evacuation substations of Rajasthan in Northern region during high solar and high wind generation in Northern region. Moreover, low voltages have also been

continuously observed in the grid during high solar and wind generation. In an integrated power system, such oscillations may propagate to affect or even trip other elements in the power system viz. line, generating unit etc.

Voltage fluctuation including low voltage along with tripping/dip in RE generation was first observed on 15th Jan'22 and same was deliberated in 192nd and 193rd NRPC OCC meetings held on 18th Feb'22 and 22nd March'22. Apart from voltage fluctuation and voltage oscillations all other RE related issues were also deliberated in 195th NRPC-OCC meetings.

On 10th June at 10:05hrs Oscillations in voltage started with a Jerk of around 15kV was observed, later sustained with amplitude of 3-4kV at 220kV level up to 10:13Hrs. After that amplitude of oscillation strengthened to 25-40kV/35-40kV at 220kV/400kV level. Oscillations sustained up to 10:55Hrs.

Largest amplitude of oscillations were observed at 220kV Fatehgarh2_PG connected RE plants in comparison of 220kV Bhadla,220kV Bhadla2 and220kV Bikaner i.e. around 25kV~40kV.

During the period of oscillations, the grid voltage near the RE generation was in lower side.

Plots for voltage fluctuations including severe low voltages are attached as Annexure of agenda.

All RE plants were requested to share the event logger details for all events of Voltage fluctuations.

Issues of voltage fluctuation and undesirable response from RE plants creating threat on Grid operation, same need to be analyzed in detailed and need to be rectified from its root cause for secure and reliable operation of Grid. To analyze any such kind of events a dedicated protection & reliability coordinator from each RE plants may be nominated for smooth sharing of data/tripping details and its detailed analysis.

Plots of oscillations on 27.05.2022 and 10.06.2022 are attached as Annexure-B.VI of agenda. Moreover, during the event there was huge MVAR drawl by RVPN stations such as Akal, Jodhpur, Kankani, Ramgarh and Barmer.

Separate meetings were also organized by NRLDC with interstate RE developers on 13.06.2022 and 21.06.2022 to discuss the issues faced with RE generators.

NRLDC representative stated that Rajasthan may also explore using Giral TPS as synchronous condenser for reactive power and inertial support in the grid. Moreover, in case of requirement of RE curtailment, quick actions need to be taken at State as well as Interstate level to ensure safe operation of the grid.

Rajasthan SLDC representative agreed for the same and informed that they shall also convene a meeting with intra-state RE generators to discuss these issues. It was also informed that RE generation would be immediately curtailed in case of any issues in future. Moreover, this is also time of high MVAR drawl due to agricultural supply during 0800-1200 hrs. leading to low voltage operation of the grid.

In the meeting, it was discussed that Rajasthan may carry out study and analyse the quantum of RE generation and load in that area/zone to be curtailed including

prioritization to improve the voltage profile and loading on 400kV & 220kV intra-state line within permissible limits. Moreover, curtailment of RE power needs to be quick so that oscillations damp out quickly.

SLDC to pursue the intrastate RE generators to support the grid by operating in voltage control mode and same should be regularly monitored at SLDC level. In case of high wind & high solar scenario, SLDC may make sure to keep maximum possible machines on bar near the RE pockets.

Rajasthan SLDC agreed for the same.

(vii) PFR testing in Northern region

It was discussed that BBMB was not able to place PO to perform PFR testing of machines even after numerous discussions in OCC meetings and written communication from NRLDC. For these remaining units of BBMB, following machines have been proposed for PFR testing by Solvina:

S. No.	Name of Utility	No. of units of utility	Station	Generating Unit No.	Capacity(MW)	Fuel Type
1	NTPC	1	Dadri stg-2	2	490	Coal
2	NTPC	2	Tanda Stage-II	1	660	Coal
3	NTPC		Tanda Stage-II	2	660	Coal
4	NTPC	1	Koldam	1	200	Hydro
5	SJVNL	3	Nathpa Jhakri	3	250	Hydro
6	SJVNL	2	Rampur	2	68.67	Hydro
7	SJVNL		Rampur	3	68.67	Hydro
8	NHPC	3	Dulhasti	1	128.44	Hydro
9	NHPC		Dulhasti	2	128.44	Hydro
10	NHPC		Dulhasti	3	128.44	Hydro
11	NHPC	3	Chamera Stage-II	1	98.8	Hydro
12	NHPC		Chamera Stage-II	2	98.8	Hydro
13	NHPC		Chamera Stage-II	3	98.8	Hydro

OCC noted the same. NHPC representative stated that Chamera-II and Dulhasti generating units are not required to provide RGMO response as storage is less than 3 hours. It was discussed that the matter may be separately discussed between NRLDC, NHPC& NLDC.

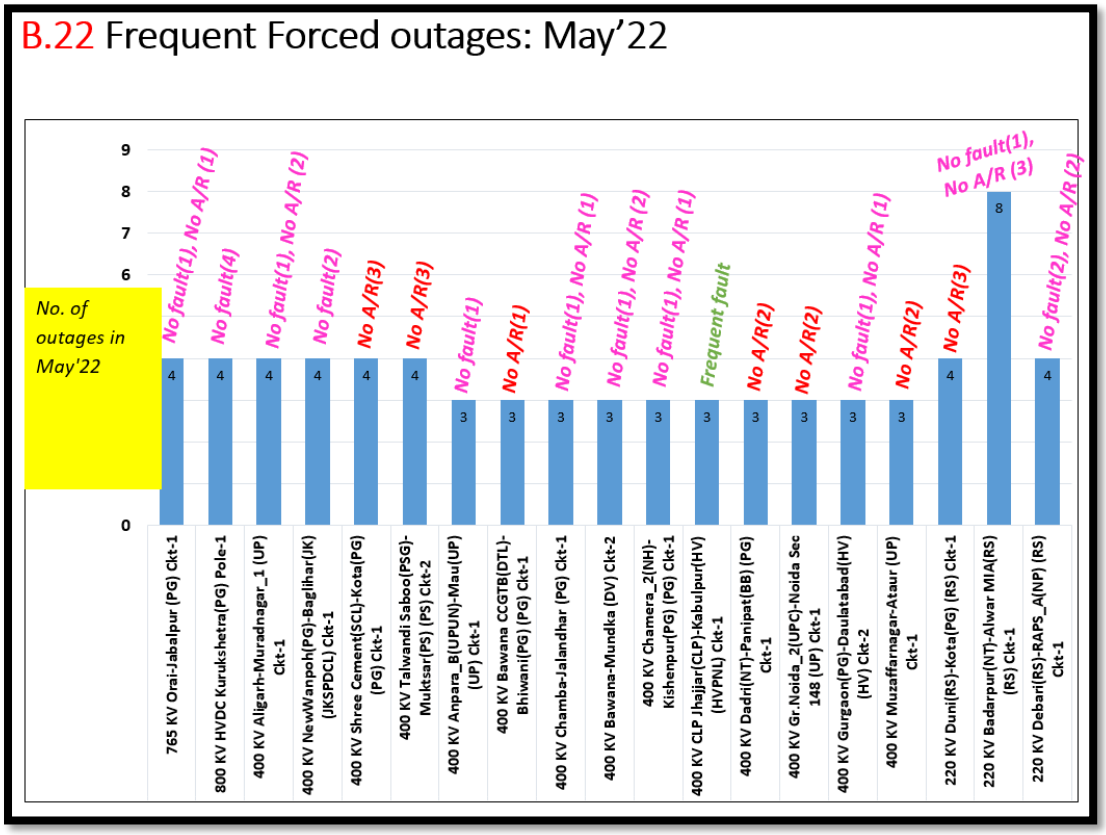
BBMB representative was asked to submit to letter to CERC stating that BBMB has not completed PFR testing citing the reasons for the same. BBMB representative agreed for the same.

17. Frequent forced outages of transmission elements in the month of May'22:

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

Sl. No.	Element Name	No. of forced outages	Utility/SLDC
1	765 KV Orai-Jabalpur (PG) Ckt-1	4	POWERGRID

Sl. No.	Element Name	No. of forced outages	Utility/SLDC
2	800 KV HVDC Kurukshetra (PG) Pole-1	4	POWERGRID
3	400 KV Aligarh-Muradnagar_1 (UP) Ckt-1	4	UP
4	400 KV NewWanpoh(PG)-Baglihar(JK) (JKSPDCL) Ckt-1	4	POWERGRID/JKSPDCL
5	400 KV Shree Cement (SCL)-Kota (PG) (PG) Ckt-1	4	POWERGRID
6	400 KV Talwandi Saboo (PSG)-Muktsar(PS) (PS) Ckt-2	4	PUNJAB
7	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	3	UP
8	400 KV Bawana CCGTB(DTL)-Bhiwani (PG) (PG) Ckt-1	3	POWERGRID
9	400 KV Chamba-Jalandhar (PG) Ckt-1	3	POWERGRID
10	400 KV Bawana-Mundka (DV) Ckt-2	3	DELHI
11	400 KV Chamera_2(NH)-Kishenpur(PG) (PG) Ckt-1	3	POWERGRID/NHPC
12	400 KV CLP Jhajjar (CLP)-Kabulpur (HV) (HVPNL) Ckt-1	3	HARYANA
13	400 KV Dadri (NT)-Panipat(BB) (PG) Ckt-1	3	POWERGRID/BBMB
14	400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1	3	UP
15	400 KV Gurgaon (PG)-Daulatabad(HV) (HV) Ckt-2	3	HARYANA
16	400 KV Muzaffarnagar-Ataur (UP) Ckt-1	3	UP
17	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	4	RAJSTHAN
18	220 KV Badarpur (NT)-Alwar MIA(RS) (RS) Ckt-1	8	RAJSTHAN
19	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	4	RAJSTHAN



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

Discussion during the meeting:

- **765 KV Orai-Jabalpur (PG) Ckt-1**: *POWERGRID representative informed that tripping on05th May, 2022 occurred on single phase to earth line fault during OPGW work at Jabalpur end. He said that tripping on 25th May, 2022 occurred on single phase to earth line fault after unsuccessful A/R operation due to permanent nature of fault, fault occurred due to thunderstorm/inclement weather condition. He further informed that tripping on 28th May, 2022 occurred due to over voltage protection operation at Jabalpur end.*
- **400 KV Aligarh-Muradnagar_1 (UP) Ckt-1:** *UPPTCL representative informed that tripping on 13th & 19th May, 2022 occurred on single phase to earth line fault after unsuccessful A/R operation due to permanent nature of fault. However, A/R didn't operate properly at Aligarh end due to issue in circuit breaker at their end. He further said that tripping of 21st May, 2022 occurred due to fault in reclaim time and another tripping on 21st May, 2022 occurred due to CVT cable faulty at Muradnagar_1 end. He further informed that faulty CVT cable at Muradnagar_1 end has been replaced.*
- **400 KV NewWanpoh (PG)-Baglihar (JK) (JKSPDCL) Ckt-1:** *POWERGRID representative informed that tripping on12th May & 16th May, 2022 occurred on single phase to earth line fault, fault occurred in 3km LILO portion which comes under JK PDD jurisdiction. He said that during patrolling they found trees in that LILO portion. He further informed that tripping on 30th May, 2022 occurred on DT received from Baglihar (JK) end and no information received from JK PDD end. JK PDD representatives were not present in the meeting.*
- **400 KV Shree Cement (SCL)-Kota (PG) (PG) Ckt-1:** *POWERGRID representative informed that tripping on 2nd May & 7th May, 2022 occurred on single phase to earth line fault. He further informed that A/R operated at Kota end but didn't operate at Shree Cement end. He said that they are investigating the issue with A/R operation at Shree Cement end.*
- **400 KV Talwandi Saboo(PSG)-Muktsar(PS) (PS) Ckt-2:** Punjab *representative informed that washing of line was done in May month after which frequent fault was occurring on the line. He further said that since 27th May, 2022 line is healthy and A/R in line is also healthy.*
- **400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1:** *UPPTCL representative informed that both the tripping on 5th May, 2022 occurred on single phase to earth line fault after unsuccessful A/R operation as fault was of permanent nature. He said that tripping on 26th May, 2022 occurred due to earth wire broken at tower location number 435-436.*
- **400 KV Bawana CCGTB(DTL)-Bhiwani(PG) (PG) Ckt-1:** *POWERGRID representative informed that tripping on 27th May, 2022 occurred due to snapping of conductor which was rectified later.*
- **400 KV Chamba-Jalandhar (PG) Ckt-1:** *POWERGRID representative informed that tripping on03rd May & 05th May, 2022 occurred on single phase to earth line fault, fault on 03rd May occurred during bad weather condition and*

on 05th May occurred during forest fire. He said that tripping on 06th May, 2022 occurred due bus bar protection operation during testing of bus-2 at Chamba. He further informed that there was some issue in isolator status selection which was rectified later.

- **400 KV Chamera_2 (NH)-Kishenpur (PG) (PG) Ckt-1:** *POWERGRID representative informed that first tripping on 03rd May, 2022 occurred on single phase to earth line fault during inclement weather condition, they will check why A/R didn't operate and second tripping on 03rd May, 2022 occurred due to DT received at Chamera_2 end but no counter increased at Kishenpur end. POWERGRID & NHPC agreed to check the PLCC at both end.*

- **400 KV CLP Jhajjar(CLP)-Kabulpur(HV) (HVPNL) Ckt-1:** *Haryana representative informed that tripping on 02ndMay, 2022 occurred on single phase to earth line fault after unsuccessful A/R operation, fault occurred during stubble burning. He further informed that tripping on 23rd May, 2022 occurred on single phase to earth line fault after unsuccessful A/R operation, fault occurred due to OPGW broken.*

- **400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1:** *UPPTCL representative informed that tripping on 21stMay, 2022 occurred on single phase to earth line fault after unsuccessful A/R operation as fault was of permanent nature. He said that tripping on 29th May, 2022 also occurred on single phase to earth line fault but A/R didn't operate. He further said that they will take up the issue in A/R scheme with the automation engineer and resolve the same on priority.*

- **400 KV Muzaffarnagar-Ataur (UP) Ckt-1:** *UPPTCL representative informed that all three tripping occurred on single phase to earth line fault. He said that auto-recloser operated at Muzaffarnagar end but didn't operate at Ataur end due to some issue in A/R scheme at their end. He further informed that Ataur end comes under WUPPTCL and as per their internal communication issue in A/R operation at Ataur end will be resolved by WUPPTCL during next shut down.*

- **220 KV Duni(RS)-Kota(PG) (RS) Ckt-1:** *Rajasthan representative informed that faults occurred in line were of transient nature but A/R is not operating. He further informed that they have replaced the relay twice but still A/R is not operating. He said that it is suspected that there is issue in CB and they will take up the issue with engineer to resolve the same.*

- **220 KV Badarpur(NT)-Alwar MIA(RS) (RS) Ckt-1:** *Rajasthan representative informed that this line is charged from Alwar MIA end only and frequent faults occurs in this line due to ROW issue.*

- **220 KV Debari (RS)-RAPS_A (NP) (RS) Ckt-1:** *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 recloser/ 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 Recloser. Regarding RAPS-A, in the absence of such clearance, it not possible to implement the Single Phase Auto Recloser. Considering the vintage design of turbine generator and absence of clearance from OEM of turbine, provision of Single Phase Auto Recloser for lines emanating from RAPS-1&2 may kindly be exempted." …. ***NRLDC representative emphasized that A/R (auto recloser) 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 recloser in service and in healthy condition for 220 kV and above voltage level transmission line.***

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

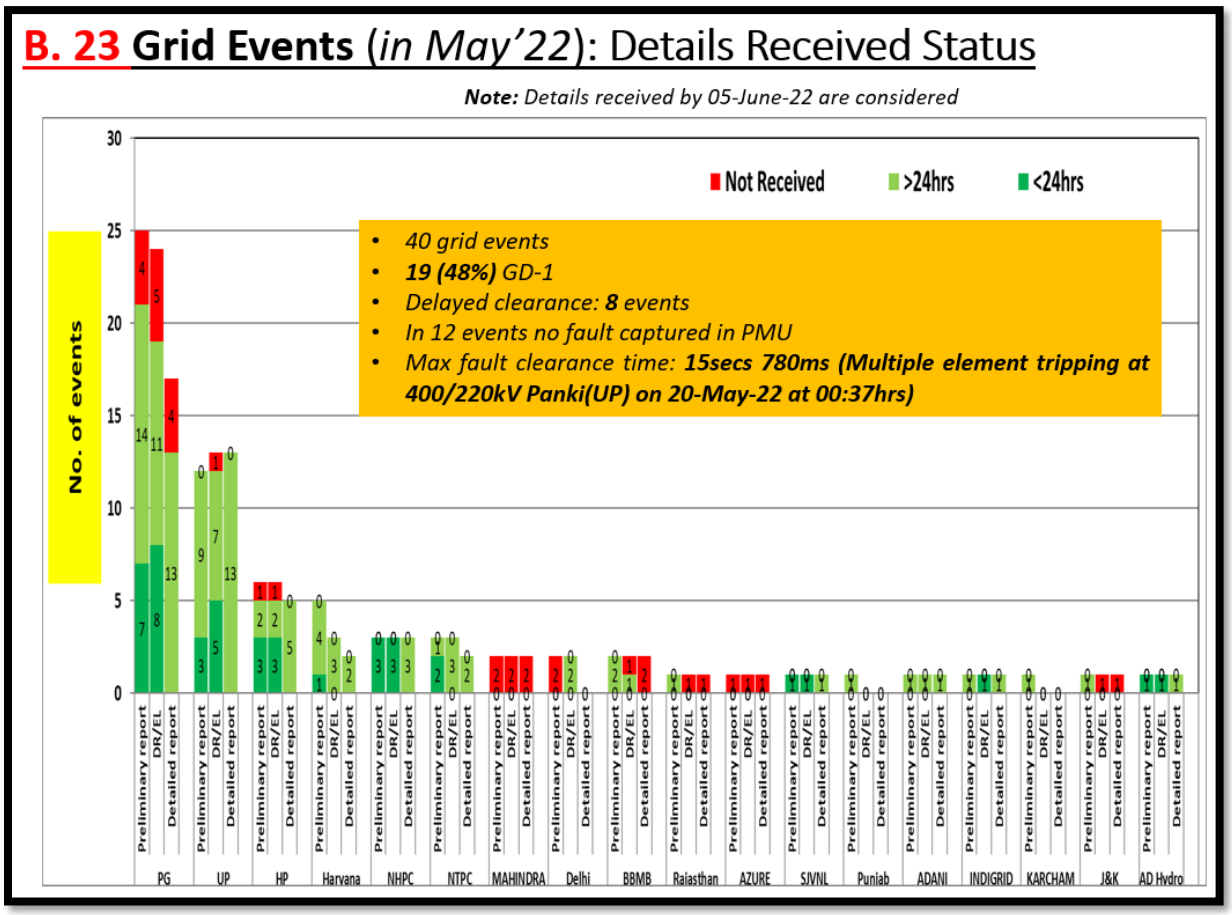
18. Multiple element tripping events in Northern region in the month of May'22:

A total of **40** grid events occurred in the month of Mar'22 of which **19** 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-June-2022 is attached at **Annexure-B.IX 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**15secs 780ms** in the event of multiple element tripping at 400/220kV Panki (UP) on 20-May-22 at 00:37hrs.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **8** events out of **40** grid events occurred in the month. In 12 number of events, fault signature couldn't be captured from PMU data.



