सत्यमेव जयते

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

संख्या: उ.क्षे.वि.स./ प्रचालन/106/01/2022/ 10810-10851 दिनांक: 10.11.2022

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 200वीं बैठक का कार्यवृत।

**Subject:** Minutes of 200th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 200वीं बैठक दिनांक 18.10.2022 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत 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।

200th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 18.10.2022. 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

10/11/22
(संतोष कुमार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

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## उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उ□-समिति की 200वीं बैठक का कार्यवृत्त

200th meeting of OCC of NRPC was held on 18.10.2022 through video conferencing.

**खण्ड-क: उ.क्षे.वि.स.** **PART-A:NRPC**

### 1. Confirmation of Minutes

Minutes of 199th OCC meeting was issued on 12.10.2022.OCC confirmed the minutes.

### 2. Review of Grid operations of September 2022

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

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

- **Delhi**

The reason of lower peak demand and energy consumption is due to rain in Sept-2022 and consequently decreased in temperature, peak demand & consumption.

- **Himachal Pradesh**

The actual energy requirement in respect of Himachal Pradesh for the month of September 2022 came on the lower side than anticipated due to extended monsoon & heavy rains in the state.

- **Haryana**

Variation between actual and anticipated energy consumption for September-2022 is high due to steep fall in temperature and heavy rainfall which results in less agricultural load and less Rural Domestic demand.

- **Rajasthan**

The Energy consumption & Peak Demand increased by 13.5 % & 13.2 % respectively w.r.t. Anticipated Energy requirement & Anticipated Peak Demand for September '2022 due to unexpected load growth in the state due to less rains during the month, as 33.14 % growth in Energy requirement and 31.51 % growth in Peak demand w.r.t. same month of the previous year.

- **Uttar Pradesh**

Actual Energy Requirement was lower than anticipated:

1. Certainly drop in humidity.

2. High intensity rainfall after 13th September 2022 due to which energy consumption decreased.

- **Uttarakhand**

Due to less rain in plain areas of Uttarakhand (where more than 70% load is concentrated) during first week of September 2022 in comparison to the 2021, maximum demand observed was higher w.r.t anticipated demand of 2160 MW (4% higher than Peak demand of 2021).

### 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 September 2022 was enclosed in the agenda and same was discussed in the meeting.

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

The maintenance programme of generating units and transmission lines for the month of November 2022 was deliberated in the meeting on 17.10.2022.

Following shutdown request was also approved/denied in the OCC meeting:

| Element Name | Owner | Reason | Requested From | Requested To | Daily/ Continuous | Decision of OCC |
|---|---|---|---|---|---|---|
| **500 MW RIHAND-I STPS - UNIT 1** | NTPC | Boiler + Gen + FGD Execution | 10-Nov-22 | 14-Dec-22 | Continuous | OCC approved the shutdown subject to the condition that it should be linked with outage of Rihand-Dadri HVDC Shutdown |

| Element Name | Owner | Reason | Requested From | Requested To | Daily/ Continuous | Decision of OCC |
|---|---|---|---|---|---|---|
| **220 KV DELHI RR(BB)-NARELA(DV) (BBMB) CKT-1 and CKT-2 (shutdown of both the circuits)** | BBMB | Deposit work by DMRC for raising the height of the line, as the transmission line is infringing with DMRC viaduct near Prasant Vihar of Janakpuri - Majlis Park Corridor of Delhi MRTS Phase-IV. | 02-Nov-22 | 17-Nov-22 | Continuous | OCC approved the shutdown. |
| **400 KV DC HAPUR - ATOR LINE** | PGCIL | Construction of 400 KV D/C Muradnagar-Simbhavali Transmission Line Transmission Line(under | 02-Nov-22 | 03-Nov-22 | Daily | OCC approved the shutdown subject to no other S/D should be availed in that pocket. |

| Element Name | Owner | Reason | Requested From | Requested To | Daily/ Continuous | Decision of OCC |
|---|---|---|---|---|---|---|
| | | PMSTL TBCB project) | | | | |

## 4. Planning of Grid Operation

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

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

| State / UT | Availability / Requirement | Revised Energy (MU) | Revised Peak (MW) | Date of revision |
|---|---|---|---|---|
| CHANDIGARH | Availability | 110 | 270 | No Revision submitted |
| | Requirement | 100 | 210 | |
| | Surplus / Shortfall | 10 | 60 | |
| | % Surplus / Shortfall | 10.0% | 28.6% | |
| DELHI | Availability | 2694 | 4050 | 17-Oct-22 |
| | Requirement | 2000 | 3900 | |
| | Surplus / Shortfall | 694 | 150 | |
| | % Surplus / Shortfall | 34.7% | 3.8% | |
| HARYANA | Availability | 4230 | 10700 | No Revision submitted |
| | Requirement | 3610 | 6930 | |
| | Surplus / Shortfall | 620 | 3770 | |
| | % Surplus / Shortfall | 17.2% | 54.4% | |
| HIMACHAL PRADESH | Availability | 969 | 1841 | 07-Oct-22 |
| | Requirement | 966 | 1830 | |
| | Surplus / Shortfall | 3 | 11 | |
| | % Surplus / Shortfall | 0.3% | 0.6% | |
| J&K and LADAKH | Availability | 940 | 3340 | No Revision submitted |
| | Requirement | 1660 | 2560 | |
| | Surplus / Shortfall | -720 | 780 | |
| | % Surplus / Shortfall | -43.4% | 30.5% | |
| PUNJAB | Availability | 4970 | 10920 | 18-Oct-22 |
| | Requirement | 3340 | 6200 | |
| | Surplus / Shortfall | 1630 | 4720 | |

| State / UT | Availability / Requirement | Revised Energy (MU) | Revised Peak (MW) | Date of revision |
|---|---|---|---|---|
| | % Surplus / Shortfall | 48.8% | 76.1% | |
| RAJASTHAN | Availability | 7640 | 18430 | 18-Oct-22 |
| | Requirement | 8680 | 14500 | |
| | Surplus / Shortfall | -1040 | 3930 | |
| | % Surplus / Shortfall | -12.0% | 27.1% | |
| UTTAR PRADESH | Availability | 9000 | 17000 | 12-Oct-22 |
| | Requirement | 8700 | 17000 | |
| | Surplus / Shortfall | 300 | 0 | |
| | % Surplus / Shortfall | 3.4% | 0.0% | |
| UTTARAKHAND | Availability | 1024 | 2043 | 05-Oct-22 |
| | Requirement | 1050 | 2070 | |
| | Surplus / Shortfall | -26 | -27 | |
| | % Surplus / Shortfall | -2.5% | -1.3% | |
| NORTHERN REGION | Availability | 31577 | 63900 | |
| | Requirement | 30106 | 51400 | |
| | Surplus / Shortfall | 1471 | 12500 | |
| | % Surplus / Shortfall | 4.9% | 24.3% | |

## 5. Submission of breakup of Energy Consumption by the states

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

| State / UT | From | To |
|---|---|---|
| Delhi | Apr-2018 | Jul-2022 |
| Haryana | Apr-2018 | Aug-2022 |
| Himachal Pradesh | Apr-2018 | Aug-2022 |
| Punjab | Apr-2018 | Aug-2022 |
| Rajasthan | Apr-2018 | Aug-2022 |
| Uttar Pradesh | Apr-2018 | Jul-2022 |
| Uttarakhand | Apr-2018 | Jul-2022 |

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

## 6. 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

7.1. 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.

7.2. 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.

7.3. 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.

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

7.5. A meeting was also taken by Hon'ble 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.

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

7.7. 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.

7.8. 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.

7.9. 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.

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

7.11. 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.

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

7.13. 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.

7.14. HPSLDC vide letter 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.

7.15. 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.

7.16. 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.

7.17. 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.

7.18. 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.

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

7.20. 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.

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

7.22. 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.

7.23. 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.

7.24. 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.

7.25. 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.

7.26. 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.

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

7.28. 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 dated 14.02.2022 to HPSEBL, & HPPTCL.

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

7.30. 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.

7.31. 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.

7.32. 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.

7.33. 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.

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

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

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

7.37. 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.

7.38. In the 194$^{th}$ 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.

7.39. 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.

7.40. 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.

7.41. 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.

7.42. 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.

7.43. 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.

7.44. In the 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.

7.45. 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.

7.46. 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.

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

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

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

7.50. In the 197th OCC, NRPC representative informed that UPSLDC has submitted the updated status of Unchahar Islanding scheme as per the deliberation held in the review meeting held on 07.07.2020. Moreover, order for system study of Agra-Lalitpur IS has been placed on CPRI.

7.51. In regard to Delhi Islanding scheme, NRPC representative informed that as per the deliberation held in the review meeting held on 13.07.2020, response from Delhi Discoms is awaited regarding whether trippings through ADMS system can be facilitated for Delhi Islanding scheme.

7.52. MS, NRPC expressed apathy over no significant progress in implementation of Delhi Islanding Scheme since last 18 months. He suggested that in view of allocation of Dadri-II to Haryana and non-scheduling of Jhajjar and Dadri-II due to high cost, the proposed islanding may not survive. Therefore, it would be better to have two small islands – one with GTs and the other with Bawana. Mostly, these plants operate and therefore survival chances for islands would be more. Moreover, these islands could be controlled through UFRs at 220kV level by STU and not at 33kV by Discoms as envisaged in proposed scheme. It was suggested

that DTL may bring out proposal for further discussion at NRPC Sectt and NRLDC level.

7.53. NRPC representative informed that HPSLDC has been requested to provide load wise details for the islanding scheme finalized by them.

7.54. In the 198th OCC, NRPC Sectt. representative informed forum that Delhi SLDC has been asked to submit generation data for last 2 years (96 blocks) of power stations in Delhi control area and they need to expedite the submission of requisite data. Further, forum was of view that after submission of data, a meeting may be conducted between NRPC Sectt., NRLDC and Delhi SLDC to review the same.

7.55. In regard to Unchahar Islanding scheme, NRPC Sectt representative informed that complete proposal has been received. On analysis of same, it is felt that logic needs to be discussed and NTPC Unchahar needs to confirm whether machines can be operated in FGMO mode in islanding operation. Further, NRPC Sectt. representative informed that they would be their sharing their observations with UPSLDC/NTPC and thereafter, comments/confirmation of NTPC on the same may kindly be communicated to NRPC Sectt.

7.56. NRPC Sectt. representative intimated that based on the discussion in the 56th NRPC meeting for Rajwest and Suratgarh islanding schemes, RVPN was asked to review the Load in Suratgarh and Rajwest islands and reduce it so that there may be some adequate gap between island load and generation.

7.57. NRPC Sectt. representative apprised that Punjab has submitted the details and same has been scrutinized. Observations of NRPC Sectt have been shared with Punjab and they may kindly submit their response on the same. Punjab representative mentioned that reply on the observations would be submitted within two-three days.