NRLDC representative stated that in the event of tripping at 400/220kV Panki (UP) on 20-May-2022 at 00:37hrs delayed clearance of around 15secs 7800ms is observed in the system. Such delayed clearance of fault affects the security and integrity of grid.

UPPTCL representative informed the following:

- At first fault occurred in 220/132kV 160MVA ICT-1 at Panki (UP) due to Y-ph CT damage at 220kV side. On this fault bus bar protection operated at 220kV side and all the 220kV lines tripped.
- At the same time, 220kV Panki- Kanpur South ckt tripped from Kanpur South end only on Z-1 distance protection operation.
- After approx. 3-4secs, jumper between CT & post insulator of 400/220kV 315MVA ICT-2 damaged and created fault.

He said that issue with the tripping of 220kV Panki-Kanpur South ckt will be checked and corrected during shutdown on 24th June, 2022.

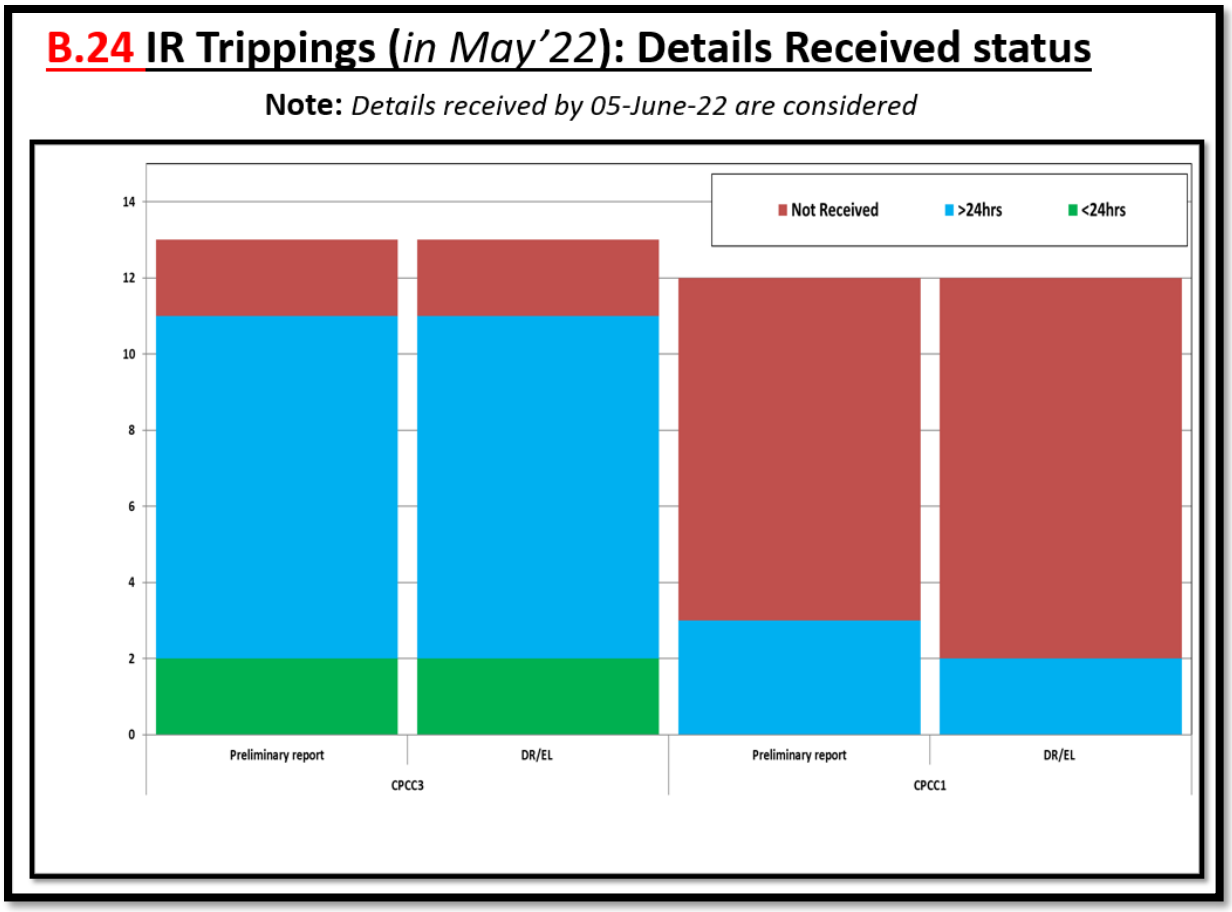
NRLDC representative raised concern about poor status of report updation by POWERGRID, MAHINDRA, BBMB, Rajasthan, AZURE & J&K on the tripping portal. He further stated that timely report submission is an important activity and all constituents are advised to take this on priority and upload the reports.

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

Members were asked to take expeditious actions to avoid such tripping in future, Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events in line with the regulations. Members agreed to take action in this regard.

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

A total of 2 inter-regional lines tripping occurred in the month of May'22. The list is attached at **Annexure-B.X 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 frequent tripping of multiple pole of 800kV Champa-Kurukshetra. POWERGDRID representative informed that software upgradation work is going on and there is some bug identified in software which led to frequent tripping of multiple pole. He further said that issue is identified and same will be rectified in next planned shutdown.

NRLDC representative raised concern about poor status of report updation by POWERGRID NR-1 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.

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

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

1st May 2022 - 31st May 2022														
S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	AD HYDRO	2	0	0	0	1	0	0	1	0	0	0	0	
2	AHEJ2L	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
3	AHEJ4L	3	3	100	2	1	100	2	1	100	3	0	100	
4	ANTA-NT	1	1	100	1	0	100	1	0	100	1	0	100	
5	AP43L	1	1	100	1	0	100	1	0	100	1	0	100	
6	APFOL	4	4	100	4	0	100	4	0	100	4	0	100	
7	APMPL	2	2	100	2	0	100	2	0	100	2	0	100	
8	AREPRL	4	2	50	2	0	50	2	0	50	4	0	100	
9	ARP1PL	1	1	100	1	0	100	1	0	100	1	0	100	
10	ASEPL	1	1	100	1	0	0	1	0	0	1	0	100	
11	AURAIYA-NT	3	1	33	1	0	33	1	0	33	1	0	33	
12	BAIRASUIL-NH	1	0	0	0	0	0	0	0	0	0	0	0	
13	BBMB	58	12	21	27	7	53	22	16	52	21	4	39	DR/EL & Tripping report needs to be
14	BUDHIL	1	1	100	1	0	100	1	0	100	1	0	100	
15	CHAMERA-III-NH	3	0	0	0	2	0	0	2	0	0	0	0	
16	CHAMERA-II-NH	4	0	0	0	0	0	0	0	0	0	0	0	
17	CHAMERA-I-NH	1	0	0	0	0	0	0	0	0	0	0	0	
18	CPCC1	165	30	18	30	13	20	30	15	20	27	15	18	DR/EL & Tripping report needs to be submitted
19	CPCC2	92	13	14	3	9	4	4	10	5	12	0	13	
20	CPCC3	76	10	13	11	6	16	10	6	14	10	1	13	
21	DADRIGAS-NT	1	1	100	1	0	100	1	0	100	1	0	100	
22	DADRI-NT	8	0	0	0	0	0	0	0	0	0	0	0	
23	DHAULIGANGA-NH	1	0	0	0	1	0	0	1	0	0	0	0	
24	DULHASTI-NH	5	0	0	0	0	0	0	0	0	0	0	0	
25	FARIDABAD-NT	2	1	50	1	0	50	1	0	50	1	0	50	DR/EL & Tripping report needs to be submitted
26	INDIGRID	1	0	0	0	0	0	0	0	0	1	0	100	
27	JHAJJAR	1	1	100	1	0	100	1	0	100	1	0	100	

28	KARCHAM	4	2	50	2	0	50	2	0	50	4	0	100	
29	KISHENGANGA-NH	5	0	0	0	0	0	0	0	0	1	0	20	
30	KOLDAM-NT	2	1	50	1	0	50	1	0	50	2	0	100	
31	MAHINDRA	3	3	100	3	0	100	3	0	100	3	0	100	
32	NAPP	5	0	0	0	0	0	0	0	0	0	0	0	
33	NJPC	6	0	0	0	3	0	0	3	0	0	0	0	
34	PARBATI-II-NH	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping
35	PKTSL	5	4	80	4	1	100	4	1	100	4	1	100	report needs to be
36	RAMPUR	3	0	0	0	0	0	0	0	0	0	0	0	
37	RAPPA	4	3	75	4	0	100	4	0	100	4	0	100	DR/EL & Tripping
38	RAPPB	1	1	100	1	0	100	1	0	100	1	0	100	report needs to be
39	SAURYA	4	4	100	4	0	100	4	0	100	4	0	100	submitted
40	SEWA-2-NH	5	0	0	0	1	0	0	1	0	0	0	0	
41	SHREE CEMENT	4	0	0	1	0	25	1	0	25	0	0	0	
42	SINGRAULI-NT	7	0	0	0	0	0	0	0	0	0	0	0	
43	SINGOLI	1	1	100	1	0	0	1	0	0	1	0	100	
44	SLDC-DV	41	5	12	13	2	0	15	3	39	14	1	35	
45	SLDC-HP	12	3	25	2	5	29	2	5	29	2	2	20	
46	SLDC-HR	69	5	7	7	2	10	13	2	19	10	0	14	
47	SLDC-JK	40	0	0	40	0	100	40	0	100	24	0	60	DR/EL & Tripping
48	SLDC-PS	41	18	44	25	2	64	30	1	75	36	0	88	report needs to be
49	SLDC-RS	63	2	3	25	0	40	25	0	40	29	0	46	submitted
50	SLDC-UK	38	22	58	23	2	64	23	13	92	23	3	66	
51	SLDC-UP	245	47	19	63	21	28	59	33	28	55	3	23	
52	STERLITE	17	0	0	0	2	0	0	1	0	4	2	27	
53	TANAKPUR-NH	5	0	0	0	1	0	0	0	0	0	0	0	
54	TANDA-NT	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping
55	THAR SURYA 1 PRIVATE LIN	2	1	50	1	0	50	1	0	50	1	0	50	report needs to be
56	UNCHAHAR-NT	1	1	100	0	0	0	0	0	0	0	0	0	

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

It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has been improved from POWERGRID, Haryana, Uttar Pradesh and Himachal Pradesh in May, 2022 compared to the previous month.

NRLDC representative raised concern about poor status of report updation by Rajasthan, Punjab, Uttarakhand and RE developers 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.

21. Frequency response characteristic

Two FRC based event occurred in the month of **May-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	02-May-22	11:06hrs	As reported at 11:06 Hrs, 400/220 kV 500 MVA ICT 1 & ICT 2 at Adani Renew Park_SL_FGARH_FBTL (AREPRL) tripped on thermal over loading protection operation. With the tripping of both the ICTs which were carrying approx. 890MW total, sudden over voltage occurred. On this over voltage, multiple 765kV lines at Fatehgarh2 & Bhadla2 and few 220kv lines to RE stations tripped. As per SCADA, total drop in solar generation of around 1920MW is observed and same figure has been considered in FRC.	49.97	49.85	*-0.12*
2	03-May-22	03:16hrs	At 03:16 Hrs on Dated 03rd-May-2022, As reported at 03:16 hrs, 400 KV simhadri, 400kv gazuwaka, 400kv kalapakka, 400kv hinduja, 220kV VSS, 220kV gannavaram, 220kV pendurthy, 220kV sarada, 220kV Atchutapuram, 220kV abhjeet, 220kV mrsvizag got dead, consequently Generation loss of around 2660 MW and Load loss of around 1200 MW occurred in the event. In this Event effective generation loss of around 1440 MW has been considered for FRC Calculation.	50.025	50.00	*-0.025*

3	15-May-22	20:11hrs	As reported at 20:11 Hrs, 400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-2 tripped on Y-N fault. Further after approx. 1min, 400kV Nathpa Jhakri(SJ)-Panchkula(PG) (PG) Ckt-1 also tripped on R-B phase to phase fault. With the tripping of both these lines Case-2 of SPS of Nathpa Jhakri, Rampur, Karcham HEP generation complex operated which led to tripping of 250 MW KarchamWangtoo HPS - UNIT 2 & UNIT 4, 68.67MW Rampur HPS UNIT 4 & UNIT 5 and 250 MW Nathpa-Jhakri HPS - UNIT 3 & UNIT 5. As per SCADA, total hydron geenration loss of approx. 1250MW is observed. Same has been considered for FRC calculation.	49.99	49.94	*-0.05*
4	20-May-22	12:31hrs	At 12:31 Hrs on Dated 20th-May-2022, 765kV Bhadla-Bikaner(PG) ckt-1 tripped on B-N phase to earth fault. At the same time, drop in solar generation of approx. 3014MW (Fatehgarh2 1578MW, Bhadla PG 1136 MW, Bhadla2 30 MW, Bikaner 270 MW) observed as per SCADA. After approx. 5 sec, 765kV Bhadla2-Fatehgarh2 ckt-1 tripped on over voltage. Further after approx. 5 sec, 765kV fatehgarh2-Bhadla ckt-1 also tripped on over voltage. Hence, geneation	50.03	49.91	*-0.12*

			loss of 3014MW has been taken for FRC calculation.			
5	23-May-22	01:09hrs	At 01:09 Hrs on Dated 23rd-May-2022, At 01:09 hrs while test charging of 765 kV Bhuj-Banaskatha line 1, 765 kV Bhuj Banaskatha line 2 also tripped due to over voltage. Due to extended planned outage of 400kV CGPL Bhuj DC lines and tripping of both circuits of 765 kV Bhuj-Banaskantha lines, Bhuj substation got isolated from the grid which resulted loss of evacuation path for Bhuj RE generators leading to loss of around 1673 MW RE generation. Same has been considered for FRC Calculation.	50.03	50.00	*-0.03*

Status of Data received:

Status of Field Data received of FRC of Grid event occurred at Fatehgarh2 at 11:06 Hrs on 02.05.2022			
Data Received from		**Data Not Received from**	
AD Hydro HEP	NJHPC	Uttarakhand	Rihand NTPC
HP	NTPC Singrauli	Punjab	APCPL Jhajjar
NHPC	Rajasthan	Haryana	Koteshwar
UP	Rosa Reliance		Rampur HEP
Delhi			Dadri NTPC
			Unchhahar TPS
			Others

Status of Field Data received of FRC of Grid event occurred at Kalpakka (Southern region) at 03:16 Hrs on 03.05.2022			
Data Received from		Data Not Received from	
AD Hydro HEP	NJHPC	Uttarakhand	Rihand NTPC
HP	NTPC Singrauli	Punjab	APCPL Jhajjar
NHPC	Rajasthan	Delhi	Rampur HEP
BBMB	Rosa Reliance	Haryana	Dadri NTPC
Koteshwar	UP		Unchhahar TPS
			Others

Status of Field Data received of FRC of Grid event occurred at Nathpa Jhakri at 20:12 Hrs on 15.05.2022			
Data Received from		Data Not Received from	
AD Hydro HEP	NTPC Singrauli	Uttarakhand	Rihand NTPC
NHPC	Rajasthan	Punjab	APCPL Jhajjar
BBMB	Koldam HEP	Haryana	Dadri NTPC
Koteshwar	Tehri HEP	HP	Unchhahar TPS
UP	Delhi		Others