7.58. As regards to Dehradun Islnading Scheme, NRPC Sectt representative reiterated that a report may kindly be submitted to OCC forum after analyzing the past generation and demand data pertaining to the proposed scheme. Based on the report, further decision would be taken.

7.59. NRPC Sectt. representative intimated that data from Himachal Pradesh has been received and same is under examination.

7.60. In the 199$^{th}$ OCC, NRPC Sectt. representative informed forum that a meeting was conducted with the officials of HP and NRLDC to review the implementation of HP islanding scheme. In the meeting, average generation and load pattern of last two years were observed for both the islanding schemes. MoM of the meeting is attached at Annexure-A.II of 199$^{th}$ OCC minutes.

7.61. Further, NRPC representative informed forum that a review meeting was conducted with the officials of UP and NRLDC to discuss the implementation of

Unchahar-Lucknow Islanding scheme. MoM of the meeting is attached at Annexure-A.III of 199th OCC minutes.

7.62. Rajasthan representative intimated forum that they have conducted a mock trial in which it took 79 ms for UFR command to reach RTU from data centre which is quite high and same is being reassessed with STLMS. Further, NRPC representative mentioned that as discussed in 56th NRPC meeting, Load of Suratgarh & Rajwest island may also be reduced to have appropriate gap in load generation. In this regard, Rajasthan representative informed that revised load setting will be shortly submitted to NRPC Sectt.

7.63. MS, NRPC expressed apathy over no significant progress in implementation of Islanding Scheme for NR states and was of view that nodal officer for each islanding scheme shall be nominated by each State/UT and concerned representative of NRPC and NRLDC shall visit respective NR State/UT where the islanding scheme is being proposed and discuss the issues being faced in the implementation of cited scheme with the concerned higher officials.

7.64. In the meeting (200th OCC), NRPC representative intimated for Unchahar islanding scheme a meeting was convened by NRPC Sectt. with officials of NRLDC, UPSLDC & NTPC Unchahar on 07.10.2022 wherein based on the deliberation held in the meeting (copy of MoM is attached as Annexure-A.III of the agenda), revised scheme accordingly has been submitted by UP. Generation has been considered as 600 MW and load has been taken as 540 MW and this islanding scheme will be two tier scheme – one at frequency level 47.9 Hz and other at 47.7 Hz. UP representative informed that with respect to UFR's to be utilized for Islanding purposes: At all transmission and generating stations UFRs shall be installed on both side of the elements. For 33kV feeders UFR shall be installed at transmission end only. OCC forum approved the Unchahar islanding scheme.

7.65. NRPC representative intimated OCC forum that Uttarakhand SLDC has submitted a feasibility report (attached as **Annexure-A.II**) of Dehradun Islanding scheme wherein they have mentioned that generation of more than 40 MW round the clock is available for 7 months and generation is not available around the clock during the remaining 5 months. Therefore, islanding is not feasible.

7.66. CGM, NRLDC stated that Uttarakhand may not consider only 1 unit of Chibro or Khodri, rather more than one units may be clubbed together for island generation. Vyasi generation may also be explored.

7.67. Uttarakhand SLDC representative stated that they have no technical experience in islanding matters, therefore handholding is requested from NRLDC.

7.68. Based on discussion in forum, MS, NRPC opined that a small sub-group of officers of NRLDC and Uttarakhand SLDC may be formulated to assist

Uttarakhand in carrying out the study for Dehradun islanding scheme. Further, sub-group may submit its report on the same to OCC forum.

7.69. NRPC representative intimated that with regard to islanding scheme of Punjab region, they have submitted vide mail dtd. 17.10.2022, the details regarding average load and relief of UFR along with SLDs sought vide mail dtd. 08.08.2022.

7.70. It was apprised that island generation has been taken as 75% of installed capacity, wherein in past OCC meetings constituents were suggested that load is to be taken as 90% of generation as decided in case of Unchahar islanding scheme.

7.71. Punjab was requested to modify the scheme as above and submit for discussion in upcoming NRPC meeting.

7.72. In respect of islanding scheme of Rajasthan, NRPC representative intimated that NRPC Sectt communicated to RVPN vide mail dtd. 20.09.2022 for modifying the Suratgarh scheme for making load as 90% of generation. Some minor mistakes were also communicated. However, revised scheme has not been submitted. Revised Rajwest scheme is also awaited from RVPN.

7.73. RVPN assured to send the revised scheme for discussion in upcoming NRPC meeting.

7.74. In respect of islanding scheme of Delhi, it is intimated that weekly load and generation data of state generators has been received from Delhi SLDC and same is being compiled for annual scenario.

7.75. MS, NRPC suggested NRLDC to share with NRPC Sectt. generation pattern for Delhi generators for last 2 years.

7.76. With regard to islanding scheme of HP region, NRPC representative intimated that the load-generation has been discussed and finalized in meeting dtd. 14.09.2022. HP SLDC was requested to submit updated scheme on basis of decisions taken therein. However, scheme has not been received from HP.

7.77. It was discussed that PFR test suggested by NRLDC for Bhabha and Malana may be explored parallely by HP.

7.78. HP assured to submit the revised scheme for discussion in upcoming NRPC meeting.

## 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 October 2022).

8.2. Average coal stock position of generating stations in northern region, having critical stock, during first nine days of October 2022 is as follows:

| Station | Capacity (MW) | PLF % (prev. months) | Normative Stock Reqd. (Days) | Actual Stock (Days) |
|---|---|---|---|---|
| ANPARA C TPS | 1200 | 77.25 | 13 | 2.8 |
| HARDUAGANJ TPS | 1265 | 54.22 | 21 | 1.7 |
| KOTA TPS | 1240 | 70.14 | 21 | 3.9 |
| OBRA TPS | 1094 | 49.71 | 21 | 2.9 |
| PARICHHA TPS | 1140 | 58.74 | 21 | 0.6 |
| PRAYAGRAJ TPP | 1980 | 73.31 | 21 | 1.5 |
| ROSA TPP Ph-I | 1200 | 73.43 | 21 | 1.1 |
| CHHABRA-I PH-1 TPP | 500 | 67.37 | 21 | 3.8 |
| KALISINDH TPS | 1200 | 68.95 | 21 | 2.5 |
| CHHABRA-I PH-2 TPP | 500 | 40.91 | 21 | 1.1 |
| CHHABRA-II TPP | 1320 | 60.84 | 21 | 3.5 |

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

**9. Deemed Availability of relocation/height raising of 400kV Jharli-Mundka Transmission line at Silani Chowk in Jhajjar Distt. (Agenda by NHAI)**

9.1. In the meeting, NRPC representative presented the matter to the forum.

9.2. Haryana representative informed forum that due to heavy waterlogging at most of the tower locations replacement of porcelain insulator work of both circuits of 400kV Jhajjar-Daulatabad transmission line could not be completed as the schedule decided in the 199th OCC meeting. Further, they have now planned the shutdown of 400 kV Jhajjar (APCL) - Daulatabad (HV) of both circuit one at a time for replacement of Porcelain insulator work in the month of November and in the outage meeting of 200th the same was approved from 1st Nov to 13th Nov for ckt-1 and 14th Nov to 26th Nov for ckt-2 respectively.

9.3. NRLDC representative intimated forum that one unit of IGSTPP is under RSD since 11th Oct.

9.4. MS, NRPC was of view that it may be confirmed from Delhi and Haryana SLDC whether they would be scheduling the third unit of IGSTPP during 28th Oct to 10th Nov. Further, he mentioned that if consent is given from Delhi and Haryana SLDC that they would not be scheduling the third unit of IGSTPP during 28th Oct to 10th Nov, then NHAI shutdown may be facilitated during this period. If NHAI shutdown is facilitated during 28th Oct to 10th Nov, then the shutdown of Jhajjar-Daulatabad transmission line may be the deferred till the completion of NHAI shutdown.

**10. Punching of Outages on OMS Portal of NRLDC (Agenda by NRPC Sectt.)**

10.1. NRPC OCC forum agreed to the revised proposed timelines for utilities to punch their respective outages in OMS portal as follows:

| **Type of Element** | **Dates b/w which outage to be punched in NRLDC OMS portal** |
|---|---|
| For HVDC and inter-regional lines (under NLDC jurisdiction) | 1st to 5th of every month |
| For Generating utilities and 440kV and below HVAC lines (under NRLDC jurisdiction) | 1st to 5th of every month |

10.2. Further, OCC forum agreed to NRLDC request for providing 5 working days for analysis and study of the punched outages on OMS portal before conducting the OCC meeting.

**11. Regarding NPCIL RAPS-B Unit-1 outage w.e.f 27/10/2022 to 28/05/2024 (around 577 days) for mandatory replacement of reactor components. (Agenda by RAPS)**

11.1. In the meeting, NRPC representative mentioned that NPCIL has intimated that RAPS-B unit-1 outage is being taken for mandatory replacement of Enmasse Reactor Coolant Channels & reactor feeders w.e.f 27/10/2022 to 28/05/2024 (around 577 days) as per LGBR subcommittee meeting dtd 27/10/2021 & 27/09/2022 and OCC-199 approval dtd 16/09/2022.

11.2. NR-1 Further, NPCIL has also mentioned that RAPS-B unit-2 will continue to operate & no planned outage is proposed (except emergency/ forced shutdown / trips if any) in this period (27/10/2022 to 28/05/2024).

11.3. In this regard, NPCIL has stated that beneficiary DISCOMs (UPPCL, JKPCL, PSPCL, HPPC & Rajasthan) may kindly arrange respective 50% share from other resources, for meeting their requirements during the period (27/10/2022 to 28/05/2024).

11.4. OCC forum noted the same.

**12. Setting up of 3000TPD Municipal Solid Waste (MSW) based Waste to Energy (WtE) facility at Narela- Bawana by MCD. (Agenda by NR-1 Powergrid)**

12.1. In the meeting, NR-1 Powergrid representative presented the matter to the forum and intimated that MCD for Setting up of 3000TPD Municipal Solid Waste (MSW) based Waste to Energy (WtE) facility at Narela- Bawana has

requested Powergrid for shifting of following transmission lines on multi-circuit towers so that the required space for setting up of plant can be made available:

- 400 kV D/C Bawana-Bahadurgarh-Bhiwani transmission line of Powergrid
- 400kV D/C Bawana-Bamnauli transmission line of DTL

12.2. Further, NR-1 Powergrid has intimated that in a meeting held at the office of Chief Secretary, Delhi with the concerned stakeholders it was decided to shift these lines of different utilities on multi-circuit towers in view of national importance of the project.

12.3. OCC forum directed Powergrid, as the above matter involves shift of lines of different utilities on multi-circuit towers, henceforth, there may be various operational and commercial issues that powergrid may discuss with DTL and after working out the modalities with DTL, Powergrid may then approach OCC forum.

**13. Upgradation of Equipment in 220KV Zainakot bays at Wagoora S/S (Agenda by NR-2 Powergrid)**

13.1. In the meeting, NRPC representative presented the matter to the forum. JKPTCL vide its letter dated 20.09.2022 has intimated that they are going to carryout re-conductoring of 220KV Wagoora Zainakot-1 with HTLS conductor including strengthening of bay at Zainakot end. As per JKPTCL, after re-conductoring, thermal rating of 220KV Wagoora Zainakot Ckt-1 will be 1600 Amp. They had also intimated POWERGRID to upgrade Zainakot 1 bay at Wagoora to match line rating.

13.2. J&K representative intimated that shutdown for the cited activity has been availed by them till 25.11.2022 and admitted that there was delay on JKPTCL part in intimating powergrid about the abovesaid work.

13.3. NR-2 Powergrid mentioned that as they were informed about the work in short notice i.e. on 12.10.2022 and accordingly, as per the present condition, they are only in position to upgrade the bay CT's. Other equipment/hardware for said bays at Wagoora end would be upgraded in 04 to 05 months under ADDCAP.

13.4. OCC forum asked JKPTCL to comply with the observations of Powergrid.

**14. Additional Agenda No.1: Difference in drawl schedule finalized by NRLDC and drawl schedule used by NRPC for finalizing the DSM and Energy Account of Uttar Pradesh (Agenda by UPSLDC)**

14.1. UPSLDC vide its letter dated 29.09.2022 (copy enclosed as **Annexure A.III**) has mentioned about the consistent difference of approx. 70MW in each time

block in the drawl schedule finalized by NRLDC and drawl schedule used by NRPC for finalizing the DSM and Energy Account of UP from 9th June 2022 onwards. (Data from April 2022 to august 2022 is attached.)

14.2. Further, UPSLDC submitted that there appears some change in methodology for preparing accounts at NRPC end due to which drawl schedule of UP is not incorporated correctly in monthly DSM and Energy Account.

14.3. NRLDC representative mentioned that schedule of states having entitlement in TALA HEP is replaced by actual injection from TALA HEP in proportion to the entitlement of the state in TALA HEP in order to nullify deviation caused by TALA HEP.

14.4. NRPC representative intimated that somewhere b/w 01.01.2022 and 18.03.2022 sign of SEM data changed on part of ERLDC of TALA HEP.

14.5. Sign Change for TALA HEP was not intimated to NRPC Sectt. at the time of furnishing of SEM data by NRLDC, henceforth the provision for sign change was not taken into account while preparing DSA and REA.

14.6. The discrepancies have become significant after onset of high flow season for Hydro Electric Stations in the month of June when average schedule given to TALA HEP is 846 MW as compared to the previous period where average schedule given was 127 MW.

14.7. NRLDC intimated that after their deliberation with ERLDC, a meeting will be held in a week's time amongst the concerned officials of NRPC Sectt., NRLDC and ERLDC for the corrective course of action.

14.8. OCC forum directed NRLDC that in future any such incidence of change in SEM configuration shall also be communicated to NRPC Sectt. so that same is taken into account while preparing the DSA and REA accounts.

**15. Additional Agenda No.2: CERC (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022 (Agenda by NRPC)**

15.1 NRPC representative intimated OCC forum that CERC has notified Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022.

15.2 Salient points of the GNA Regulations, 2022 were presented to the forum by NRPC representative.

15.3 OCC forum noted the information.

**16. Additional Agenda No.3: Singrauli St-2 PG test of DDCMIS System (Unit# 6 & Unit#7, 500MW Units) (Agenda by NTPC)**

16.1 NTPC representative intimated OCC forum that Singrauli St-2 PG test of DDCMIS System (Unit# 6 & Unit#7, 500MW Units) is tentatively planned in the

month of November. This test is necessary for providing Grid reliability & System Support as well as checking and ensuring ramping capability of station and healthiness of DDCMIS System.

16.2 Further, he also stated that each Unit PG test will take around 2 days. During PG test of load will be reduced as per test procedure.

16.3 NRLDC representative asked NTPC to share test procedure with the concerned beneficiaries for their consent.

16.4 UPSLDC representative asked NTPC to share the complete details of the test procedure with power management cell of UP for their consent.

16.5 OCC forum was of opinion that NTPC shall share the complete details of the test procedure with in the constituents and within three days constituents have to reply to NTPC and if no reply is received from constituents, then NTPC may go ahead with the PG test.

16.6 Further, NTPC was asked by forum to conduct the test on weekends.

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

## 17. NR Grid Highlights for September 2022

NRLDC representative highlighted following points related to NR grid operation for Sep 2022:

- Maximum energy consumption of Northern Region was **1710.43 Mus** on 09th September'22 and it was 23.2 % higher than September' 2021 (1388.05 Mus 06th September'21)

- Average energy consumption per day of Northern Region was **1435.92 Mus** and it was 18.5 % higher than September'21 (1211.88 Mus per day)

- Maximum Demand met of Northern Region was **75673 MW** on 09th September'22 @13:00 hours (*based on data submitted by Constituents)* as compared to 63559 MW on 06th September'21 @21:00 hours.

**Northern Region all time high values recorded in September'2022:**

| **State** (Maximum Demand Met) | **All Time High Record** | | **Previous Record (upto August-22)** | |
|---|---|---|---|---|
| | **Value (MW)** | **Achieved on** | **Value (MW)** | **Achieved on** |
| Uttar Pradesh | 26002 | 10.09.2022 at 21:00 | 25951 | 15.07.2022 at 23:00 |

| | | | | |
|---|---|---|---|---|
| Jammu & Kashmir (UT) and Ladakh (UT) | 2967 | 30.09.2022 at 07:00 | 2826 | 03.02.2022 at 19:00 |

| **State** (Maximum Demand Met) | **All Time High Record** | | **Previous Record (upto August-22)** | |
|---|---|---|---|---|
| | **Value (MU)** | **Achieved on** | **Value (MU)** | **Achieved on** |
| Rajasthan | 328.86 | 09.09.2022 | 323.84 | 09.06.2022 |

| **Solar Generation** | **All Time High Record** | | **Previous Record (upto August-22)** | |
|---|---|---|---|---|
| | **Value (MU)** | **Achieved on** | **Value (MU)** | **Achieved on** |
| | 121.81 | 03-09-2022 | 118.73 | 10.08.2022 |

Frequency Data

| **Month** | **Avg. Freq. (Hz)** | **Max. Freq. (Hz)** | **Min. Freq. (Hz)** | **<49.90 (% time)** | **49.90 – 50.05 (% time)** | **>50.05 (% time)** |
|---|---|---|---|---|---|---|
| **Sep' 22** | 50.00 | 50.31 | 49.50 | 5.94 | 80.77 | 13.29 |
| **Sep' 21** | 50.00 | 50.23 | 49.50 | 4.87 | 77.01 | 18.12 |

***Detailed presentation as delivered by NRLDC representative is attached as Annexure-B.I. Diwali demand forecast assessed by NRLDC was also presented and is attached as Annexure-B.II.***

**18. Winter preparedness**

NRLDC representative stated that in 199 OCC meeting, it was deliberated that winter in Northern region is likely to start from mid of October till February end, and the challenges faced during these months were deliberated. During winter, demand of NR states except Rajasthan and hilly states starts reducing. With decreasing temperatures, winter also brings some severe challenges to NR grid operators:

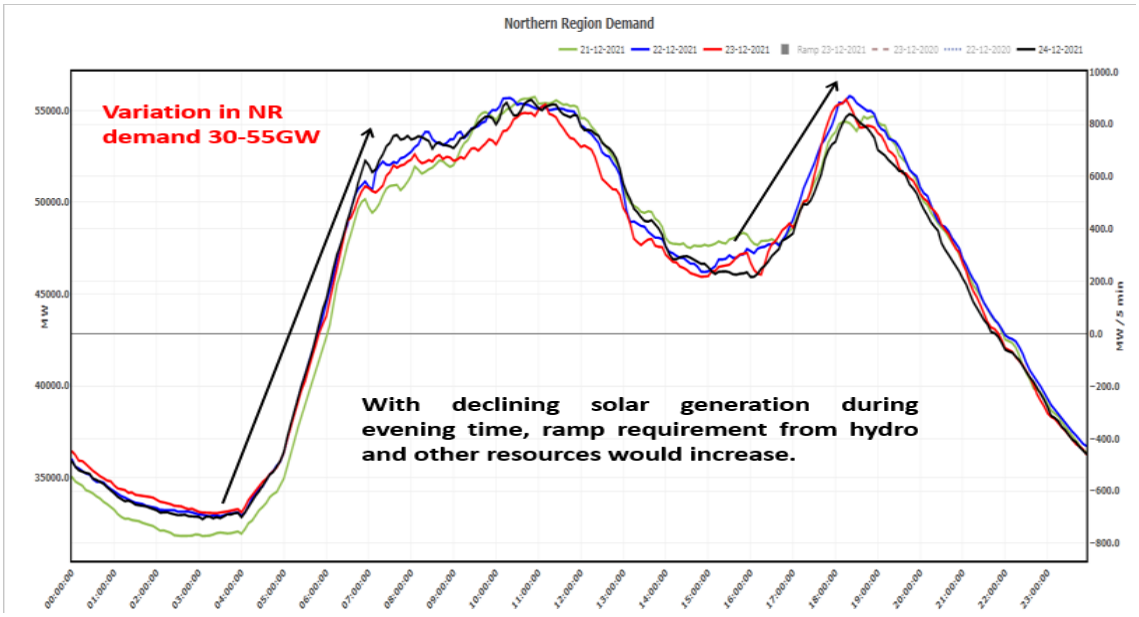
(i) Load-generation balance including matching ramp in demand which is increasing with increased solar generation

(ii) High voltages in grid

(iii) EHV lines trip during fog/Smog
(iv) Load crash due to inclement weather
(v) Frequent tripping of ICTs on overflux and lines on overvoltage

Accordingly, utilities were requested to follow following measures for safe and secure operation of grid during winter months:

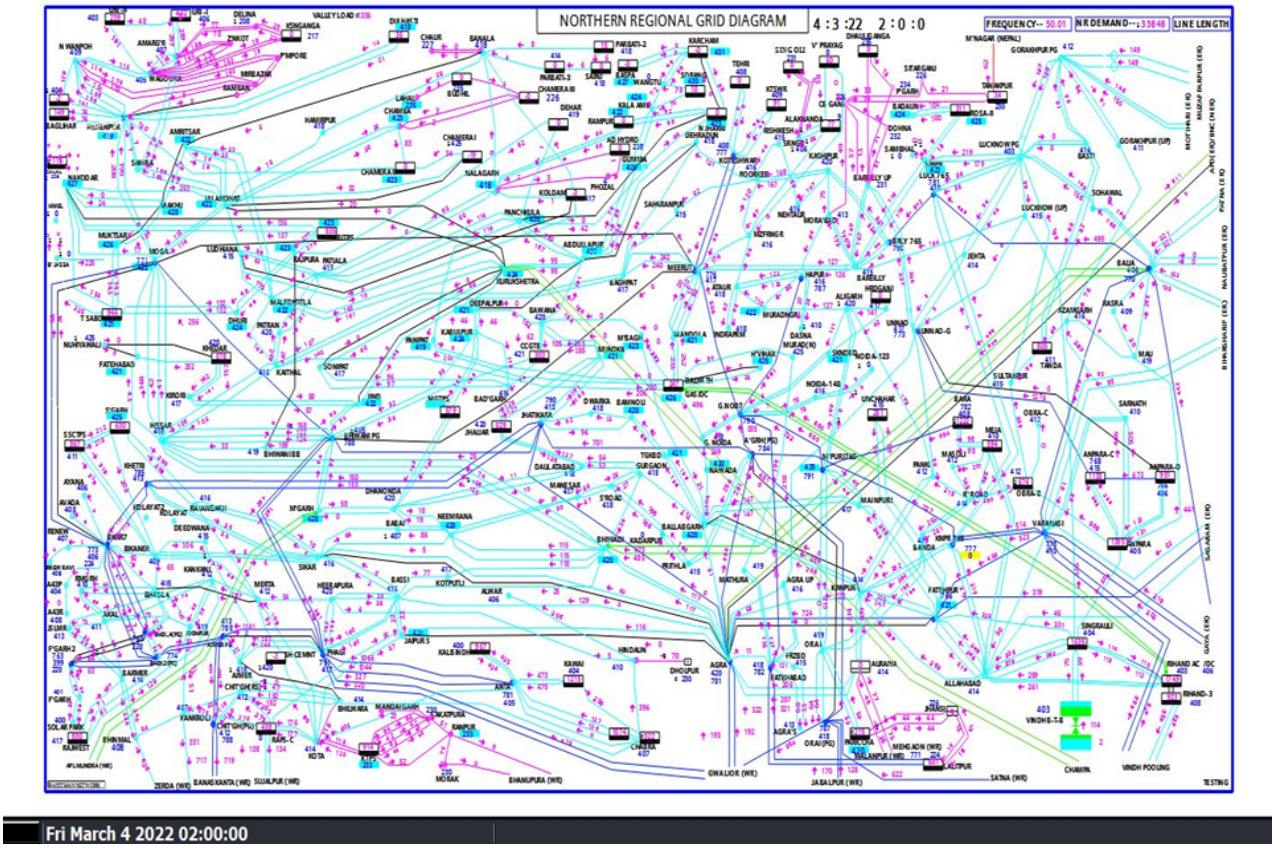
- Forecast of demand ramp is important and so SLDCs were advised to forecast demand and ramp rate of demand especially for morning and evening peaks so that commensurate ramping of generation can also be planned.
- ISGS hydro stations are being scheduled by NRLDC to provide maximum support and requisite ramp rate during peak hours, keeping in view their forecasted daily energy availability as well as mechanical availability. SLDCs were also requested to optimally schedule their hydro and gas generation to make sure that demand as well as ramp requirements are met.
- Sample plots of NR demand from the months of Dec'2021 were presented in the meeting and utilities were asked to make sure that generating resources are made to ramp up/down as per demand requirement.




- Minimize generation to technical minimum as per IEGC guidelines /CERC directions during low demand.
- Optimum utilization of Hydro resources for meeting peak hour demand.
- Ensure additional trained manpower is available especially during night hours at all major control centres/ substations
- All system operators and transmission utilities shall regularly monitor weather forecast site ( Weather portal for power sector)

***OCC members agreed to take above actions for better frequency control in the grid.***

Apart from above, persistent issue of high voltage in Northern region was also deliberated. Snapshot for one of the instance of high voltage in Northern region was presented in the meeting and it was mentioned that even after utilizing available reactive power management tools including opening of lightly loaded lines, severe high voltages are observed in the Northern region and therefore all the actions discussed for high voltage management need to be strictly followed by all the utilities.




Following measures need to be taken to manage high voltages in the grid during winter months:

- Ensuring disconnection of capacitors & switch on of reactors.
- Ensuring healthiness of all commissioned reactors in the system
- Monitoring of reactive power performance of generators and exchange of reactive power with ISTS through SCADA displays.
- Ensuring reactive power support (absorption) from generating stations by operating units upto their capability limits.
- ***It was discussed that there has been change in SVC set points of Ludhiana SVC. POWERGRID NR-2 was asked to communicate as per which***

***instructions set points were changed. NR-2 representative agreed to provide update through mail.***

- Synchronous condenser operation especially of hydro units during night hours for dynamic voltage support. Some of the generators have already been tested successfully (Tehri, Chamera, Pong etc.) in synchronous condenser mode and shall be available for condenser mode of operation as and when required. As discussed in 199 OCC, RSD is expected to be used as synchronous condenser from this winter.

| S.No | Generator | Capacity (MW) |
|---|---|---|
| 1 | Pong | 396 |
| 2 | Larji | 126 |
| 3 | Ranjit Sagar HEP | 600 |
| 4 | Rana Pratap Sagar | 172 |
| 6 | Tehri | 500 |
| 7 | Chamera -2 | 300 |

In 200 OCC meeting, following was discussed with respect to synchronous condenser mode of operation:

- ***RSD representative stated that each generating unit of capacity 150MW has been able to absorb 10MVAR when operated as synchronous condenser. Under excitation limiter is limiting further MVAr absorption.***
- ***NRLDC representative stated that generally unit should be able to absorb much higher MVAR whereas the unit is only absorbing 5-6% of MVA capacity which is very low. THDC representative added that generally they are able to absorb upto 30-40% of their MVA capacity.***
- ***NRLDC representative requested that report/reasons submitted by OEM limiting further MVAR absorption by RSD generating units may be shared with NRPC/ NRLDC.***
- ***HP representative stated that the matter has been taken up with DISCOM for using Larji as synchronous condenser however response is pending. NRLDC representative stated that the matter is pending since long and may be taken on priority, if required separate online meeting may be convened with NRLDC, NRPC, HP SLDC and Larji.***

- ***NHPC representative stated that Unit-5 of Chamera-2 has been tested for synchronous condenser mode of operation and Unit-3 may also be tested this year. Further, testing may be carried out after confirmation from NHPC for utilisation as synchronous condenser.***
- ***BBMB representative stated that two machines are under overhauling and other machines are available for synchronous condenser mode of operation.***

- ICT Tap Optimization at 400kV & above is carried out every year by NRLDC. Same exercise needs to be carried out by SLDCs at 220kV & below levels. ***It was requested that present tap postions may be shared by all utilities with NRLDC.***
- Opening of EHV lines based on expected voltage reduction and also considering security & reliability of system. This exercise to be done at 400kV and above voltage level by NRLDC and 220kV and below voltage level by SLDCs, but only as the last resort after utilizing all other resources.
- To ensure that line reactors are available even after opening of lines are optimally utilized it is necessary that updated details of all the stations where the provision of using line reactors as bus reactors exist, is available at all control centres. The Reactive power document being compiled by NRLDC has the details of all such line reactors. Last updated document is available at NRLDC website under documents section:
  *https://nrldc.in/download/nr-reactive-power-management-2022/?wpdmdl=9908*
- All utilities were requested to go through the document and report if any incorrect or missing information is noticed. The document is being utilized in real-time operation by control room operators at NRLDC, and thus it is necessary that list of all reactors where such provision is available are updated in the document.

***OCC members agreed to take above actions for high voltage management in the grid. All states were requested to prepare and share high voltage management plan for winter months with NRPC/ NRLDC. It was discussed that such plan would include instructions with priority to manage high voltage during winter months.***

***MS NRPC stated that such plan developed by states should be readily available with NRLDC as well as SLDC control room officials so that effective voltage control is possible during winter months and real-time operator at SLDC as well as RLDC end are aware of the actions to be taken.***

It was also mentioned that there is severe fog in Northern region especially from 15 Dec- 15 Feb period every winter and it has been observed from past experiences that the tripping of transmission lines also increases during night hours in case of fog. Therefore, adequate precautionary measures as mentioned below need to be taken so as to ensure safe and secure grid operation during winter months.

- ***All the protection settings need to be as approved by NRPC so as to avoid any false tripping on overvoltage or overflux protection.***
- Priority wise cleaning & replacement of damaged insulators.
- Monitoring progress of cleaning and replacement of porcelain insulator with polymer insulator and furnishing updated status to NRPC/NRLDC.

***NRLDC representative stated that status of insulator cleaning and replacement of damaged insulators/ porcelain insulator with polymer insulators was requested in 199th OCC meeting as well, however status is pending from all the utilities. Utilities were requested to share the latest status at the earliest.***

***NRLDC representative also presented list of lines which had frequently tripped from 21:00 hrs to 0900hrs during 15 Dec 2021- 15 Feb 2022. It was requested that after submission of status of insulator replacement and cleaning, NRLDC may also suggest some important lines for which insulator cleaning and replacement may be prioritized.***

***Utilities were requested to prepare and share plan for measures to be taken by them for carrying out pre-winter maintenance activities. Same may be shared by utilities via mail with NRPC/NRLDC before OCC meeting.***

**19. TTC/ATC of state control areas for winter 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.

Based on feedbacks received till date, SLDCs were requested to go through the tentative ATC/TTC limits for November 2022 (Annexure-B.I 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.II of agenda.

**Punjab**

Punjab SLDC was requested to share:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Plan to control high voltages during winter months

Punjab SLDC representative informed that some 220kV lines are being kept open continously during winter months to control high voltage in state control area. These

lines are kept open till summer months. SLDC should also endevaour to keep some units on bar to ensure sufficient MVAR absorption locally.

NRLDC representative requested that the list of such 220kV lines may be shared with NRLDC/ NRPC.

**UP**

UP SLDC was requested to provide update on:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Status of Obra and Sohawal SPS
- Reason for non-operation of SPS at Gorakhpur(UP) on 19.09.2022.

UP SLDC representative informed that:

- Present generation is range of 11000MW for which ATC has already been calculated. If internal generation is further reduced, revised ATC/TTC limits would be submitted to NRLDC.
- Offer negotiation is under progress for Obra SPS while work on Sohawal SPS is under progress.
- On 19.09.2022, one ICT was already under shutdown at Gorakhpur(UP), further LBB protection operated and 500MVA ICT further tripped and only 315MVA ICT remained in service. 7 out of 8 220kV lines had tripped as per SPS, however still the loading of transformer was beyond the overcurrent setting.

NRLDC representative stated that detailed report may be shared and reason for non-operation of one of the 220kV feeder may be investigated. Works for Obra and Sohawal SPS may be expedited so as to complete the work atleast before next summer.

**Rajasthan**

Rajasthan SLDC was to provide update on:

- Revised ATC/TTC limits of Rajasthan state control area for winter 2022-23. NRLDC had shared few observations on the ATC/TTC limits assessed by Rajasthan state control area.
- SPS for 400/220kV Bhadla and Bikaner ICTs.