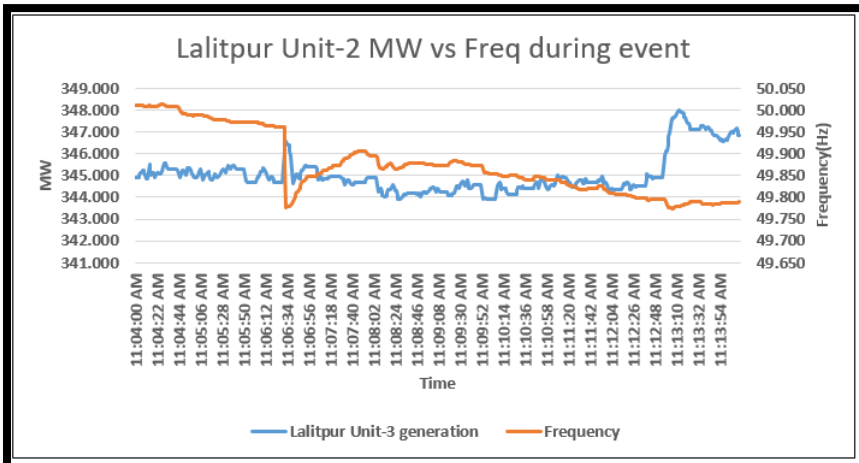
Status of Field Data received of FRC of Grid event occurred at Fatehgarh2 at 12:31 Hrs on 20.05.2022			
Data Received from		Data Not Received from	
Kawai	Rosa Reliance	Uttarakhand	Rihand NTPC
NHPC	Tehri HEP	Punjab	APCPL Jhajjar
UP	Delhi	Haryana	Rampur HEP
HP		BBMB	Dadri NTPC
		Rajasthan	Karcham
			NJHPC
			Others

Status of Field Data received of FRC of Grid event occurred at Bhuj at 01:09 Hrs on 23.05.2022			
Data Received from		Data Not Received from	
Kawai	Rosa Reliance	Uttarakhand	Rihand NTPC
NHPC	UP	Punjab	APCPL Jhajjar
Delhi	Tehri	Haryana	Rampur HEP
		HP	Dadri NTPC
		BBMB	Karcham
		Rajasthan	NJHPC
			Others

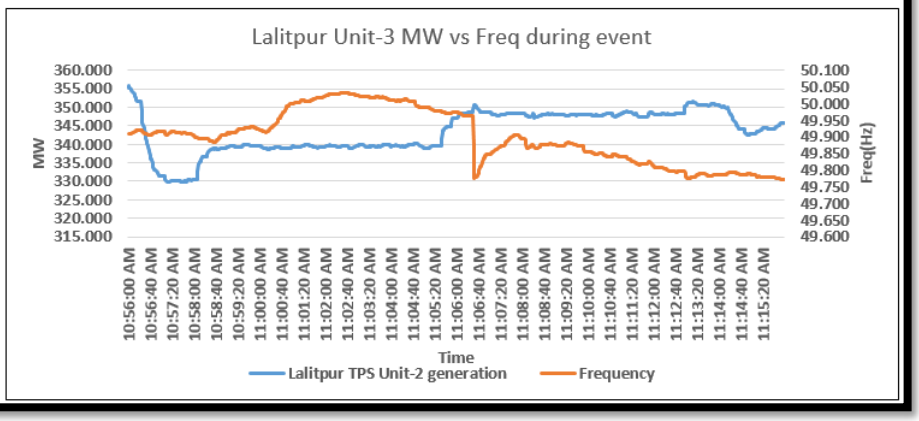
PFR as per generators field data:

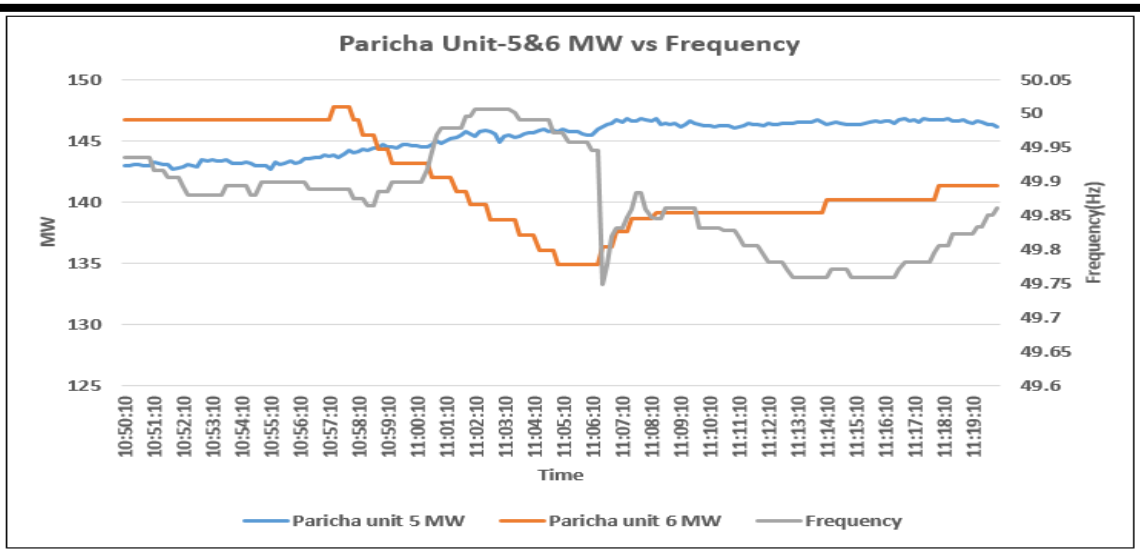
Primary Frequency Response by Generators during Grid Event at Fatehgarh2 at 11:06 Hrs on 02.05.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	AD Hydro Unit-2	23%	37.3%	Unsatisfactory PFR Response
2	Chamera-III	311%	327%	Satisfactory PFR Response
3	Dhauliganga	Suspected SCADA data	3%	Unsatisfactory PFR Response
4	Nathpa Jhakri Unit-5	99%	94.84%	Satisfactory PFR Response
5	Nathpa Jhakri Unit-6		92.62%	
6	Singrauli Unit-6	16%	6.48%	Unsatisfactory PFR Response
7	Singrauli Unit-7		39.57%	
8	Kalisindh TPS Unit-1	12%	17%	Unsatisfactory PFR Response
9	Harduaganj	106%	112%	Satisfactory PFR Response
10	Paricha Unit-5	8%	14%	Unsatisfactory PFR Response
11	Paricha Unit-6		62%	
12	Lalitpur Unit-2	6%	0%	Unsatisfactory PFR Response
13	Lalitpur Unit-3		0%	
14	KTPS Unit-4	1%	64.5%	Unsatisfactory PFR Response
15	KTPS Unit-5		21.2%	Unsatisfactory PFR Response
16	CTPP Unit-1	20%	13%	Unsatisfactory PFR Response
17	CTPP Unit-2		25.6%	Unsatisfactory PFR Response
18	CTPP Unit-3		99.9%	Satisfactory PFR Response
19	Rosa TPS Unit-1	16%	14%	Unsatisfactory PFR Response
20	Rosa TPS Unit-2		6.31%	
21	Rosa TPS Unit-3		14%	
22	Rosa TPS Unit-4		3.16%	



No response Observed





No response observed in Unit-5 and unsatisfactory response from Unit-6

Primary Frequency Response by Generators during Grid Event at Kalpakka(Southern region) at 03:16 Hrs on 03.05.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	AD Hydro	485%	518%	Satisfactory PFR Response
2	Chamera III	46.45%	35%	Unsatisfactory PFR Response
3	Harduaganj	-12%	61.9%	Unsatisfactory PFR Response
4	Koteshwar Unit-4	100%	83.3%	Satisfactory PFR Response
5	Sewa-II	Suspected SCADA data	91.2%	Satisfactory PFR Response
6	Nathpa Jhakri Unit-1	-49%	-21%	Unsatisfactory PFR Response
7	Nathpa Jhakri Unit-2		119%	Satisfactory PFR Response
9	Lalitpur Unit-2	-16%	26%	Unsatisfactory PFR Response
10	Lalitpur Unit-3		0%	
11	Singrauli Unit-6	28%	93.6%	Satisfactory PFR Response
12	Singrauli Unit-7		106.7%	
13	Paricha U-5	-6%	69.4%	Satisfactory PFR Response
14	Paricha U-6		137.2%	
15	Kalisindh TPS Unit-1	49%	34.6%	Unsatisfactory PFR Response
16	SSCTPS Unit-8	9%	46.1%	Unsatisfactory PFR Response
18	CTPP Unit-1	20%	30%	Unsatisfactory PFR Response
19	CTPP Unit-2		39%	
20	CTPP Unit-3		13%	

Primary Frequency Response by Generators during Grid Event at Nathpa Jhakri at 20:12 Hrs on 15.05.2022

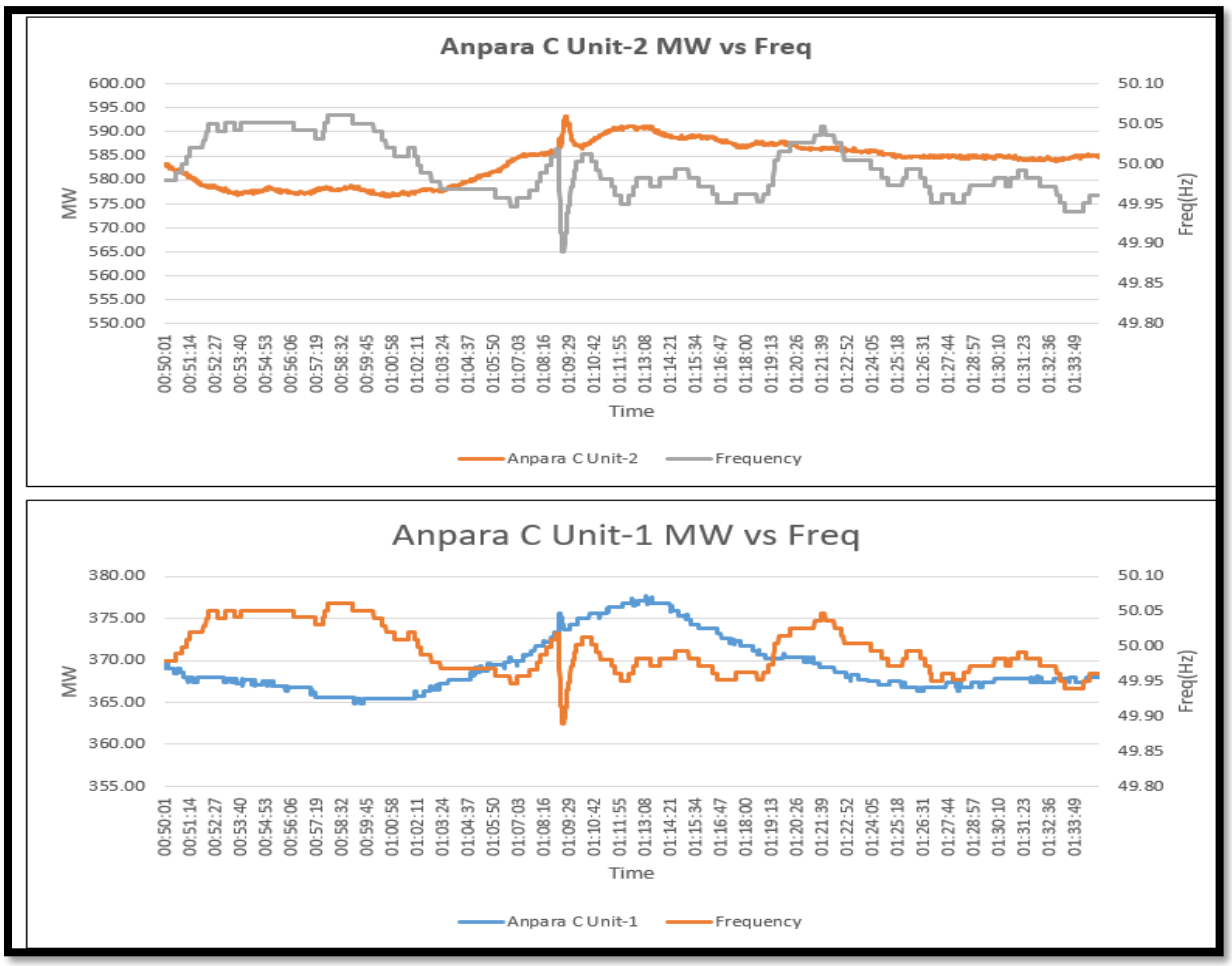
Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	AD Hydro	284%	266%	Satisfactory PFR Response
2	Koldam	6%	3%	Poor response
3	KTPS	0%	0%	Poor response
4	Kalisindh	Suspected SCADA data	16.5%	Unsatisfactory PFR Response
5	Lalitpur Unit-1	17%	20%	Poor PFR Response
6	Lalitpur Unit-2		1%	
7	Lalitpur Unit-3		4%	
8	Singrauli Unit-6	35%	21.5%	Unsatisfactory PFR Response
9	Singrauli Unit-7		62%	
10	CSCTPP Unit-5	-15%	18%	Poor PFR Response
11	CSCTPP Unit-5		0%	

Primary Frequency Response by Generators during Grid Event at Fatehgarh2 at 12:31 Hrs on 20.05.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	Kawai Unit-1	84%	145%	Satisfactory PFR Response
2	Kawai Unit-2		0%	No Response
3	Dhauliganga	0%	17%	Unsatisfactory PFR Response
4	Rosa TPS Unit-1	28%	14%	Unsatisfactory PFR Response
5	Rosa TPS Unit-2		27.5%	
6	Rosa TPS Unit-3		32.5%	
7	Rosa TPS Unit-4		38%	
8	Anpara C Unit-1	4%	-7%	Unsatisfactory PFR Response
9	Anpara C Unit-2		14%	
10	Lalitpur Unit-1	61%	0%	Poor Response
11	Lalitpur Unit-2		225%	Satisfactory PFR Response
12	Lalitpur Unit-3		39%	Unsatisfactory PFR Response
13	Paricha Unit-5	Suspected SCADA data	6%	Unsatisfactory PFR Response
14	Paricha Unit-6		44%	

Primary Frequency Response by Generators during Grid Event occurred Bhuj at 01:09 Hrs on 23.05.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	Kawai Unit-1	213%	315%	Satisfactory PFR Response
2	Kawai Unit-2		0%	No Response
3	Dhauliganga	0%	40.68%	Unsatisfactory PFR Response
4	Rosa TPS Unit-1	69%	6%	Poor Response
5	Rosa TPS Unit-2		95%	Satisfactory PFR Response
6	Rosa TPS Unit-3		30%	Unsatisfactory PFR Response
7	Rosa TPS Unit-4		51%	
8	Anpara C Unit-1	85%	12%	Satisfactory PFR Response
9	Anpara C Unit-2		3%	
10	Lalitpur Unit-1	73%	-7%	Poor Response
11	Lalitpur Unit-2		101%	Satisfactory PFR Response
12	Lalitpur Unit-3		24%	Unsatisfactory PFR Response
13	Paricha Unit-5	48%	28%	Unsatisfactory PFR Response
14	Paricha Unit-6		136%	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 satisfactory response has been observed from units of Nathpa Jhakri HEP, Koteshwar HEP, AD Hydro HEP, Kawai (Adani) Unit-1, Lalitpur TPS Unit-2, Paricha Unit-6, Rosa TPS, Chamera-III and Singrauli TPS. It was further added that units ofAnpara C, Lalitpur Unit-1 & 3, Paricha TPS Unit-5, Kawai TPS Unit-2, Dhauliganga HEP & CTPP 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.

UP representative informed that they are in coordination with SOLVINA team for PFR testing of Rosa TPS units. He further informed that it will be carried out during winter, 2022 tentatively. He said that they will take up the issue with regards to governor tuning with the generators. Representative from Lalitpur TPS said that they are monitoring PFR of their units and will take necessary action if required.

Rajasthan representative informed they are in coordination with a third party for PFR testing of generating units of their control area.

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.

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

In last 15 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.XII 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, PSS tuning/ retuning and step response of Unit #1, 2,3,4,6 & 7 of KTPS, Kota carried out during the period 02.03.22 to 04.03.22 and Unit #2 & 4 of STPS, Suratgarh was conducted on 06.06.22.

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.

23. Additional Agenda: Mock testing of 765 kV Agra-Gwalior SPS conducted on 27.04.2022:

The mock testing of 765 kV Agra-Gwalior System Protection Scheme (SPS) was conducted successfully on 27th April 2022. Before the testing as well as during the testing a high level of support and coordination was extended by all the stakeholders. A brief report on the SPS testing has already been shared with all the stakeholders. The testing of the scheme was satisfactory with few observations.

NRLDC representative informed that mock testing report / counter increment details not received yet from 132kV Panipat substation of Haryana and from 400/220kV Hissar & Fatehabad substations of POWERGRID. He further informed that as per details received, DTPC link / communication is not healthy at 132/33kV Bhilwara(Raj), 220kV Prem Nagar(BBMB), 132kV Narwana(Har), 220kV Nuna Majra(Har), 220/132kV Ablowal(Pun) & 220/132kV Jamsher(Pun). He requested respective states/constituents to take the corrective action in coordination with POWERGRID so that healthy communication during SPS operation is ensured. He also requested states to give input regarding the present status of radial/non radial of selected feeders in load groups and if any changes are required in load group.

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 — May-2022
◎ HARYANA — Nov-2021
◎ HP — Jan-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Aug-2021
◎ RAJASTHAN — May-2022
◎ UP — Mar-2022
◎ UTTARAKHAND — Jun-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 — Mar-2022
◎ HARYANA — Mar-2022
◎ HP — Jun-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Mar-2022
◎ RAJASTHAN — Mar-2022
◎ UP — Mar-2022
◎ 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></td><td></td><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Not increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased</td></tr>
</table>

			◎	UTTARAKHAND	Increased
			◎	BBMB	Increased
			BBMB was requested to submit the updated self certification report indicating increase of 0.2 Hz in AUFR settings, within one week. J&K and LADAKH were requested to update status for increasing settings of UFRs.		
4	Status of FGD installation vis-à-vis installation plan at identified TPS	List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed. Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.	Status of the information submission (month) from states / utilities is as under:		
			◎	HARYANA	Mar-2022
			◎	PUNJAB	Jun-2022
			◎	RAJASTHAN	Jun-2022
			◎	UP	Jun-2022
			◎	NTPC	Feb-2022
			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	Price bid has been opened and is under evaluation

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. 07.04.2022 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. 07.04.2022 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: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	Oct'22	Updated in 196th OCC by UPPTCL
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	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.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	-	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	Commissioned: 8	Utilized: 0	• 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.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
13	Sub-station	Total: 8	Unutilized: 8	• 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.
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	Nov'22	Updated in 196th OCC by HVPNL
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	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	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	-	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	Oct'22	• Lucknow -Kaurasa (Sitapur), 220 kV D/C line expected energization date Oct'22 updated by UPPTCL in 196th OCC _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Dec'22	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date Dec'22 updated by UPPCL in 196th OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 4 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC
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	Aug'22	Updated in 196th 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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
26	400/220kV Amritsar S/s	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	Aug'22	Updated in 196th OCC by UPPTCL
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.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	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	Sept'22	Saharanpur(PG)-Devband D/c line expected energization date Sept'22 updated by UPPTCL in 196th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	-	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	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC
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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
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 (Updated by UP on 18.06.2022)
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (18.06.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (21.06.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (10.06.2022)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (18.06.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (18.06.2022)
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 (18.06.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (18.06.2022)
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: 31-03-2023), 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: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), 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: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH TPS U#1 (Target: 31-12-2024), 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)

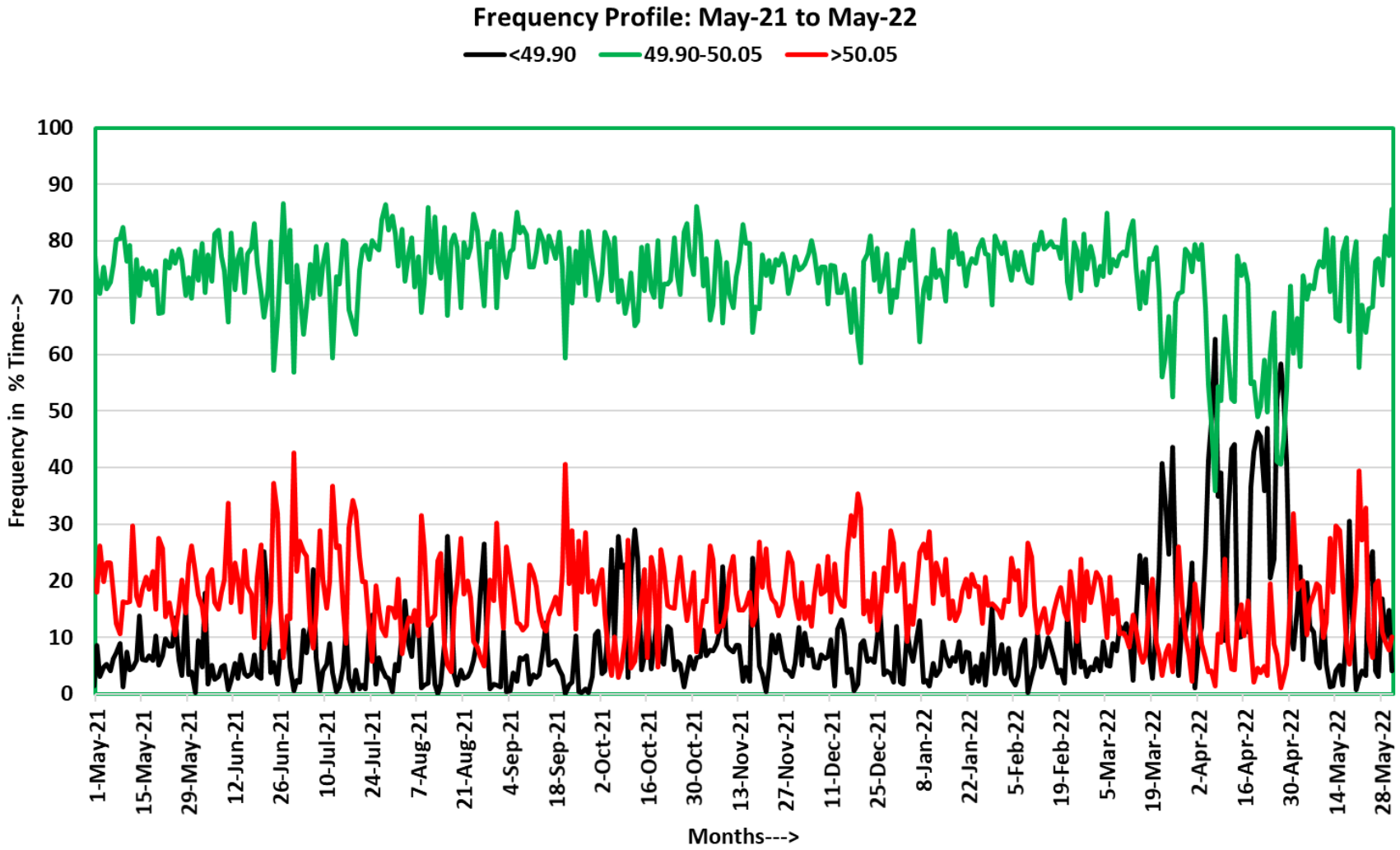
Annexure-B.I

प्रचालन समन्वय उपसमिति की बैठक
मई - 2022

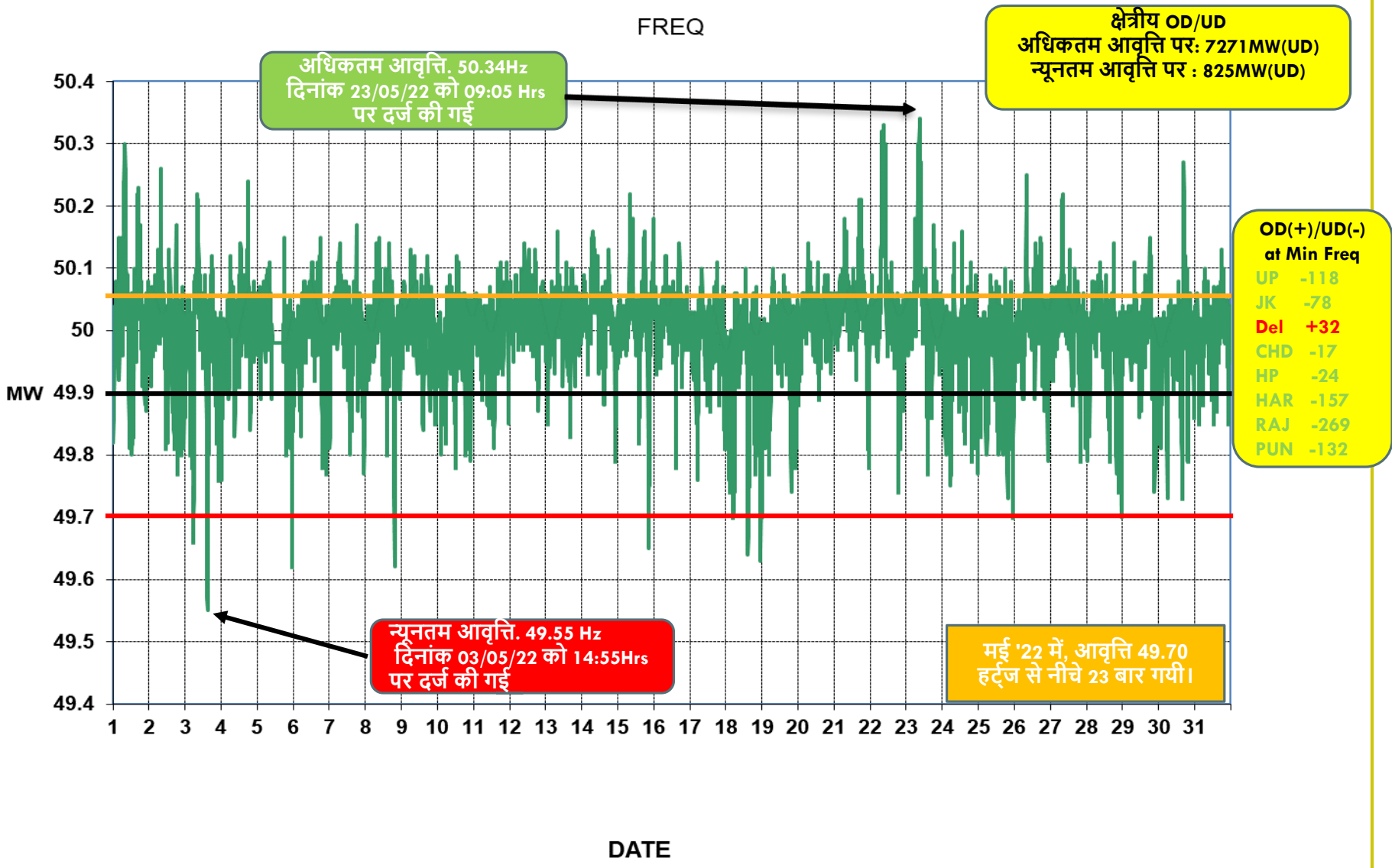
पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	मई 2021	जून 2021	जुलाई 2021	अगस्त 2021	सितम्बर 2021	अक्टूबर 2021	नवम्बर 2021	दिसम्बर 2021	जनवरी 2022	फ़रवरी 2022	मार्च 2022	अप्रैल 2022	मई 2022
< 49.7 Hz(%)	0.02	0.07	0.04	0.17	0.21	0.31	0.09	0.03	0.02	0.08	0.46	4.94	0.27
<49.8 Hz(%)	0.50	1.06	0.67	1.3	0.69	2.43	1.17	0.71	0.53	0.55	2.92	13.60	1.94
<49.9 Hz(%)	6.63	6.12	5.35	7.67	4.18	11.10	8.02	6.92	5.84	5.99	14.50	31.98	9.83
49.90-50.05 Hz(%)	**74.49**	**74.81**	**75.06**	**76.93**	**77.01**	**74.38**	**74.10**	**73.14**	**75.66**	**77.06**	**73.42**	**59.30**	**72.23**
50.05-50.10 Hz(%)	15.41	14.74	16.71	14.14	15.83	12.70	14.77	15.09	15.17	14.36	10.28	7.35	12.95
>50.10 Hz(%)	2.89	3.18	2.78	1.25	2.26	1.81	3.05	3.89	3.21	2.51	1.72	1.35	4.11
>50.20 Hz(%)	0.07	0.09	0.10	0.01	0.03	0.06	0.07	0.25	0.11	0.08	0.08	0.08	0.88
औसत आवृत्ति	50.00	50.00	50.01	50.00	50.00	49.99	50.00	50.00	50.00	50.00	49.98	49.93	50.00

आवृत्ति की स्थिति: मई -2021 से 2022



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

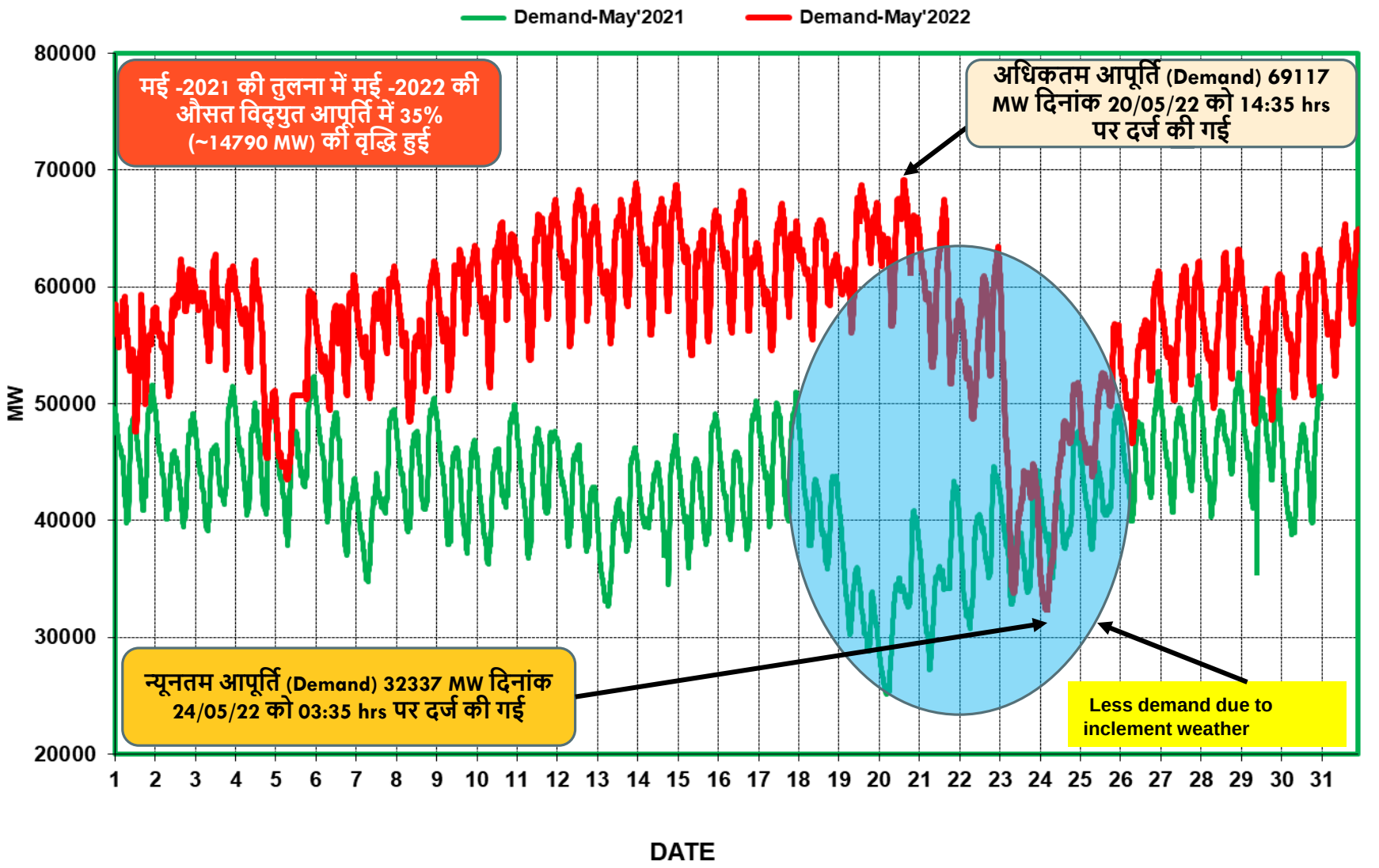


मई -2022 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

राज्य	अधिकतम मांग (MW) (in May'22)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Apr'22)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU) (in May'22)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Apr'22)	दिनांक
पंजाब	10886	13.05.22 at 14:15	13633	01.07.19 को 12:00 बजे	235.640	20.05.22	306.09	01.07.21
हरियाणा	10052	19.05.22 at 14:00	12120	07.07.21 को 14:45 बजे	208.350	19.05.22	266.15	07.07.21
राजस्थान	15898	19.05.22 at 12:30	15749	01.03.22 को 08:30 बजे	311.080	20.05.22	310.790	19.08.21
दिल्ली	7009	19.05.22 at 24:00	7409	02.07.19 को 15:35 बजे	139.920	20.05.22	147.10	02.07.19
उत्तर प्रदेश	25046	15.05.22 at 22:00	24795	16.07.21 को 23:00 बजे	514.200	14.05.22	514.49	07.07.21
उत्तराखंड	2354	16.05.22 at 16:00	2468	24.01.22 को 09:00 बजे	50.370	31.05.22	49.68	10.07.21
हिमाचल प्रदेश	1644	21.05.22 at 14:00	2030	07.01.22 को 10:00 बजे	35.270	07.05.22	36.90	29.12.20
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2678	28.05.22 at 20:00	2826	03.02.22 को 19:00 बजे	53.656	27.05.22	59.95	17.01.22
चंडीगढ़	372	20.05.22 at 15:30	426	08.07.21 को 15:00 बजे	6.970	30.05.22	8.41	08.07.21
उत्तरी क्षेत्र #	69341	20.05.22 at 14:46	73191	18.08.21 को 13:00 बजे	1539.799	20.05.22	1650.07	07.07.21