During last 30 days, loading was above N-1 contingency limits of 400/220kV ICTs at Ajmer(RJ), Jodhpur(RJ), Chittorgarh, Merta(RJ) and Bikaner(RJ) when import of Rajasthan was close to their ATC limits.

It was discussed that ATC/TTC assessment for winter 2022-23 has been submitted by Rajasthan SLDC and NRLDC has provided comments on the studies. It was requested that Rajasthan may further clarify following issues in simulation basecase as well as real-time:

- Low voltage at 400/220kV Hindaun and Alwar
- Loading of 400/220kV ICTs such that SPS is able to provide relief in case of N-1 contingency

- High loading of 220kV lines such as 220kV Sikar(PG)-Sikar(RS) D/C (320MW each ckt), 220kV Bassi-Dausa D/C (280MW each ckt), 220kV Agra-Bharatpur, 220kV Neemrana-Neemrana, 220kV Bhiwadi-Bhiwadi (all these loaded >300MW)

It was also requested that load of Hindaun and Alwar area may be staggered till the time additional connectivity is implemented so as to manage low voltages at these stations.

Rajasthan SLDC representative agreed to provide their response to the issues highlighted by NRLDC in one/ two week.

**Delhi**

Delhi SLDC was requested to ensure sufficient intrastate generation on bar during winter months, which would help in providing the required MVAR absorption to limit high voltages during winter months

Delhi SLDC was requested to share:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Plan to control high voltages during winter months
- Status of commissioning of reactors.

Delhi SLDC agreed to share the updated status and high voltage management plan through mail.

**Haryana**

Haryana SLDC was asked to provide update on:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Plan to manage loading of 400/220kV Deepalpur and Panipat ICTs.
- Plan to control high voltages during winter months

Haryana SLDC agreed to share the updated status and high voltage management plan through mail.

**Uttarakhand**

Uttarakhand SLDC representative visited NRLDC to finalise SPS for 400/220kV Kashipur and 220kV CBGanj-Pantnagar line as there were some issues regarding SPS scheme which needed to be discussed.

During last 30 days, loading was above N-1 contingency limits of 400/220kV ICTs at Kashipur when import of Uttarakhand was close to their ATC limits.

Uttarakhand SLDC representative stated that revised SPS scheme has been mailed to NRLDC on 17.10.2022. NRLDC representative stated that they shall provide their observations vide mail.

**HP**

HP SLDC was asked to provide update on:

- Revised ATC/TTC limits of HP state control area for winter 2022-23.
- Plan to control N-1 compliance of 400/220kV Nallagarh ICTs and high loading of 220kV Nallagarh-Upernangal D/C. Same has also been shared with CTU/CEA in quarterly operational feedback

HP representative informed that:

- They shall share ATC/TTC for winter shortly
- To control loading of 220kV Nallagarh-Upernangal line, 400kV line under construction from Nallagarh-Kunihar would be charged at 220kV and LILOed at Upernangal.
- Punjab and Chandigarh have also planned further drawl for areas presently fed from Nallagarh, accordingly HP would plan further ICT augmentation requirement at 400/220kV Nallagarh

POWERGRID representative stated that 400/220kV Nallagarh ICTs remain heavily loaded and while availing shutdown of one ICT, loading management on other ICTs become difficult. Switchgear at Nallagarh end are under ownership of HPSEB and if higher rating equipments is required, same may be taken up by HPSEB.

**J&K**

Loading of 400/220kV Amagarh ICTs was close to N-1 contingency limits for last 30 days

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/T s are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC.

It was again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC. NRLDC is continuously sending emails in real-time for ensuring N-1 compliances as well as restricting schedule till ATC limit and maximizing internal generation. SLDCs need to ensure this during real-time operation.

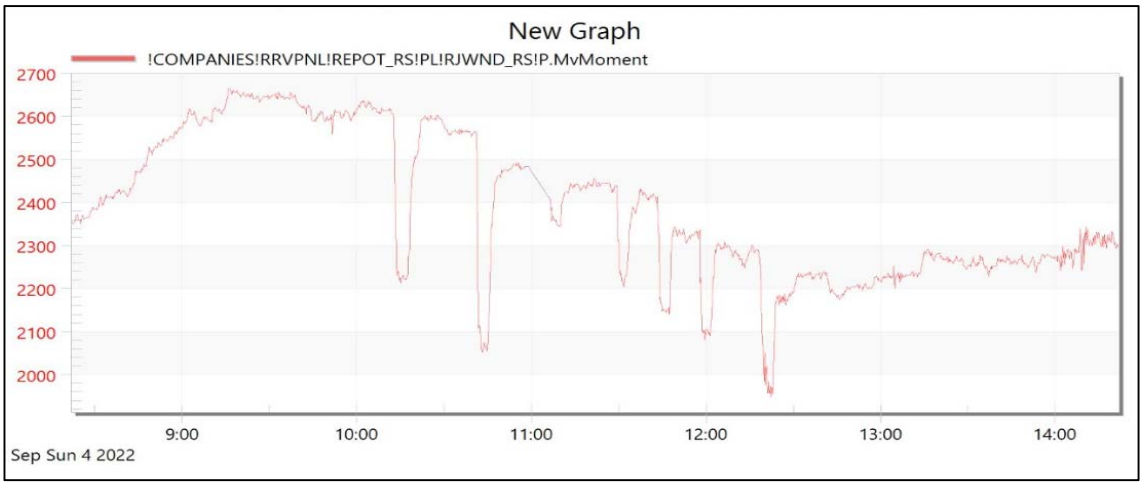
***Members agreed to take actions in this regard.***

## 20. Grid operation related issues

### (i) Wind generation fluctuation in Rajasthan control area

It was discussed that various dips were observed in Rajasthan wind generation between 10:10 hrs to 12:30 hrs in the tune of 200 MW to 500MW on 4th September

2022. During this time huge variations in voltage were also observed in RE pooling substations of Rajasthan state control area such as Jaisalmer, Ramgarh, Bikaner and Bhadla.




In 199th OCC meeting, Rajasthan SLDC was asked to gather wind speed, voltage profile, MVAR drawl and action taken from RE developers and RE pooling stations. Cut-in & cut-out speed for wind turbines may also be gathered along with actual wind speed data. It was also requested that wind generators may be asked to provide reasons for manually tripping wind turbines as soon as voltages fall below 0.9 p.u. & what issue would be there if machine is made to operate at slightly lower voltage say 0.88 p.u. Rajasthan SLDC agreed to provide update on the above issues.

***Rajasthan SLDC representative informed that some of the wind developer such as those having SUZLON machines are manually tripping their units when voltages are getting below 0.9 p.u.. MVAR drawl by solar generators, wind generators and load is coinciding which is leading to severe low voltages especially in Western Rajasthan pockets. NRLDC representative requested that SUZLON may be asked to furnish the reason for manually tripping their units and a separate meeting with Rajasthan SLDC, NRLDC, NRPC and wind developers may be convened.***

**(ii) MVAR support from generators**

NRLDC representative stated that during winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings,

it is seen that MVAR data telemetry is poor/ inaccurate from most of the state generating stations. For some of the generators it is seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 30 days (12 Sep 2022 – 12 Oct 2022) was presented in the meeting:

| S.No. | Station | Unit No. | Capacity | Geographical location | MVAR capacity as per capability curve (on LV side) | MVAR performance (-) Absorption (+) Generation (HV side data) | Voltage absorption above (in KV) |
|---|---|---|---|---|---|---|---|
| 1 | Dadri NTPC | 1 | 490 | Delhi-NCR | -147 to 294 | -170 to 90 | 412 |
| | | 2 | 490 | | -147 to 294 | -180 to 90 | 414 |
| 2 | Singrauli NTPC | 1 | 200 | UP | -60 to 120 | -25 to 25 | 406 |
| | | 2 | 200 | | -60 to 120 | -30 to 10 | 405 |
| | | 3 | 200 | | -60 to 120 | -20 to 25 | 409 |
| | | 4 | 200 | | -60 to 120 | -40 to 15 | 406 |
| | | 5 | 200 | | -60 to 120 | -30 to 0 | 405 |
| | | 6 | 500 | | -150 to 300 | -80 to 10 | 402 |
| | | 7 | 500 | | -150 to 300 | -60 to 10 | 402 |
| 3 | Rihand NTPC | 1 | 500 | UP | -150 to 300 | -110 to 20 | 404 |
| | | 2 | 500 | | -150 to 300 | -80 to 20 | 403 |
| | | 3 | 500 | | -150 to 300 | -165 to 0 | 400 |
| | | 4 | 500 | | -150 to 300 | -90 to 30 | 404 |
| 4 | Kalisindh RS | 1 | 600 | Rajasthan | -180 to 360 | -120 to 120 | Voltage data issue |
| | | 2 | 600 | | -180 to 360 | -120 to 40 | |
| 5 | Anpara C UP | 1 | 600 | UP | -180 to 360 | -100 to 60 | Voltage data issue |
| | | 2 | 600 | | -180 to 360 | -100 to 60 | |
| 6 | Talwandi Saboo PB | 1 | 660 | Punjab | -198 to 396 | -200 to 100 | 420 |
| | | 2 | 660 | | -198 to 396 | -200 to 80 | 420 |
| | | 3 | 660 | | -198 to 396 | -200 to 80 | 420 |
| 7 | Kawai RS | 1 | 660 | Rajasthan | -198 to 396 | -100 to 50 | 405 |
| | | 2 | 660 | | -198 to 396 | -120 to 50 | 402 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 8 | IGSTPP Jhajjar | 1 | 500 | Haryana | -150 to 300 | -120 to 100 | 412 |
| | | 2 | 500 | | -150 to 300 | -130 to 100 | 412 |
| | | 3 | 500 | | -150 to 300 | - | - |
| 9 | Rajpura (NPL) | 1 | 700 | Punjab | -210 to 420 | -240 to 80 | 410 |
| | | 2 | 700 | | -210 to 420 | -240 to 80 | 410 |
| 10 | MGTPS | 1 | 660 | Haryana | -198 to 396 | -140 to 80 | 412 |
| | | 2 | 660 | | -198 to 396 | -140 to 80 | 412 |
| 11 | Bawana | 1 | 216 | Delhi-NCR | -64.8 to 129.6 | - | - |
| | | 2 | 216 | | -64.8 to 129.6 | -60 to 40 | 410 |
| | | 3 | 216 | | -64.8 to 129.6 | -70 to 20 | 410 |
| | | 4 | 216 | | -64.8 to 129.6 | -40 to 60 | 412 |
| | | 5 | 253 | | -75.9 to 151.8 | -40 to 60 | 415 |
| | | 6 | 253 | | -75.9 to 151.8 | -40 to 60 | 415 |
| 12 | Bara PPGCL | 1 | 660 | UP | -198 to 396 | -80 to 60 | 765 |
| | | 2 | 660 | | -198 to 396 | -80 to 90 | 765 |
| | | 3 | 660 | | -198 to 396 | -100 to 50 | 765 |
| 13 | Lalitpur TPS | 1 | 660 | UP | -198 to 396 | -60 to 180 | 775, 785 |
| | | 2 | 660 | | -198 to 396 | -30 to 160 | 775, 785 |
| | | 3 | 660 | | -198 to 396 | -90 to 180 | 760, 780 |
| 14 | Anpara D UP | 1 | 500 | UP | -150 to 300 | -130 to 80 | 765 |
| | | 2 | 500 | | -150 to 300 | -140 to 80 | 765 |
| 15 | Chhabra TPS | 1 | 250 | Rajasthan | -75 to 150 | -70 to 20 | 405 |
| | | 2 | 250 | | -75 to 150 | -80 to 20 | 405 |
| | | 3 | 250 | | -75 to 150 | - | - |
| | | 4 | 250 | | -75 to 150 | - | - |
| | | 5 | 660 | | -198 to 396 | -80 to 100 | 410 |
| | | 6 | 660 | | -198 to 396 | -90 to 90 | 410 |