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

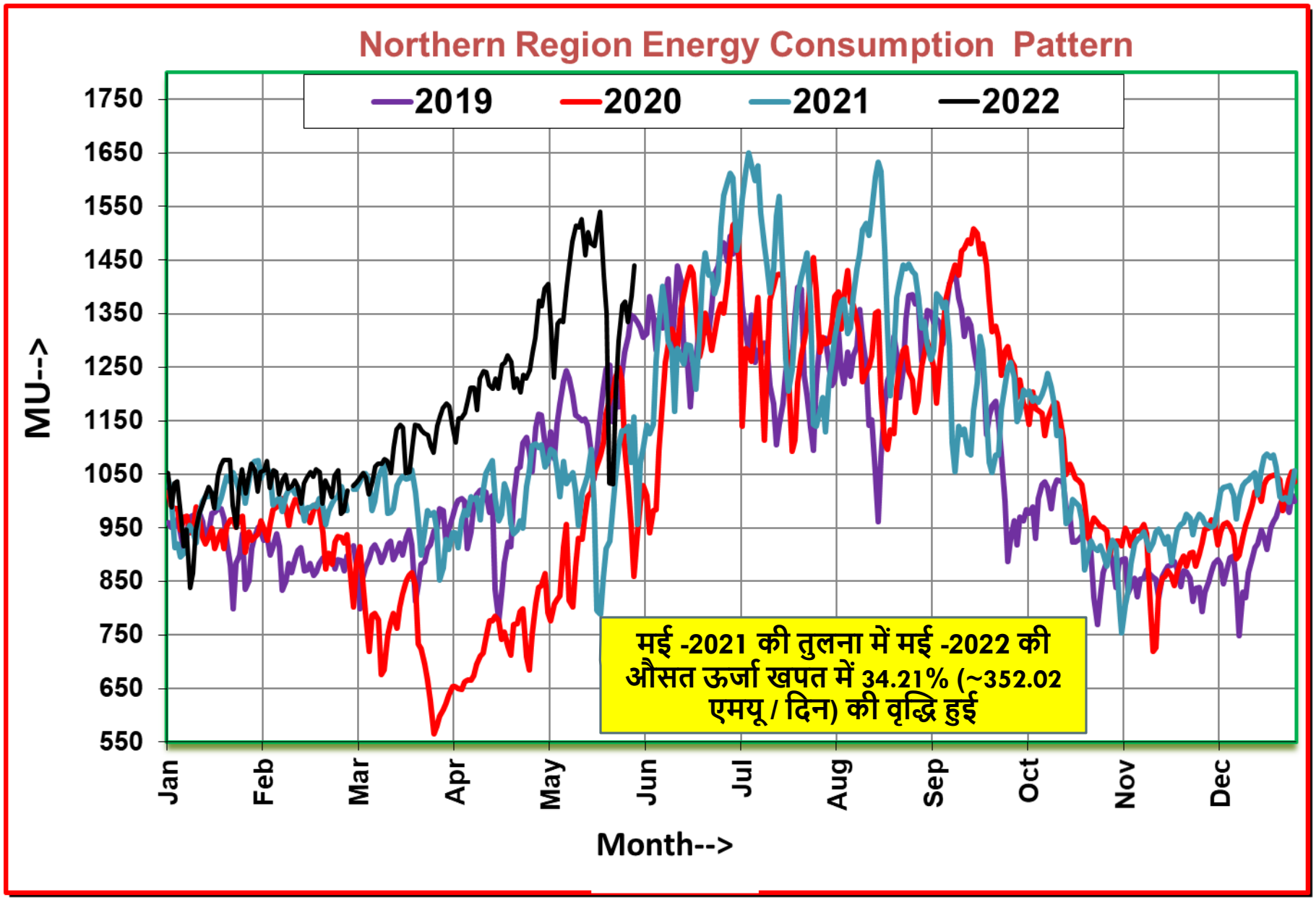
क्षेत्रीय विद्युत आपूर्ति (Demand) मई 2021 बनाम मई 2022 (As per 5 Minute SCADA data)



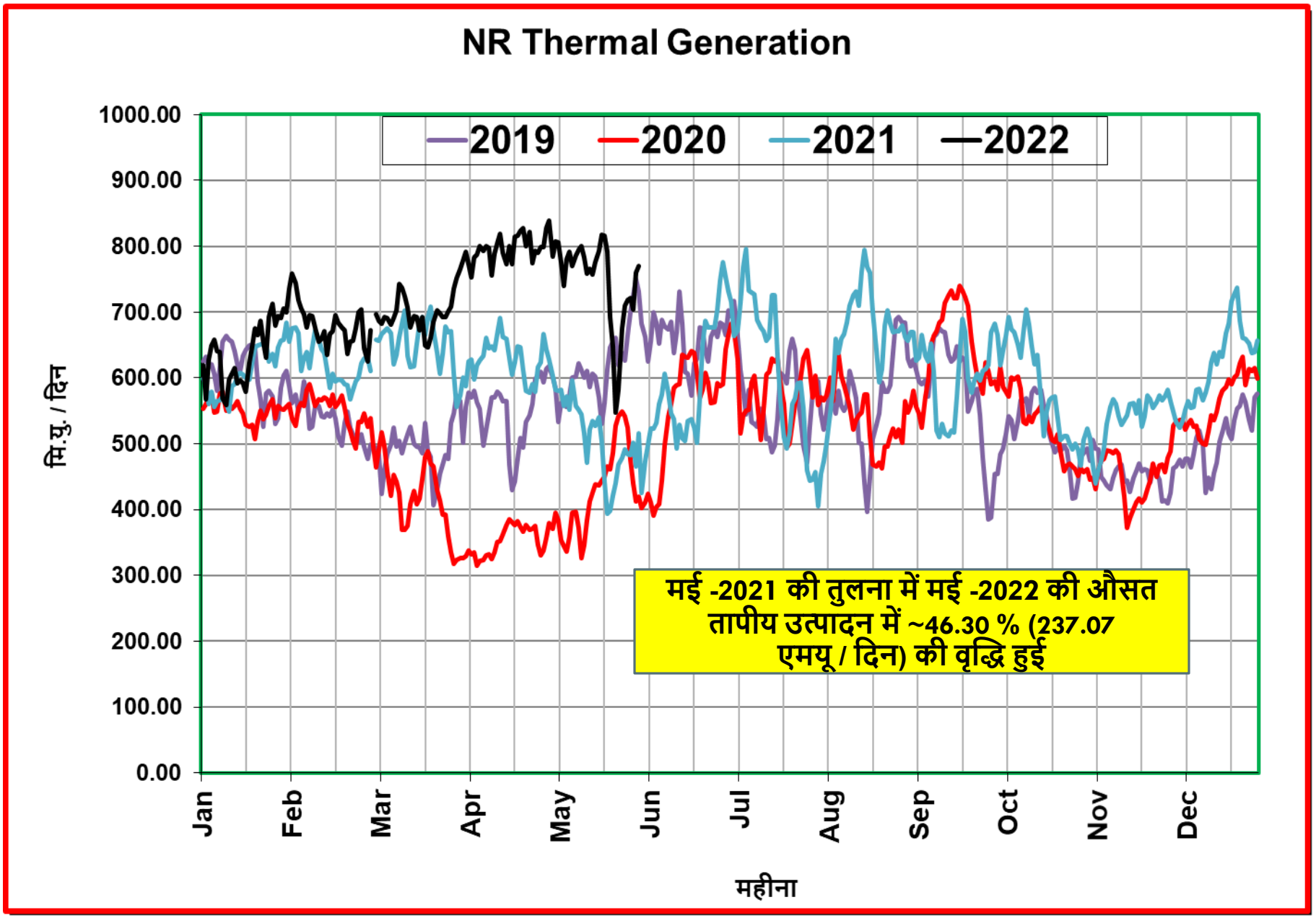
उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) मई -2022/ मई -2021 / मई -2020

राज्य	मई -2020	मई -2021	मई -2022	% वृद्धि (मई -2021 vs मई -2020)	% वृद्धि (मई -2022 vs मई -2021)
पंजाब	133.22	150.05	204.23	12.63%	36.11%
हरियाणा	125.78	133.92	181.97	6.47%	35.88%
राजस्थान	217.35	212.75	288.85	-2.11%	35.77%
दिल्ली	79.53	74.64	120.59	-6.15%	61.56%
उत्तर प्रदेश	330.11	340.78	454.32	3.23%	33.32%
उत्तराखंड	29.20	34.52	44.93	18.19%	30.18%
चंडीगढ़	3.78	4.11	5.91	8.84%	43.90%
हिमाचल प्रदेश	21.23	26.72	32.36	25.87%	21.11%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	42.21	51.57	47.96	22.17%	-7.00%
उत्तरी क्षेत्र	982.40	1029.05	1381.11	4.75%	34.21%

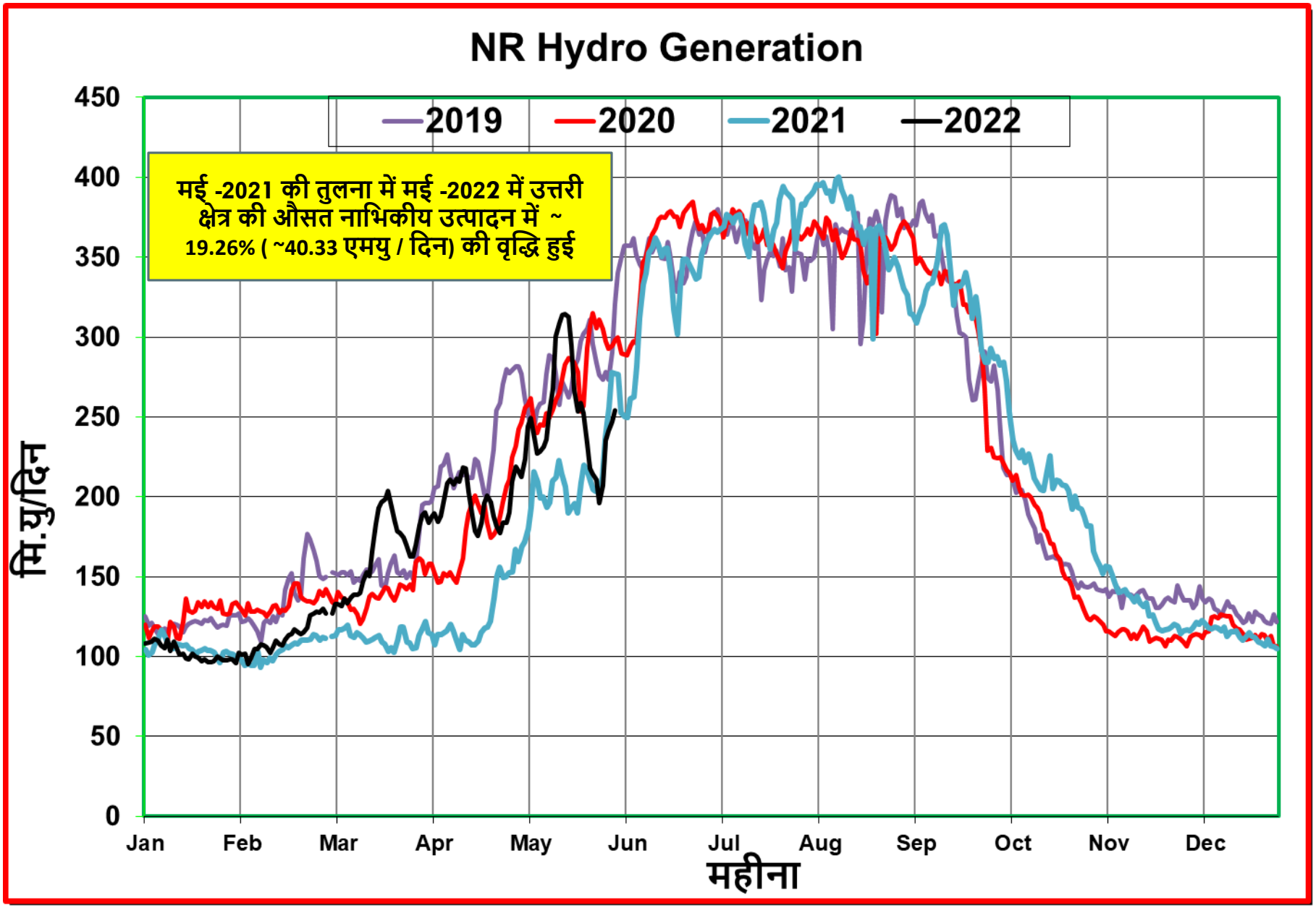
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



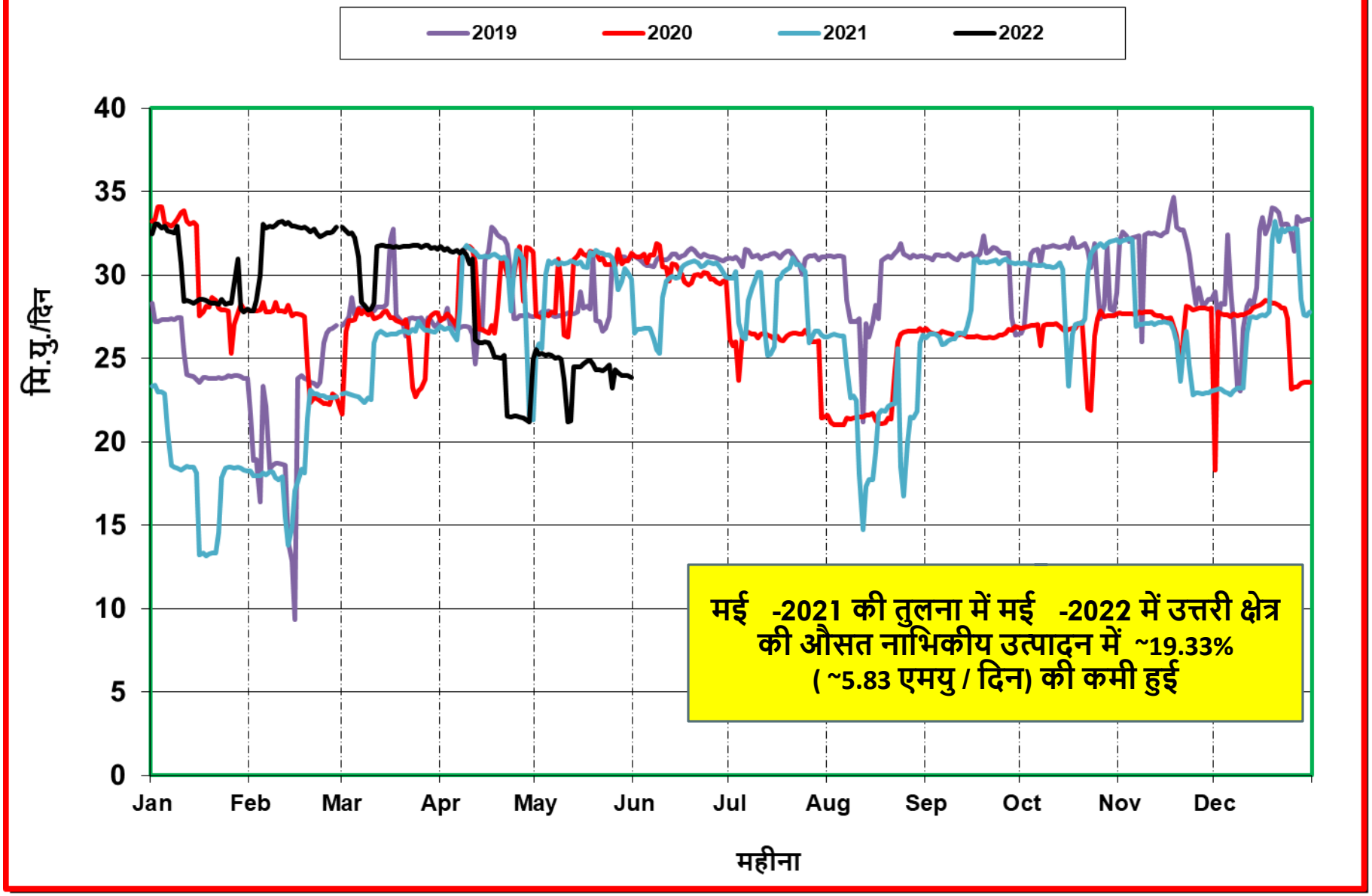
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



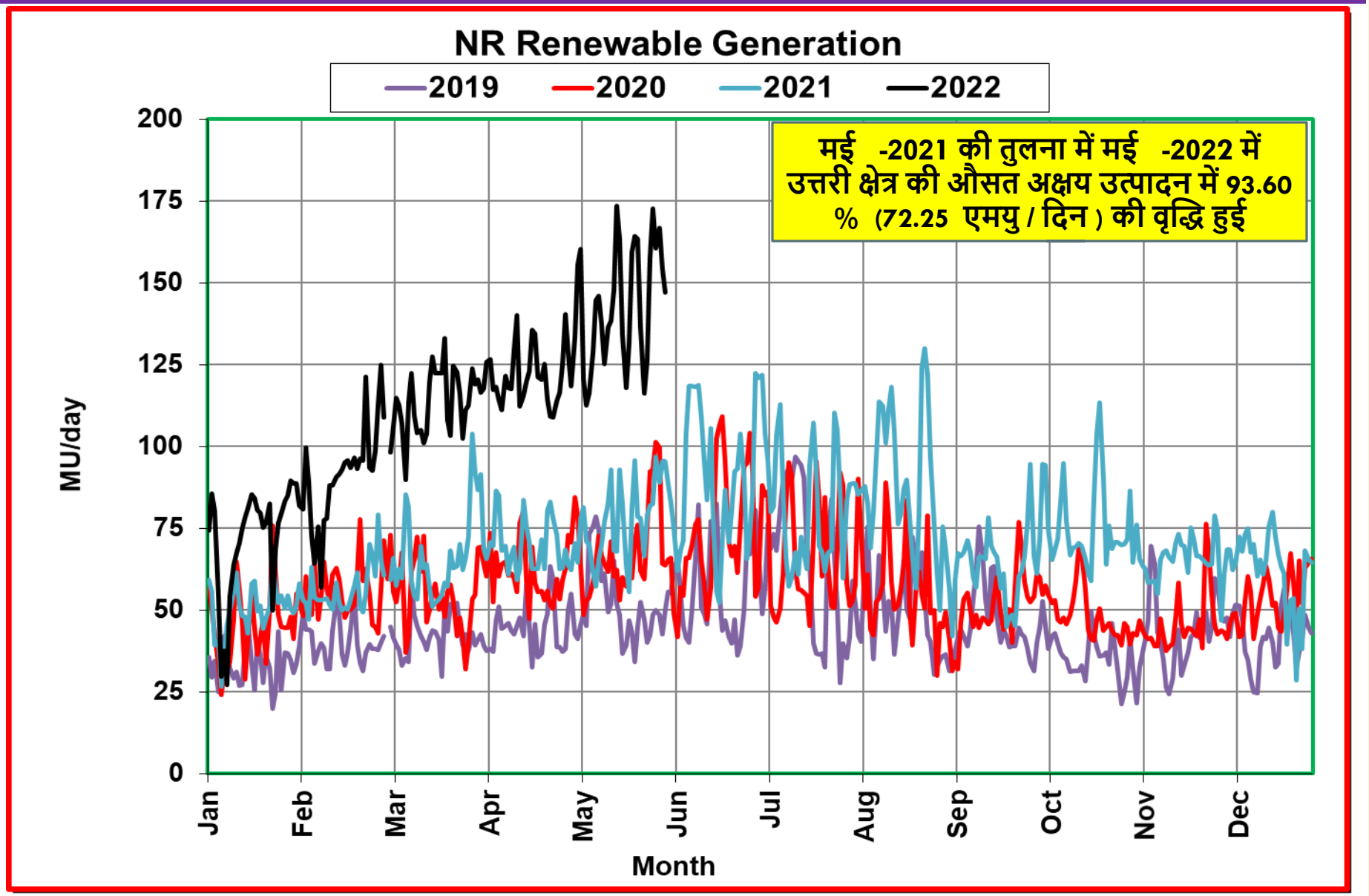
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



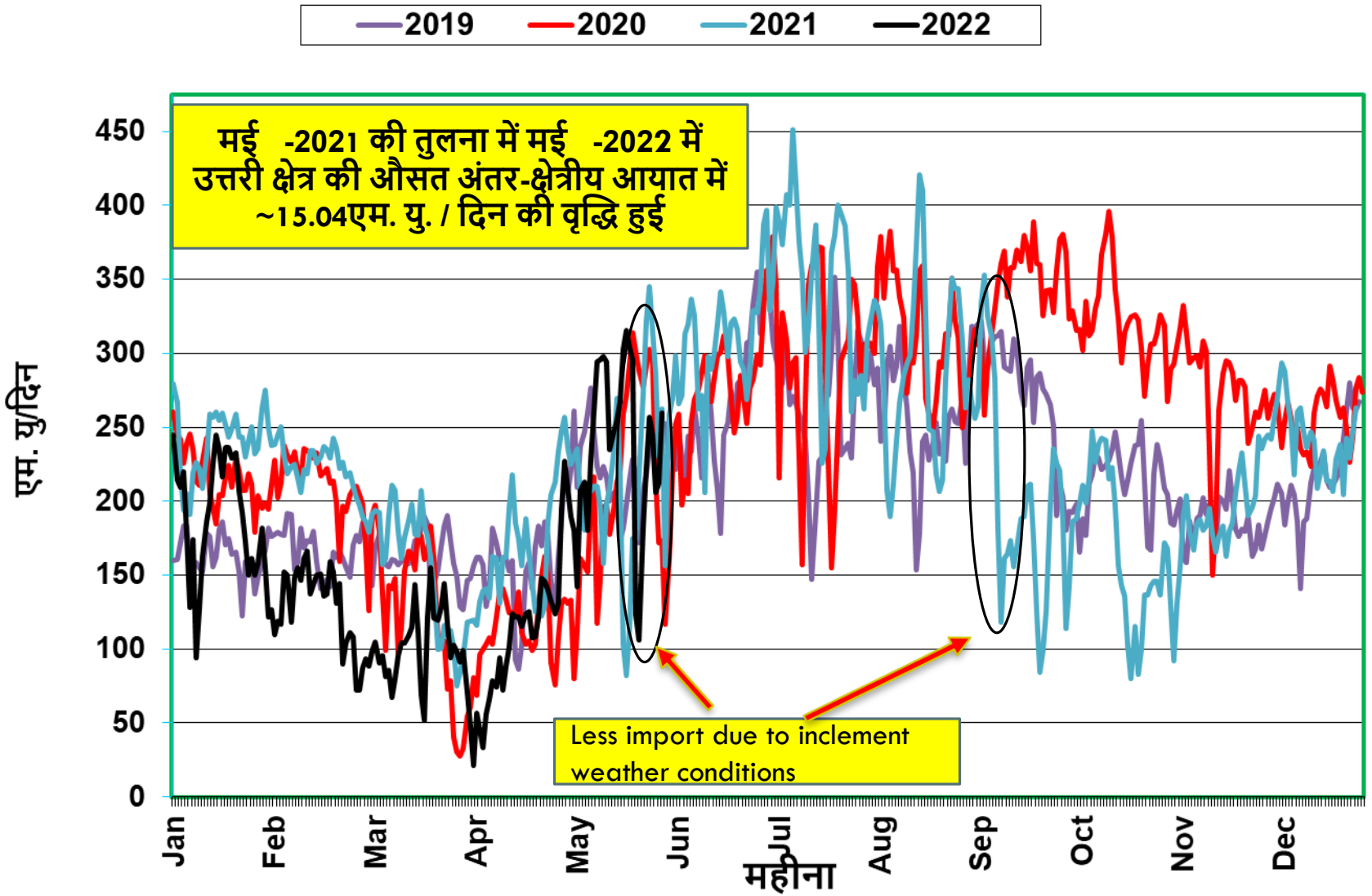
उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



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



अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



RE Penetration

	Maximum Daily MU Penetration			
	May '2022		Record upto April'2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	5.91	23-05-2022	12.28	01-04-2020
Rajasthan	30.26	03-05-2022	36.47	22-10-2021
UP	3.08	24-05-2022	4.07	30.10-2021
NR	13.91	21-05-2022	12.77	22-10-2021

	Maximum Instantaneous Penetration in MW			
	May '2022		Record upto April'2022	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	8.15	24-05-2022	26.87	22-04-2020
Rajasthan	49.73	03-05-2022	68.38	31-03-2020
UP	10.68	24-05-2022	15.13	01-04-2021
NR	30.49	23-05-2022	32.84	22-02-2022

वास्तविक सारांश - मई -2021 वनाम मई -2022

	मई -2021 (मि.यु. /दिन)	मई -2022 (मि.यु. /दिन)	मई माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	512.08	749.15	237.07
जलीय (Hydro) उत्पादन	209.34	249.67	40.33
नाभिकीय (Nuclear) उत्पादन	30.19	24.35	-5.83
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	218.89	233.93	15.04
अक्षय (Renewable) उत्पादन	77.193	149.440	72.25
कुल उपलब्धता	**1047.69**	**1406.54**	**358.86**

B.20

Outage Summary For May 2022									
CONSTITUENTS	PLANNED (A)	FORCED OUTAGES (B=C+D)	EMERGENCY SHUTDOWNS (C)	TRIPPING (D)	% PLANNED SHUTDOWNS (A/(A+C))	% EMERGENCY SHUTDOWNS(C/(A+C))	% ESD SHUTDOWNS(C/B)	% TRIPPING (D/B)	TOTAL OUTAGES (A+B)
POWERGRID	191	387	179	208	51.6%	48.4%	46.3%	53.7%	578
UPPTCL	89	226	55	171	61.8%	38.2%	24.3%	75.7%	315
HVPNL	71	87	30	57	70.3%	29.7%	34.5%	65.5%	158
RRVPNL	56	75	25	50	69.1%	30.9%	33.3%	66.7%	131
PSTCL	58	53	18	35	76.3%	23.7%	34.0%	66.0%	111
BBMB	24	51	14	37	63.2%	36.8%	27.5%	72.5%	75
RSRPL, RSWPL, RSBPL	52	3	3	0	94.5%	5.5%	100.0%	0.0%	55
DTL	11	35	8	27	57.9%	42.1%	22.9%	77.1%	46
PTCUL	7	30	4	26	63.6%	36.4%	13.3%	86.7%	37
PDD JK	9	28	1	27	90.0%	10.0%	3.6%	96.4%	37
Azure	29	3	2	1	93.5%	6.5%	66.7%	33.3%	32
HPPTCL	16	6	1	5	94.1%	5.9%	16.7%	83.3%	22
Adani Hybrid	7	10	3	7	70.0%	30.0%	30.0%	70.0%	17
NTPC	9	6	2	4	81.8%	18.2%	33.3%	66.7%	15
Adani	7	4	4	0	63.6%	36.4%	100.0%	0.0%	11
PKTSL	5	4	1	3	83.3%	16.7%	25.0%	75.0%	9
BKTL	2	5	4	1	33.3%	66.7%	80.0%	20.0%	7
AEPL, Avaada	4	2	1	1	80.0%	20.0%	50.0%	50.0%	6
GPTL	0	6	2	4	0.0%	100.0%	33.3%	66.7%	6
ARP1PL	3	2	1	1	75.0%	25.0%	50.0%	50.0%	5
POWERLINK	0	5	0	5	0.0%	0.0%	0.0%	100.0%	5
NRSS XXIX	3	1	0	1	100.0%	0.0%	0.0%	100.0%	4
Sekura	3	1	0	1	100.0%	0.0%	0.0%	100.0%	4
MEGA_SURYAURJA	1	3	0	3	100.0%	0.0%	0.0%	100.0%	4
THAR SURYA1	0	4	3	1	0.0%	100.0%	75.0%	25.0%	4
Saurya Urja	0	4	0	4	0.0%	0.0%	0.0%	100.0%	4
ABC RJ01	2	1	0	1	100.0%	0.0%	0.0%	100.0%	3
ACME_HEERGARH	1	2	0	2	100.0%	0.0%	0.0%	100.0%	3
Cleansolar_Jodhpur	2	1	1	0	66.7%	33.3%	100.0%	0.0%	3
PKTCL	1	2	0	2	100.0%	0.0%	0.0%	100.0%	3
ADHPL	0	3	0	3	0.0%	0.0%	0.0%	100.0%	3
ESUCRL	1	1	1	0	50.0%	50.0%	100.0%	0.0%	2
NHPC	1	1	0	1	100.0%	0.0%	0.0%	100.0%	2
PTCUL,Singoli(LTUHP)	0	2	2	0	0.0%	100.0%	100.0%	0.0%	2
FBTL	0	2	0	2	0.0%	0.0%	0.0%	100.0%	2
PFTL	0	2	0	2	0.0%	0.0%	0.0%	100.0%	2
APCPL	1	0	0	0	100.0%	0.0%	0.0%	0.0%	1
THDC	0	1	1	0	0.0%	100.0%	100.0%	0.0%	1
PUTL	0	1	0	1	0.0%	0.0%	0.0%	100.0%	1
TOTAL	**666**	**1060**	**366**	**694**	**64.5%**	**35.5%**	**34.5%**	**65.5%**	**1726**

B.20

New Elements First Time Charged During May 2022

S. No.	Type of transmission element	Total No
1	220kV line	01
3	LILO of existing line	02
4	ICTs	09
6	765kV, 400kV, 220 kV Bays	24
Total New Elements charged		36

B.20

New Transmission Lines
(Line length-19.5 Ckt. Kms)

Sr. No.	Name of element	Voltage Level (in kV)	Line Length (In kM)	Conductor Type	Agency/ Owner	Location	Remarks	Date & time of charging	
								Date	Time
1	220kV Bhadla_2 (PG)-Seora_SL_BHD2_PG (Mega_SuryaUrja)-1	220kV	19.5	AL59 Zebra	Mega_Surya Urja	RAJASTHAN	-	15-May-2022	20:10

LILO of Transmission Lines
(LILO length-35.527 Ckt. Kms)

Sr. No.	Name of element	Voltage Level	Line Length (In kM)	LILO Length	Conductor Type	Agency/ Owner	Location	Date & time of charging	
								Date	Time
1	220kV Sohna Road (GPTL)-Gurugram Sec-69 (HV)-2(After LILO of 220kV Sector-72 Gurugram - Sohna Road Gurugram -2 line at 220kV Sector-69, Gurugram)	220kV	6.348 Kms	0.040 Kms	MOOSE	HVPNL	HARYANA	02-May-2022	21:35
2	220kV Dehradun(PG)-Vyasi HEP (UK)-2(After LILO of 220 kv Jhajjra(PTCUL)-Dehradun (PGCIL) line Circuit -2 at Vyasi (HEP))	220kV	36.808 Kms	35.487 Kms	ZEBRA	PTCUL	UK	07-May-2022	16:51

B.20

ICT (MVA Capacity Addition- 2985 MVA)

S.No.	Name of element	Transformation Capacity (in MVA)	New/replacement /augmentatio	Make	Configuration	Agency/ Owner	Remarks	Actual date & time of charging	
								Date	Time
1	400/220/33kV, 315 MVA, 3-Phase, CGL, ICT - 2 at Bawana(DV)	315 MVA	Replacement	CGL	3-Phase	DTL		05-May-2022	12:24
2	765/400/33kV, 1500 MVA, 3x1-Phase, ABB Hitachi, ICT - 4 at Fatehgarh_II(PG)	1500 MVA	New	ABB Hitachi	3x1-Phase	POWERGRID		07-May-2022	20:49
3	400/220/33kV, 500MVA, 3-Phase, T&R, ICT - 5 at Bhadla_2 (PG)	500MVA	New	T&R	3-Phase	POWERGRID		14-May-2022	22:38
4	220/33kV, 100 MVA, 3-Phase, Prime Meiden, ICT - 1 at Seora_SL_BHD2_PG (Mega_SuryaUrja)	100 MVA	New	Prime Meiden	3-Phase	Mega_SuryaUrja		16-May-2022	00:58
5	220/33kV, 100 MVA, 3-Phase, Prime Meiden, ICT - 2 at Seora_SL_BHD2_PG (Mega_SuryaUrja)	100 MVA	New	Prime Meiden	3-Phase	Mega_SuryaUrja		16-May-2022	01:24
6	220/33kV, 100 MVA, 3-Phase, Prime Mieden, ICT - 3 at Seora_SL_BHD2_PG (Mega_SuryaUrja)	100 MVA	New	Prime Mieden	3-Phase	Mega_SuryaUrja		16-May-2022	01:38
7	400/220/33kV, 500MVA, 3-Phase, TBEA, ICT - 2 at Ludhiana(PG)	500MVA	Augmentation	TBEA	3-Phase	POWERGRID	Augmentation from 315 MVA to 500 MVA	18-May-2022	16:50
8	765/400/33kV, 500 MVA, 1-Phase, ABB, ICT - 2 at Gr.Noida_2(UPC)	500 MVA	Replacement	ABB	1-Phase	WUPPTCL	One unit of 3*500 MVA ICT-2 is replaced with a new 1*500 MVA unit.	21-May-2022	18:46
9	400/220/33kV, 500 MVA, 3-Phase, Kanohar Electricals Ltd, ICT - 2 at Rajpura(PS)	500 MVA	New	Kanohar Electricals Ltd	3-Phase	PSTCL		29-May-2022	18:04

B.20

Connectivity at Fatehgarh II(PG)

Sr No.	Plant Name	Installed Capacity in MW	Capacity commissioned in MW	Dedicated Tr. Line	Grid Connectivity	Commissioned Date	Commissioning Year
1	AHEJ2L(Adani)	300	68.6 (Solar)	220kV S/C AHEJ2L-Fatehgarh II(PG) line	connected at Fatehgarh II(PG)	14.05.2022	2022

Connectivity at Fatehgarh I (FBTL)

Sr No.	Plant Name	Installed Capacity in MW	Capacity commissioned in MW	Dedicated Tr. Line	Grid Connectivity	Commissioned Date	Commissioning Year
1	AHEJ4L PSS2	350	54.56	220kV AREPRL(Adani Fatehgarh1)-AHE4PL PSS2(ADANI)-S/C	connected at Fatehgarh I	04.05.2022	2022
2			1.12			27.05.2022	2022
3	AHEJ4L PSS3	250	30.2	220kV AREPRL(Adani Fatehgarh1)-AHE4PL PSS3(ADANI)-S/C	connected at Fatehgarh I	21.05.2022	2022
4			21.2			02.05.2022	2022
5			10.8			21.05.2022	2022

B.20

Connectivity at Bhadla_2(PG)

Sr No.	Plant Name	Installed Capacity in MW	Capacity commissioned in MW	Dedicated Tr. Line	Grid Connectivity	Commissioned Date	Commissioning Year
1	Acme Heergarh	300	100	220kV ACME Heergarh-Bhadla_2 (PG)-1	765/400/220kV Bhadla_2	20.05.2022	2022
2	ABC Renew_RJ01	300	150	220kV ABC-Bhadla_2 (PG)-1	765/400/220kV Bhadla_2	11.05.2022	2022
3	Mega Suryaurja	250	175	220kV Mega Saurya Urja-Bhadla 2(PG)	765/400/220kV Bhadla_2	17.05.2022	2022

Connectivity at Bikaner(PG)

Sr No.	Plant Name	Installed Capacity in MW	Capacity commissioned in MW	Dedicated Tr. Line	Grid Connectivity	Commissioned Date	Commissioning Year
1	Avaada Sustainable RJ	300	100	400kV Bikaner(PG)-Avaada-S/C	765/400/220kV Bikaner(PG)	06.05.2022	2022
2	Avaada(RJHN)	240	25	400kV Bikaner(PG)-Avaada-S/C		04.05.2022	2022


धन्यवाद

पावर ट्राँसमिशन कारपोरेशन ऑफ उत्तराखण्ड लि0
(उत्तराखण्ड सरकार का उपक्रम)
मुख्य अभियन्ता, प्रान्तीय भार निस्तारण केन्द्र कार्यालय
विद्युत भवन, नजदीक–आई0एस0बी0टी0 क्रासिंग, सहारनपुर रोड़, माजरा, देहरादून–248002
दूरभाष नं0 0135–2645768 फैक्स नं0 0135–2645758 email:- sldc1@rediffmail.com

Letter No. 396 **/SLDC/CE** **Dated :** 07 **/06/2022**

CGM(I/C)
NRLDC
18-A, Saheed Jeet Singh Marg,
Katwaria sarai,
New Delhi.