***All generating stations were asked to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine. It was also discussed that some of the generating units such as Dadri, Bawana may explore possibility of further MVAR absorption. Generators may also set their Vsch (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement.***

***Members agreed to take actions in this regard.***

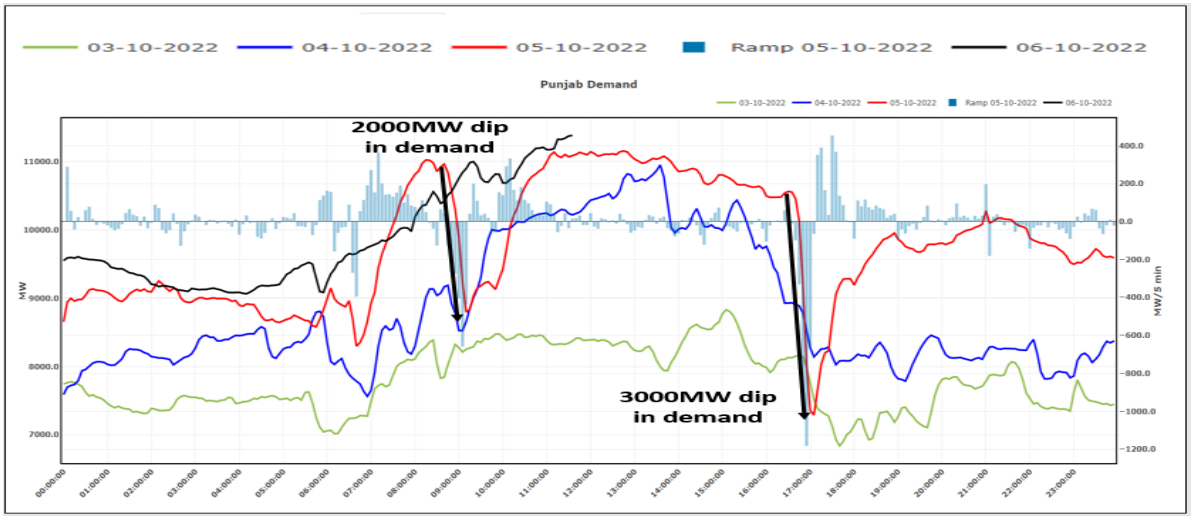
**(iii) Large variations in drawal pattern and too much reliance on RTM by states**

As per IEGC clause 5.2(j),

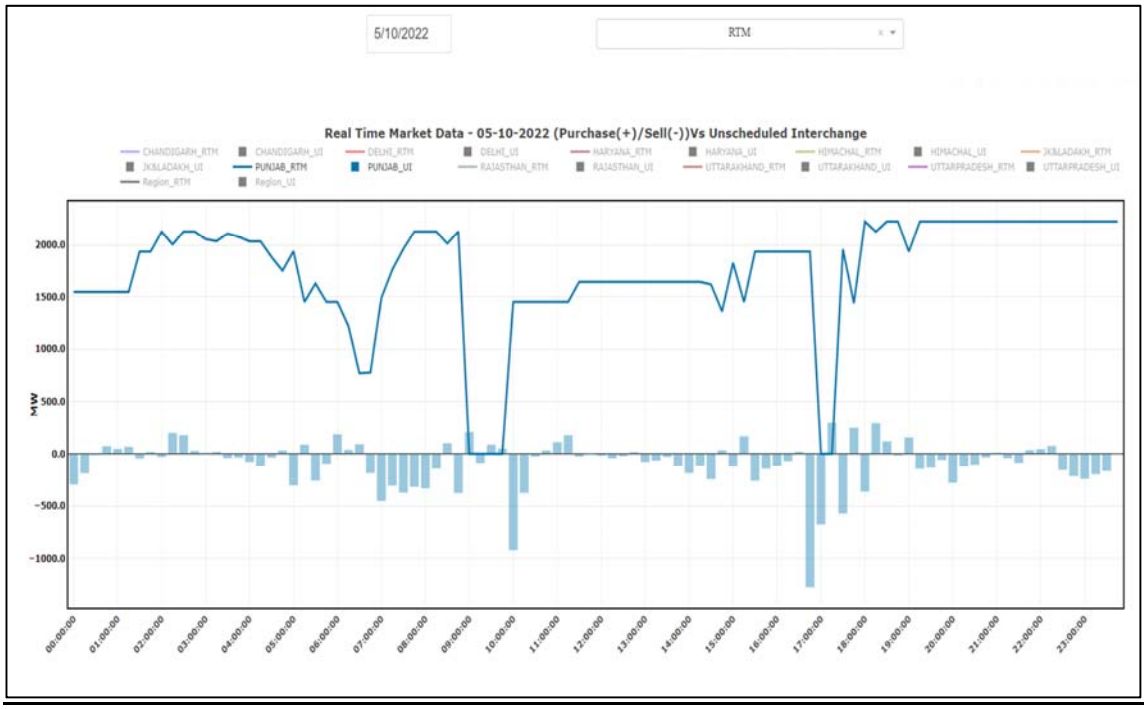
“No User/SEB shall cause a sudden variation in its load by more than one hundred (100 MW) without prior intimation to and consent of the RLDC”.

State control areas are mandated as per IEGC clause 5.3 to balance their portfolio in operational planning as well as in real-time operation as per clause no. 5.4 of IEGC.

It has been observed that Punjab control area has changed its drawl by large quantum during hourly boundaries at 07:00Hrs, 09:00Hrs, 10:00Hrs and 17:00Hrs on 05.10.2022. The trends (5 minutes’ average) of Punjab demand for the period 03.10.2022 to 05.10.2022 is shown below:




The trends of deviations by Punjab and corresponding purchase in RTM for 05.10.2022 is shown below:




It can be seen that Punjab has been depending on RTM (Real Time market) for purchase of power for most part of the day since 01/10/2022. In case of non-availability of power in RTM, Punjab is resorting to load shedding.

The matter has been taken up with Punjab multiple times in the form of operational messages and deviation messages from NRLDC control room. The large deviations causing low/high frequency excursions occurring almost on daily basis are detrimental to the Grid reliability.

During high demand period, the prices in power exchange also increase and at times power is unavailable in RTM (Real time market). Thus too much reliance on RTM could be avoided specially during high demand period. Punjab state control area may explore to do better portfolio management through purchase of power in DAM, TAM and STOA etc.

Therefore, it was suggested that SLDC needs to balance portfolio of Punjab state control area in both operational planning as well as real-time operation by initiating necessary control by state authorities.

In view of the increasing peak demand, declining hydro generation in NR and lack of adequate ramping-up reserves during morning and evening peak hours, it was suggested to ensure following measures to restrict deviations from schedule to mitigate low/high frequency excursions:

1. Meticulous load forecasting and operational planning on daily/weekly/monthly basis.

2. Restrict the load variation to the tune of limits specified in IEGC through staggering of load connection/disconnection.
3. Maintain drawal from the Grid as per schedule by proper ramping of on-bar own generation in consonance with the demand variation, to mitigate over-drawal/load shedding.
4. Expedite revival of generating units under reserve shutdown/forced outage and ensure sufficient fuel availability, to maintain adequate spinning reserves.

***Punjab SLDC representative stated that on 5th October one of the state generating unit had tripped and accordingly more power was purchased in RTM. In some blocks when bid was not cleared in RTM for few of the blocks, load shedding was done for some non-essential load.***

***NRLDC representative stated that Punjab was heavily purchasing in RTM from 1-5 Oct 2022 and in case one of the unit has tripped, other state generating unit should be brought on bar to avoid huge dependency on real-time market. Punjab SLDC representative agreed to implement the suggestions of NRLDC in future.***

**(iv) Long outage of transmission elements/ generating units**

Reasons and revival date for elements under long outage are being discussed regularly in OCC meetings.

***Some of the important elements which are under long outage are shown below:***

- 400/220 kV 315 MVA ICT-2 at Mundka (DTL)
- 400kV Bus-2 at Parbati-2 HEP (NHPC)
- 400kV Parbati-3(NHPC)-Sainj(HP) line
- 400kV Bus-2 at Parbati-3 HEP (NHPC)
- 765kV Anpara_D-Unnao(UP) Ckt-1 (UPPTCL)
- 50 MVAR Non-Switchable LR on 400kV Agra-Unnao (UP) Ckt-1 at Agra(UPPTCL)
- 50 MVAR Bus Reactor No 1 at 400KV Moradabad(UPPTCL)

***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.***

**Latest status as available with NRLDC is attached as Annexure-B.III.**

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

In 176th OCC meeting, it was discussed that first time charging procedure is not being diligently followed by some entities. The documents are being submitted at the last minute and thereafter it is being urged to NRLDC to give the code for charging. In the meeting it was also requested that utilities should inform about elements expected for

first time charging in the next one month in advance in OCC meeting. This information would be helpful in carrying out studies, SPS requirement/modification etc. in time.

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

***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.***

**(v) Calculation of Drawal points based on SLDC end data**

In 197 OCC meeting, Haryana SLDC representative informed that SCADA team is working on the issue and trying to determine additional RTUs required for the work. Haryana SLDC was asked to share the details so that same can be incorporated in OCC minutes. However, reply was not received.

Uttarakhand SLDC representative informed that data calculation was already done from SLDC end data and there is difference between the values from NRLDC end and Uttarakhand SLDC end drawl data; few data points are suspected. There are shortages of Multi-Functional Meters, and issues of faulty PLCC links. It was informed by SCADA wing of PTCUL that SCADA had initiated tenders of procurement of MFM and for re-locations of Digital PLCC Panels and expected to be completed by Aug'2022.

Haryana and Uttarakhand SLDCs were requested to provide update on the agenda point.

Haryana representative stated that the issue is arising due to non-availability of redundant points at BBMB stations, the matter is still pending. For these stations 22 points from BBMB s/s are available, if redundant data is required, nearly 70 downstream points need to be added in the list which may take more time for implementation as DISCOM is also involved.