Subject:- List of radial feeders for physical regulation.

Sir,

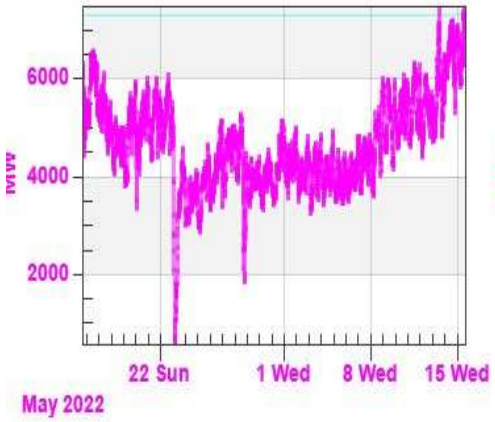
This is in reference to Agenda item No.19 of 195th OCC meeting regarding list of radial feeders for physical regulation. The details of updated feeders for physical regulation are as follows:-

SL No.	Transmission Element to be Opened	Power Supply interruption	Appox Load Belief (MW)	Remarks
1.	132 kV Sitargang (PGCIL)-ELDECO (PTCUL)	ELDECO (Industrial Feeder)	40-62	Industrial Load (only in case of extreme situations)
2.	132 kV Pithoragarh (PGCIL)-Pithoragarh (PTCUL)	Pithoragarh S/s (PTCUL)	24-54	Also fed from 132 kV Almora-Pithoragarh line which is normally opened at 132 kV S/s Pithoragarh.
3.	132 kV Kashipur-Ramnagar and 132 kV Kalagarh-Ramnagar line (CB-74) and CB-(72) at 132 kV S/s Ramnagar respectively	Ramnagar Area.	35-40	SLDC will open CB-72 and CB-74 at 132kV S/s Ramnagar immediately after physical regulation recieved NRLDC.

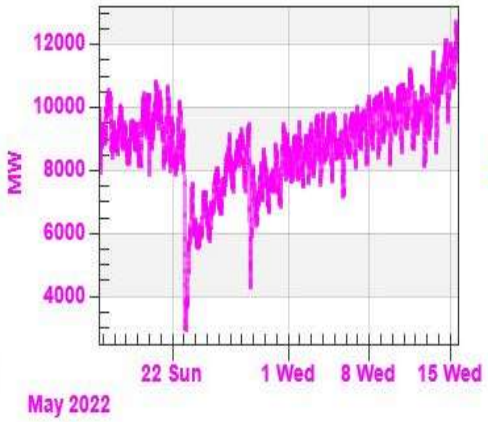
Rajiv Gupta
Chief Engineer L-1 (SLDC)

CC:- 1. S.E.(Operation),NRPC, New Delhi for information.
2. S.E., SLDC, Dehradun for information.

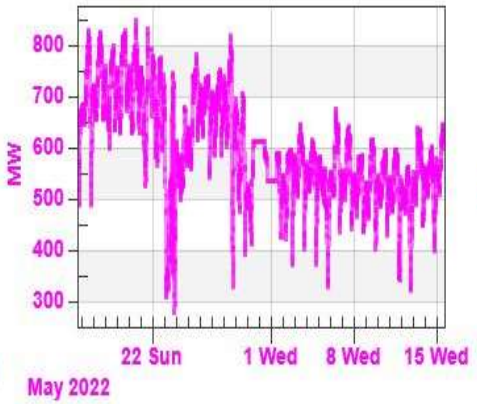
Punjab Import



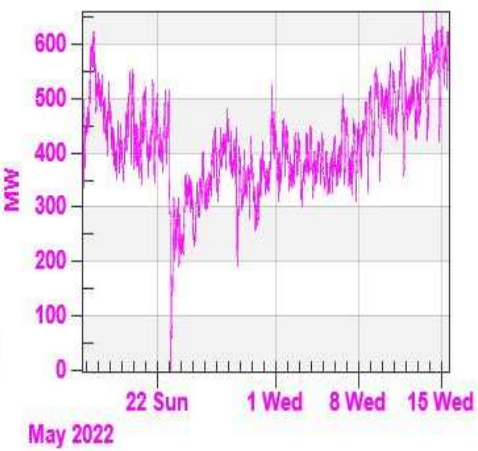
Punjab load



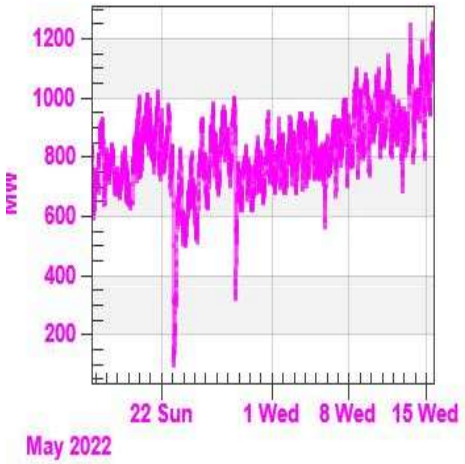
Rajpura ICT load



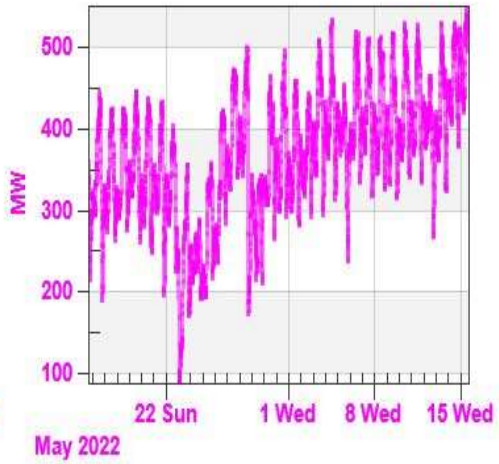
Patiala ICT load



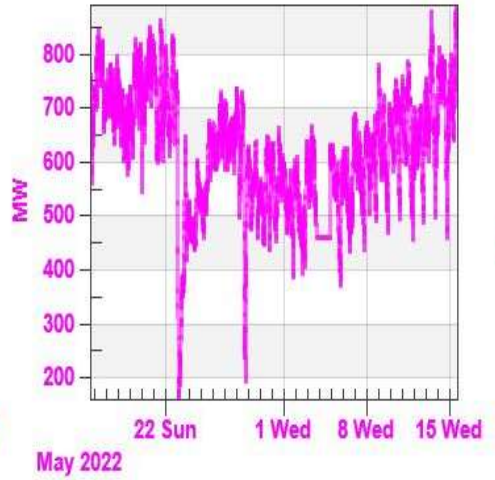
Ludhiana ICT load



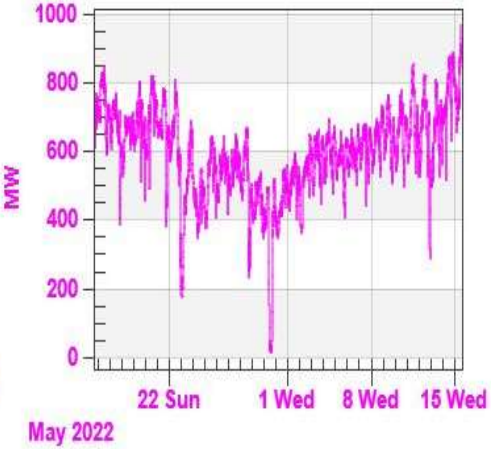
Nakodar ICT load



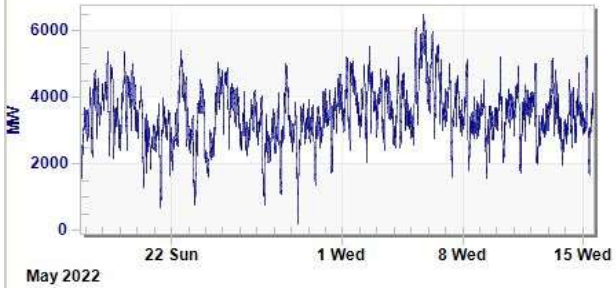
Moga ICT load



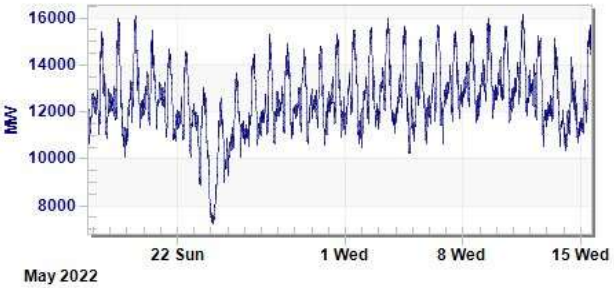
Amritsar ICT load



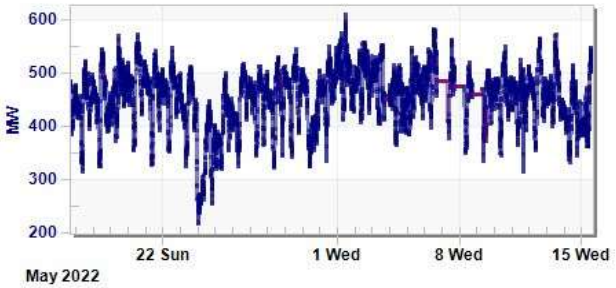
Rajasthan import



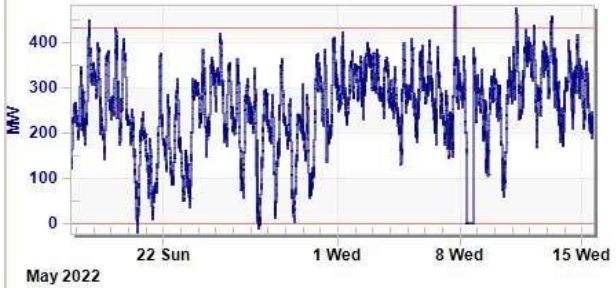
Rajasthan Load



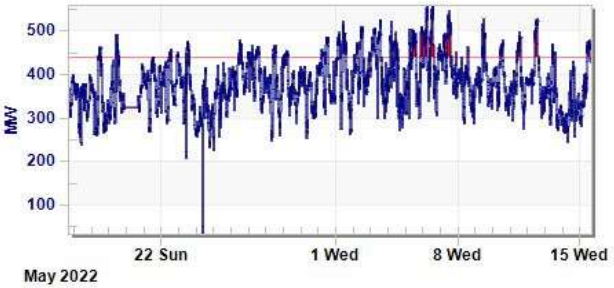
Ajmer ICT loading



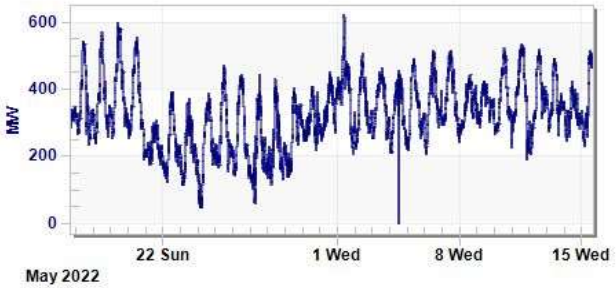
Jodhpur ICT loading



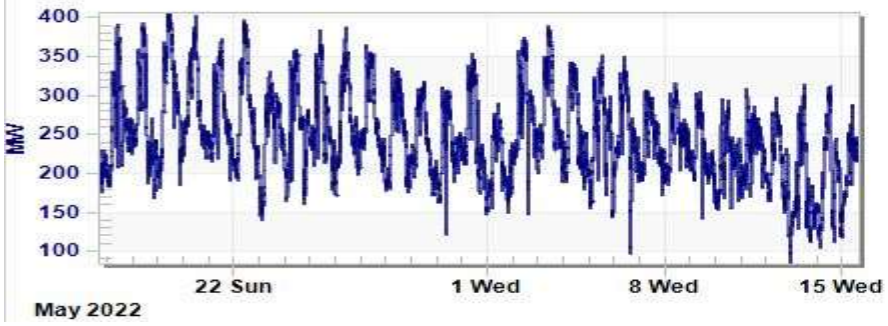
Merta ICT loading



Chittorgarh ICT loading



Bhinmal ICT loading



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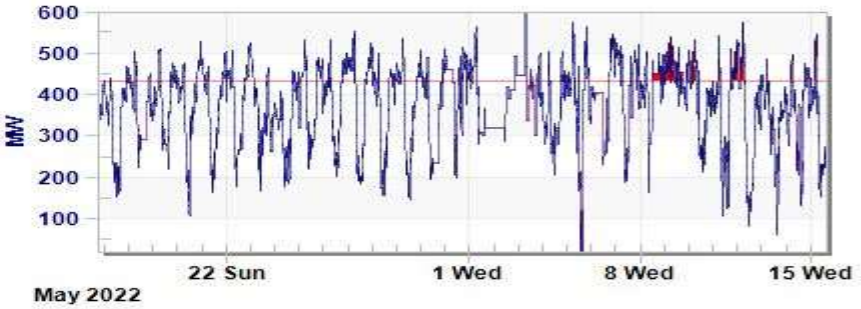

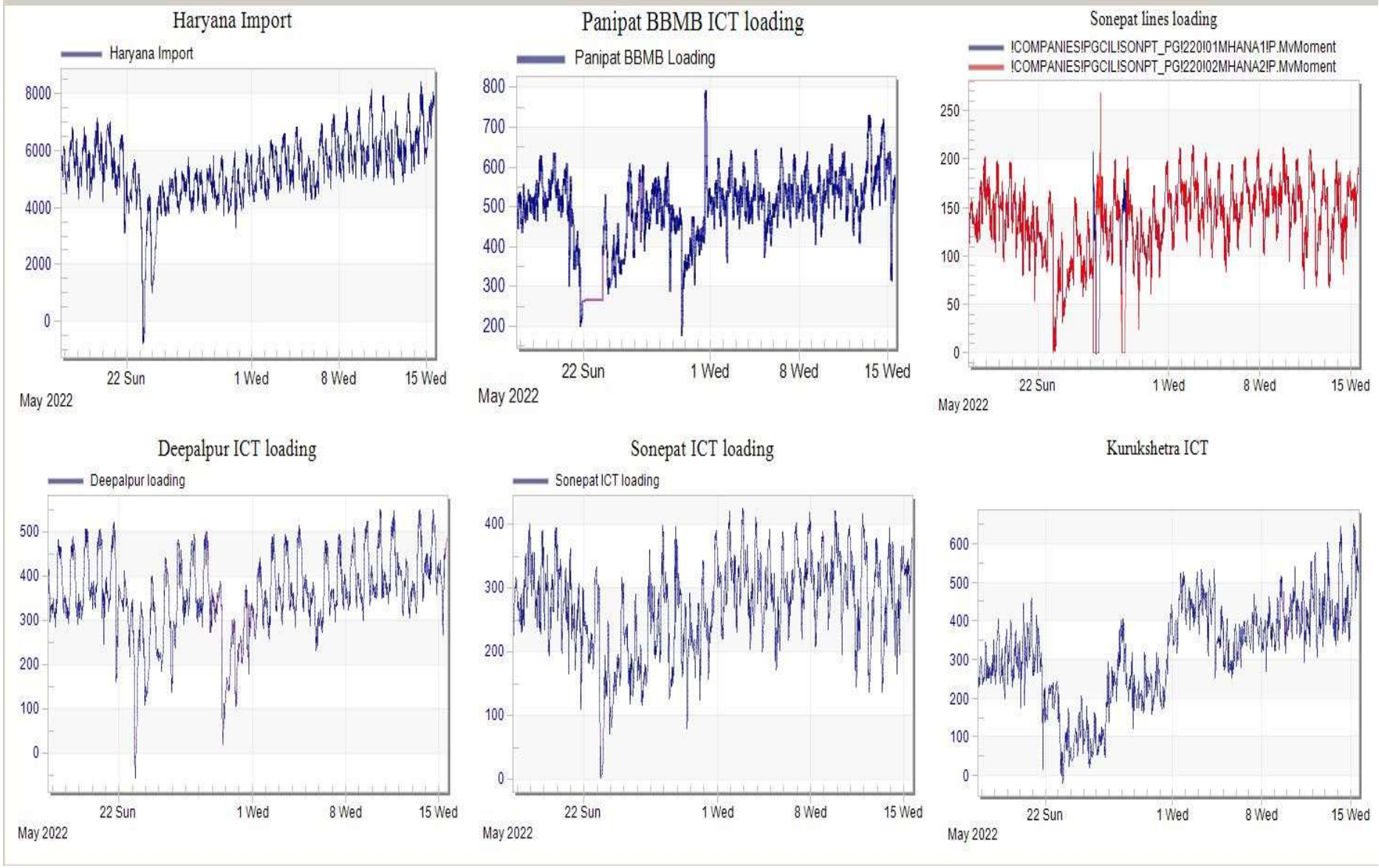
Haryana Import
Haryana Import
8000
6000
4000
2000
0
22 Sun
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8 Wed
15 Wed
May 2022
Panipat BBMB ICT loading
Panipat BBMB Loading
800
700
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22 Sun
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8 Wed
15 Wed
May 2022
Sonepat lines loading
!COMPANIES!PGCIL!SONPT_PGI220I01MHANA1IP.MvMoment
!COMPANIES!PGCIL!SONPT_PGI220I02MHANA2IP.MvMoment
250
200
150
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0
22 Sun
1 Wed
8 Wed
15 Wed
May 2022
Deepalpur ICT loading
Deepalpur loading
500
400
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22 Sun
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May 2022
Sonepat ICT loading
Sonepat ICT loading
400
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22 Sun
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Kurukshetra ICT
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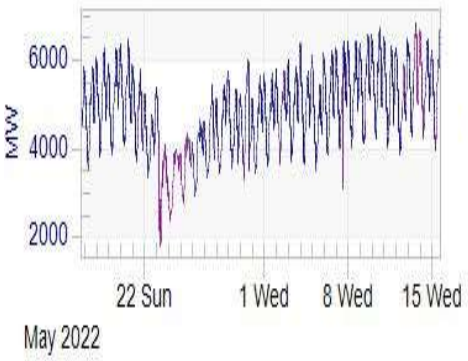
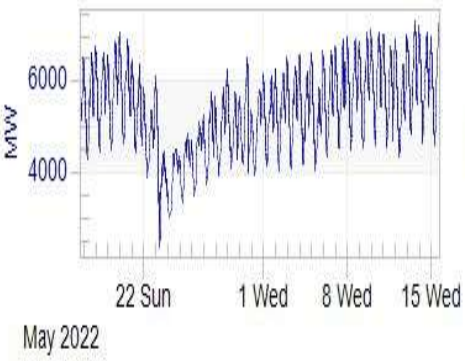
May 2022

Delhi Import



Delhi load



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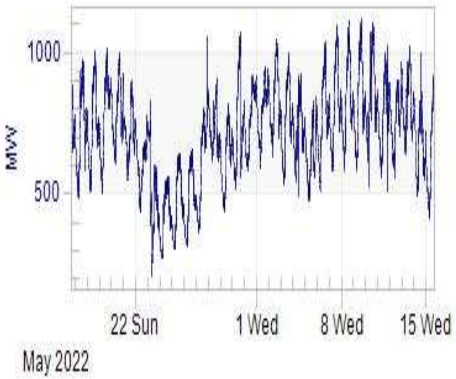

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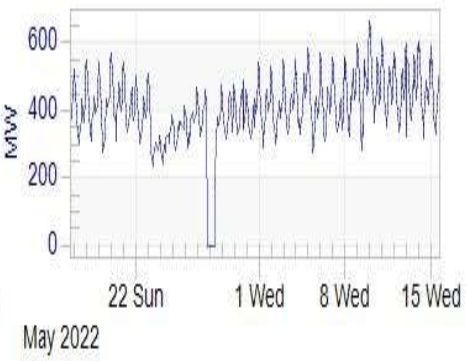

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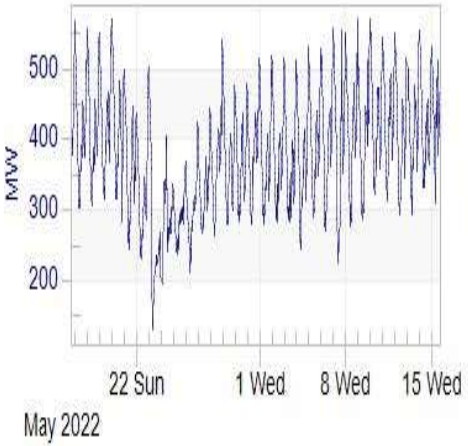

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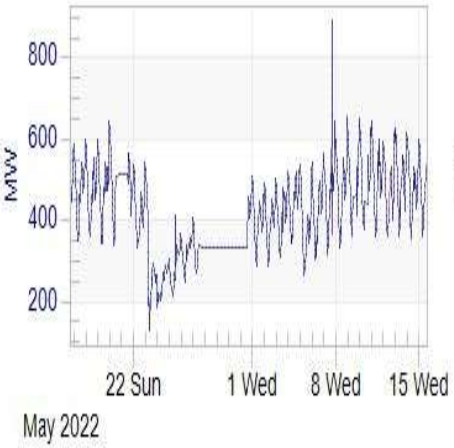
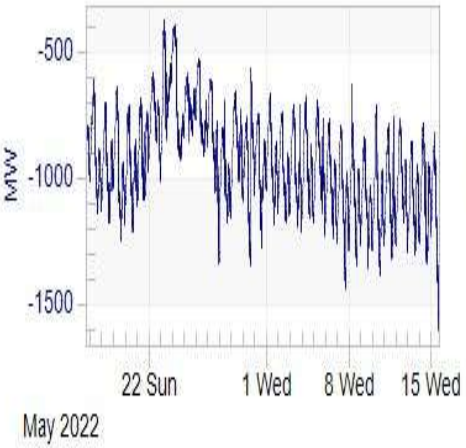


Mandola ICT loading



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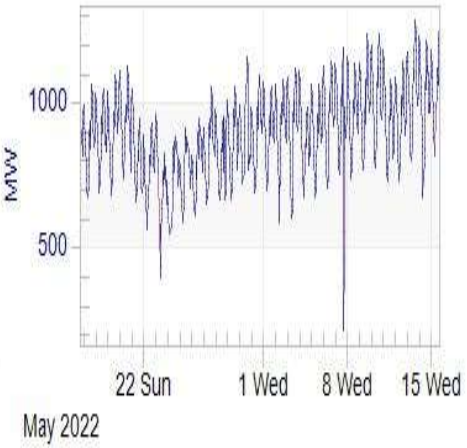

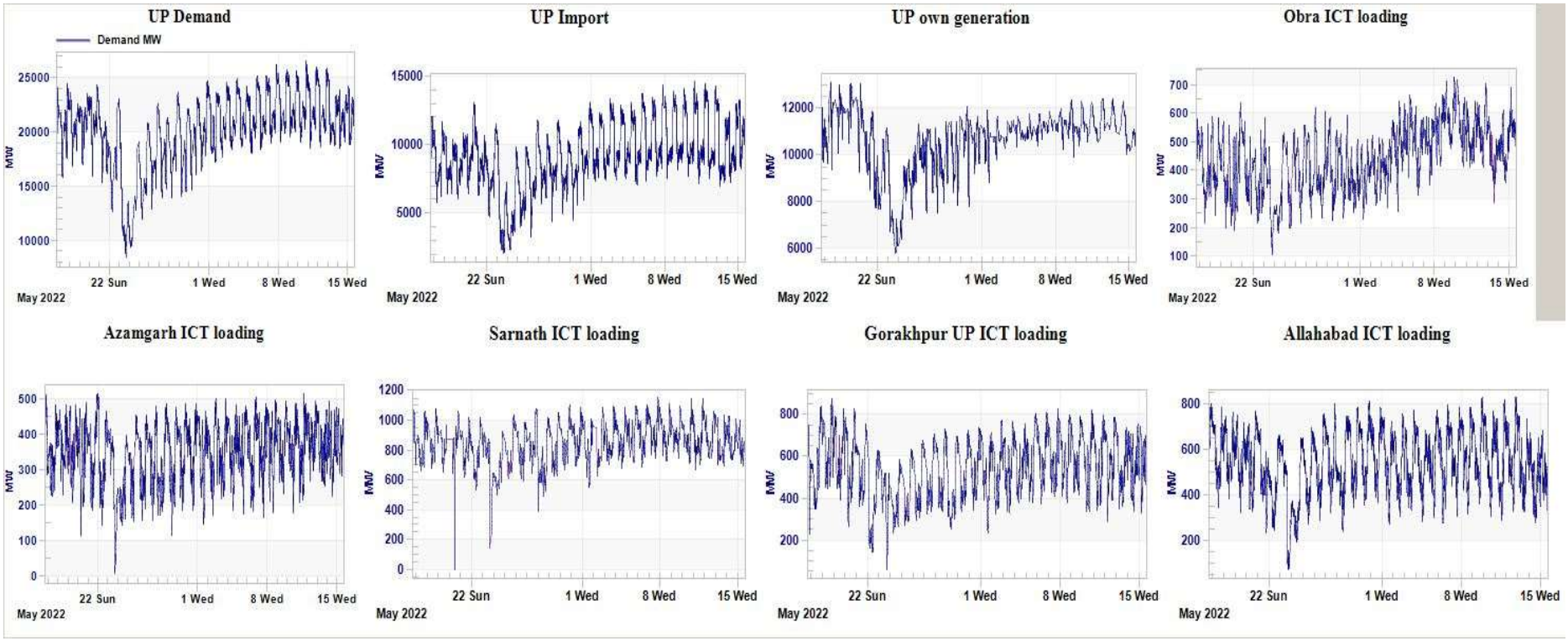
UP Demand
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Obra ICT loading
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May 2022
Azamgarh ICT loading
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Sarnath ICT loading
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Gorakhpur UP ICT loading
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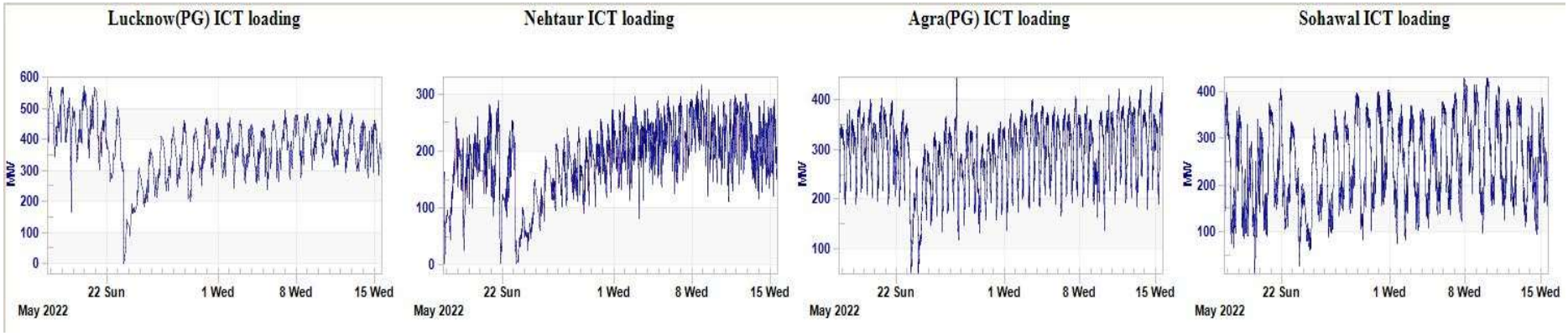
Lucknow(PG) ICT loading
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Nehtaur ICT loading
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May 2022
Agra(PG) ICT loading
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Sohawal ICT loading
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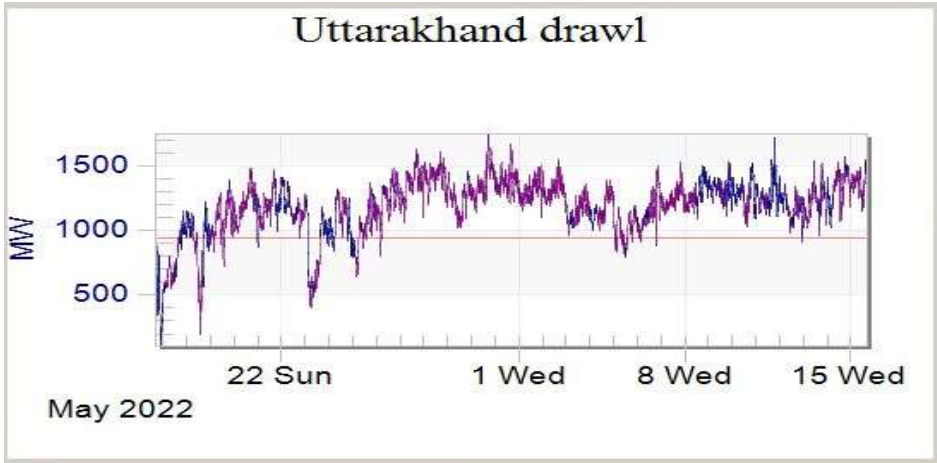
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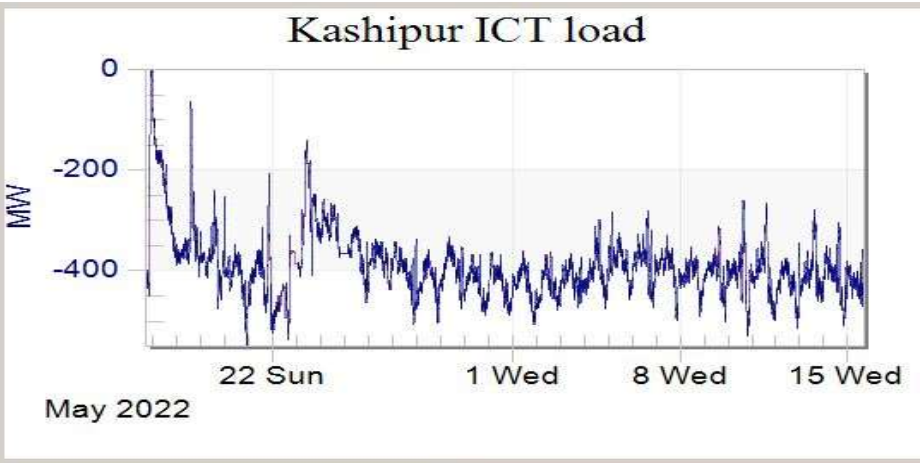
May 2022


Kashipur ICT load
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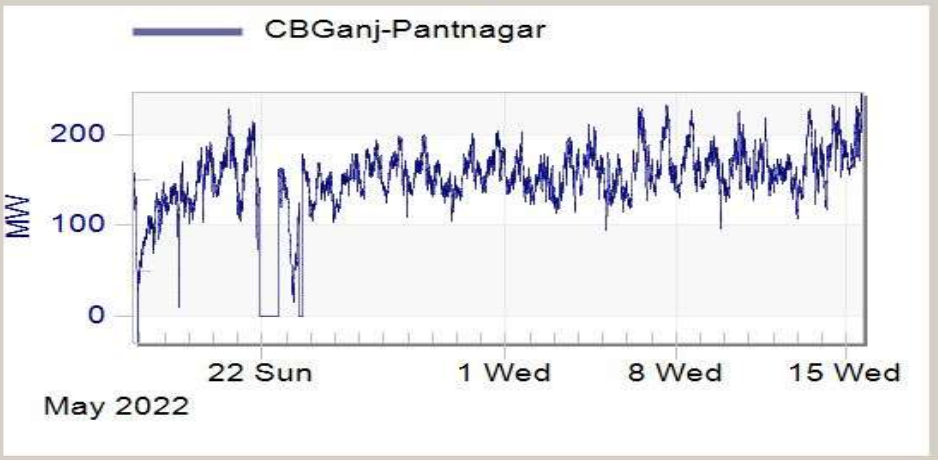
8 Wed
15 Wed
May 2022


CBGanj-Pantnagar
200
100
0
MW
22 Sun
1 Wed
8 Wed
15 Wed
May 2022