OCC advised Haryana that meanwhile available data from BBMB stations may be used till integration of other end 70 downstream points is completed. It was also discussed that Haryana may mail detailed issues observed with NRLDC SCADA team for further resolution of issue.

Uttarakhand SLDC representative informed that tender is to be awarded within next two weeks.

In 200 OCC meeting, Haryana and Uttarakhand SLDCs were requested to provide update on the agenda point.

***Haryana SLDC representative stated that the maximum possible available from SCADA have been taken and only BBMB station points for drawl assessment are pending due to non-availability of redundant points.***

***Uttarakhand SLDC representative informed that tender work for procurement of equipments has been awarded.***

**21. Frequent forced outages of transmission elements in the month of September'22:**

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

| Sr. No | Element Name | Number of Outages | Utility |
|---|---|---|---|
| 1 | 400kV Banda-Rewa Road(UP) ckt-1 | 3 | UP |
| 2 | 220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1 | 4 | UP |
| 3 | 220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt-1 | 4 | UP |

The complete details are attached at **Annexure-B.IV of agenda**.

**Discussion during the meeting:**

- **400kV Banda-Rewa Road(UP) ckt-1:** *UPPTCL representative stated that there was some issue of noise frequency at Rewa Road end and a function was not enabled in PLCC at Rewa Road(UP) end which led to the initiation of DT command. He further informed that issue with the PLCC has been resolved.*

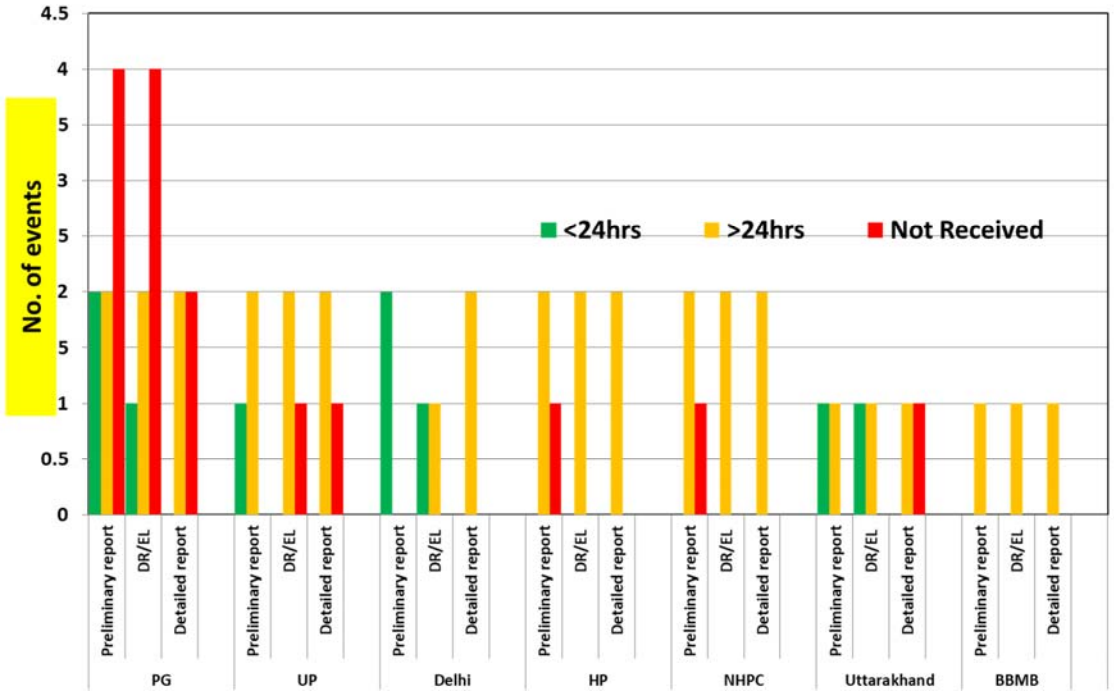
- **220 KV Nara(UP)-Roorkee(UK) (UP) Ckt-1-**: *UPPTCL representative stated that there is some issue in A/R operation in line and issue is being taken up with the ABB engineer.*

- **220 KV Saharanpur(UP)-Khodri(UK) (UP) Ckt-1:** *UPPTCL representative stated that in two cases of delayed clearance of fault, fault was in Z-2 from Sharanpur end and as carrier aided protection is not available in line, fault cleared with the Z-2 time delay.*

***NRLDC representative emphasized that A/R (auto re-closer) issue was found in many of these tripping. He further sensitized all the utilities to ensure healthiness/ in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standards. He further informed that most of the tripping are transient in nature but due to non-operation of A/R, it resulted into tripping of the transmission element thus and reducing the reliability of the grid. All the utilities shall endeavor to keep auto re-closer in service and in healthy condition for 220 kV and above voltage level transmission line.***

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

**22. Multiple element tripping events in Northern region in the month of September '22:**




A total of 21 grid events occurred in the month of September '22 of which **18** are of GD-1 category and **03** are of GI-2 Category. The preliminary report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.V of agenda.**

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

Maximum Fault Duration observed is 1.2 seconds in the event of multiple element tripping at 220kV Sambha, Hiranagar & Sewa on 01st Sept'22. As reported at 17:12hrs, R-ph PT of 132 kV main Bus at Hiranagar blasted and bus bar protection operated. As per PMU at Sambha (PG), R-N fault with delayed clearance of 1280 ms is observed. Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **7** events out of **21** grid events occurred in the month.

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken by respective utilities in OCC & PSC forum. Moreover, utilities may impress upon all concerned for providing the

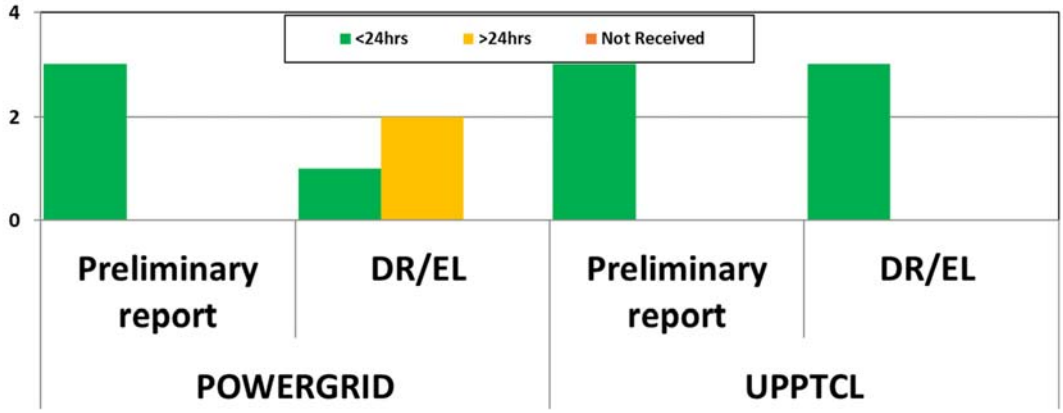
Preliminary Report, DR/EL & Detailed Report of the events to RLDC in line with the regulations.

***NRLDC representative raised concern about poor status of report updation by POWERGRID & Uttarakhand 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.***

**23. Details of tripping of Inter-Regional lines from Northern Region for September' 22:**




A total of 8 inter-regional lines tripping occurred in the month of September'22. The list is attached at **Annexure-B.VI of agenda.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

***NRLDC representative asked SLDC-UP about the reason of frequent fault in 132kV Rihand(UP)-Garwa(JS) (UP) ckt. UP representative stated that they have***

***asked the details from remote end, they will share the same as soon they received it.***

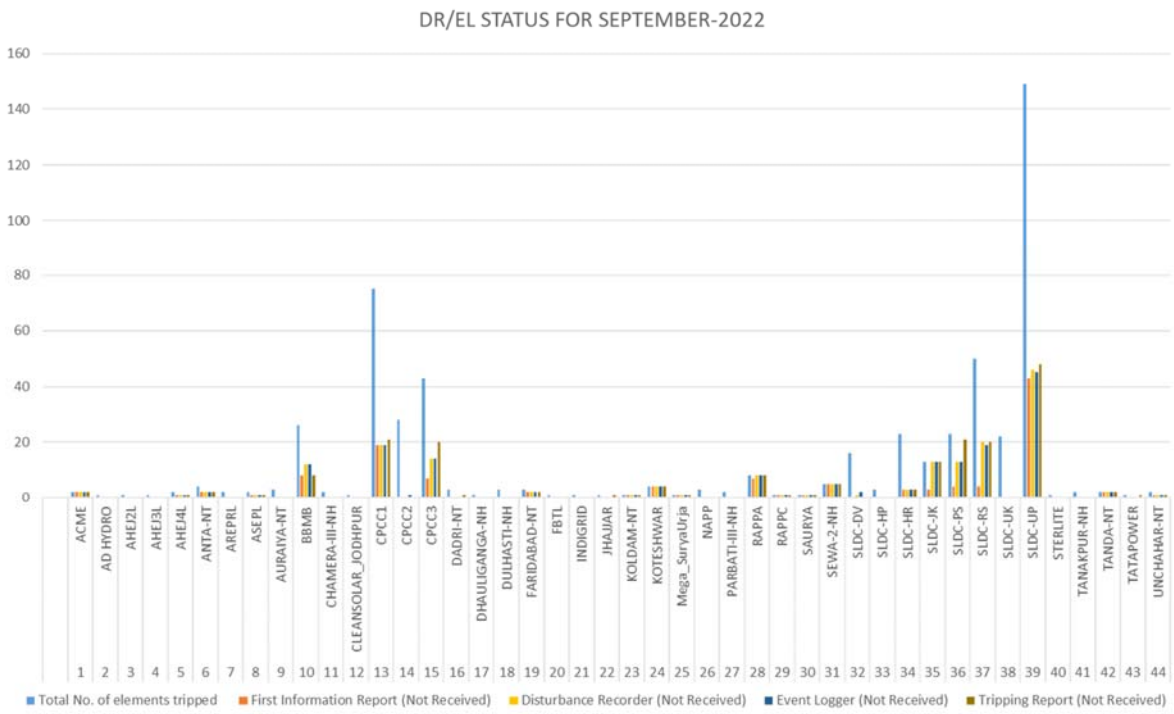
***NRLDC representative requested members to advise the concerned for taking corrective action to avoid such tripping as well as timely submission of the information.***

**24. Status of submission of DR/EL and tripping report of utilities for the month of September'22.**

The status of receipt of DR/EL and tripping report of utilities for the month of September'2022 is attached at **Annexure-B.VII of agenda**. It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement.

***NRLDC representative raised concern about poor status of Punjab, Rajasthan & J&K. Rajasthan representative stated that they are working on to improve the reporting status and will ensure the improvement in reporting status from next month onwards itself.***

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




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

In last 17 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-VIII of agenda.**

It is to be noted that as per regulation 5.2(k) of IEGC, Power System Stabilizers (PSS) in AVRs of generating units (wherever provided), shall be got properly tuned by the

respective generating unit owner as per a plan prepared for the purpose by the CTU/RPC from time to time.

NRLDC representative informed that PSS tuning report of Anpara D TPS (Unit-6 & 7), Obra_B TPS (Unit-9, 10, 11&12) have been received from UP on 15th October 2022.

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

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

**26. Frequency response characteristic:**

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

Table:

| S. No. | Event Date | Time (In hrs.) | Event Description | Starting Frequency (in Hz) | End Frequency (in Hz) | *Δf* |
|---|---|---|---|---|---|---|
| 1 | 11-Sept-22 | 12:22hrs | Region wise FRC for Renewable generation loss of around 3800 MW at Rajasthan renewable generation complex of Northern Region on dated 11th September 2022. The event reported is on 11th Sep 2022, at 12:22 hrs 220kV Bhadla – CSP Jodhpur tripped due to phase to phase fault. During the fault, approximate 3800 MW of solar generation connected to Fatehgarh & Bhadla generation complex reduced due to low bus voltage as | -0.31 | 3500 | 13% |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | reported by Solar Stations. During the incident, four number of 765kV lines emanating from solar complex also tripped. The loss of 3800 MW generation loss has been considered for FRC Calculation. | | | |
| 2 | 17-Sept-22 | 10:14hrs | At 10:14Hrs on Dated 17h-September-2022, As reported, R-phase CT blasted for 220kV Fatehgarh2-AHEJ2L ckt at Fatehgarh2 end. This resulted in tripping of aforementioned line. Subsequent to this, 220kV Fatehgarh2-AHEJ3L tripped on over voltage from AHEJ3L end. Hence, generation loss of 1566 MW has been taken for FRC calculation. | -0.1 | 1566 | 30% |

Status of Data received till date:

| Status of Field Data received of FRC of Grid event occurred at Rajasthan RE complex at 12:22 Hrs on 11.09.2022 | | | |
|---|---|---|---|
| Data Received from | | Data Not Received from | |
| Koteshwar HEP | BBMB | Uttarakhand | APCPL Jhajjar |
| Rihand NTPC | Tanda NTPC | Haryana | Rampur HEP |
| Rosa Reliance | Dadri NTPC | UP | Unchhahar NTPC |
| | HP | Punjab | Karcham HEP |
| | | Rajasthan | AD Hydro HEP |
| | | N. Jhakri HEP | Singrauli NTPC |
| | | Rampur HEP | NHPC |

| Status of Field Data received of FRC of Grid event occurred at Rajasthan RE complex at 10:14 Hrs on 17.09.2022 | | | |
|---|---|---|---|
| Data Received from | | Data Not Received from | |
| Koteshwar HEP | BBMB | Uttarakhand | APCPL Jhajjar |
| Rihand NTPC | Tanda NTPC | Haryana | Rampur HEP |
| Tehri HEP | AD Hydro HEP | UP | Unchhahar NTPC |
| N. Jhakri HEP | | Punjab | Karcham HEP |
| | | Rajasthan | Singrauli NTPC |
| | | Rampur HEP | NHPC |
| | | Dadri NTPC | Rosa Reliance |
| | | HP | |

PFR as per NRLDC SCADA data and generators field data:

## Primary Frequency Response by Generators during Grid Event occurred at Rajasthan RE complex at 12:22 Hrs on 11.09.2022

| Sr. No | Generating stations | FRC as per NRLDC SCADA data (in %) | FRC as per generator data (in %) | |
|---|---|---|---|---|
| | | | If no upper dead band | If upper dead band of 5% |
| 1 | Dadri TPS Stage-1 Unit-1 | 6 | 18 | 41.67 |
| 2 | Dadri TPS Stage-1 Unit-2 | | 13 | 31 |
| 3 | Dadri TPS Stage-1 Unit-3 | | 21 | 49 |
| 4 | Dadri TPS Stage-1 Unit-4 | | Data suspected | |
| 5 | Dadri TPS Stage-2 Unit-1 | 57 | 49 | 114 |
| 6 | Dadri TPS Stage-2 Unit-2 | | 43 | 98 |
| 7 | Koteshwar HEP | 9 | 10.4 | 24.9 |
| 8 | Rihand Unit-3 | 31 | 50 | 115 |
| 9 | Rihand Unit-4 | | 28 | 64 |
| 10 | Rihand Unit-5 | 24 | 20 | 46 |
| 11 | Rihand Unit-6 | | 25 | 58 |
| 12 | Rosa Unit-1 | 22 | 30 | 68 |
| 13 | Rosa Unit-2 | | 25 | 56 |
| 14 | Rosa Unit-3 | | 25 | 56 |
| 15 | Rosa Unit-4 | | 19 | 44 |

## Primary Frequency Response by Generators during Grid Event occurred at Rajasthan RE complex at 10:14 Hrs on 17.09.2022

| Sr. No | Generating stations | FRC as per NRLDC SCADA data (in %) | FRC as per generator data (in %) |
|---|---|---|---|
| 1 | Nathpa Jhakri Unit-1 | 100 | 73 |
| 2 | Nathpa Jhakri Unit-2 | | 50 |
| 3 | Nathpa Jhakri Unit-4 | | 74 |
| 4 | Nathpa Jhakri Unit-6 | | 74 |
| 5 | Koteshwar HEP Unit-1 | 43 | -22 |
| 6 | Koteshwar HEP Unit-3 | | 218 |
| 7 | Koteshwar HEP Unit-4 | | 77 |
| 8 | Rihand Unit-1 | -64 | 72 |
| 9 | Rihand Unit-3 | -20 | 140 |
| 10 | Rihand Unit-4 | | -26 |
| 11 | Rihand Unit-5 | 0 | 126 |
| 12 | Rihand Unit-6 | | 24 |
| 13 | Tehri Unit-1 | 55 | 40 |
| 14 | Tehri Unit-2 | | 130 |
| 15 | AD Hydro Unit-1 | 189 | 219 |

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.***

***Punjab & Rajasthan representatives stated that they will improve their reporting status.***

Other utilities are also requested to kindly share the FRC calculations and further action taken at their end.

**27. Mock black start exercises in NR:**

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

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

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

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

**Hydro Power Stations:**

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

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

**Gas Power Stations:**

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

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

**Hydro Power Stations:**

| Name of stations | Tentative Date for Mock Black start exercise (to be proposed by power plants) |
|---|---|
| *Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga | |
| Dhauliganga | |
| *Bairasiul | |
| Sewa-2 | |

| | |
|---|---|
| *N. Jhakri and Rampur | |
| Karcham and Baspa | |
| *Budhil | |
| *Parbati-3 and Sainj | |
| *Salal | |
| *Chamera-3 | |
| *Kishenganga | |
| Koteshwar | 11.01.2023 (May be preponed) |
| *Chamera-1 and Chamera-2 | |
| *Malana-2, AD Hydro and Phozal | 12.12.2022 |
| Tehri | 10.01.2023 (May be preponed) |
| *Koldam | |

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

**Gas Power Stations:**

| Name of stations | Tentative Date for Mock Black start exercise (to be proposed by power plants) |
|---|---|
| Anta GPS | |
| *Auraiya GPS | |
| Dadri GPS | |

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

**NRLDC representative requested Tehri & Koteshwar HEP to preponed their proposed schedule for mock black start exercise. Tehri & Koteshwar representative agreed to preponed it to mid-December.**

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

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

| S. NO. | Utility | Hydro Power Station | Installed Capacity(MW) |
|---|---|---|---|
| 1 | J&K | Baglihar | 3x150 |
| 2 | | Baglihar stage-2 | 3x150 |
| 3 | | Lower Jhelum | 3x35 |

| | | | |
|---|---|---|---|
| 4 | | Upper Sindh | 2x11+3x35 |
| 5 | | Larji | 3x42 |
| 6 | | Bhabha | 3x40 |
| 7 | | Malana -I | 2x43 |
| 8 | | Baspa | 3x100 |
| 9 | Punjab | Anandpur Sahib | 4x33.5 |
| 10 | | Ranjit Sagar | 4x150 |
| 11 | Rajasthan | Mahi-I&II | 2x25+2x45 |
| 12 | | Rana Pratap Sagar | 4x43 |
| 13 | | Jawahar Sagar | 3x33 |
| 14 | | Gandhi Sagar | 5x23 |
| 15 | | Dholpur GPS | 3x110 |
| 16 | | Ramgarh GPS | 1x35.5+2x37.5+1x110 |
| 17 | UP | Rihand | 6x50 |
| 18 | | Obra | 3x33 |
| 19 | | Vishnuprayag | 4x100 |
| 20 | | Srinagar (Alaknanda) | 4x82.5 |
| 21 | | | |
| | Uttarakhand | Gamma Infra | 2x76+1x73 |
| 22 | | Shravanti | 6x75 |
| 23 | | Ramganga | 3x66 |
| 24 | | Chibro | 4x60 |
| 25 | | Khodri | 4x30 |
| 26 | | Chilla | 4x36 |
| 27 | | Maneri Bhali-I&II | 3x30+4x76 |
| 28 | Delhi | IP Extn GTs | 6x30+3x30 |
| 29 | | Pragati GPS | 2x104.6+1x121.2 |
| 30 | | Rithala | 3x36 |
| 31 | Haryana | Faridabad GPS | 2x137.75+1x156.07 |

***SLDCs shall submit the reports of black start exercise in their respective control area. SLDCs may also identify further generating stations/unit for black start exercise.***

**28. Revision of document for Reactive Power Management and System Restoration Procedure (SRP) for Northern Region:**

Reactive Power Management document for Northern region has been revised on 31st Dec 2021 & updated document link is as below:

https://nrldc.in/download/nr-reactive-power-management-2022/.

Document is password protected and password was already informed to all the NR constituents through letter dated 31st Dec 2021.

***Constituents are requested to provide the feedback, suggestion and updated information by 30th Nov 2022.***

System restoration procedure document for Northern region has been revised on 31stJan 2022 & updated document link is as below:

https://nrldc.in/wp-content/uploads/2022/01/System-Restoration-Procedure_NR_2022.pdf

Document is password protected and for password request can be sent to nrldcso2@gmail.com Constituents are requested to go through the document and provide any modification/addition in respect of their system. SLDC/Generating utilities are requested to kindly update and share the restoration procedure in respect of their state/generating station.

***Constituents were requested to provide the feedback, suggestion and updated information by 31st Dec 2022.***

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

## Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:<br><table><tr><td>◎</td><td>CHANDIGARH</td><td>Sep-2019</td></tr><tr><td>◎</td><td>DELHI</td><td>Aug-2022</td></tr><tr><td>◎</td><td>HARYANA</td><td>May-2022</td></tr><tr><td>◎</td><td>HP</td><td>Jan-2022</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Available</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jul-2022</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Aug-2022</td></tr><tr><td>◎</td><td>UP</td><td>Sep-2022</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Sep-2022</td></tr></table>All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:<br><table><tr><td>◎</td><td>CHANDIGARH</td><td>Not Available</td></tr><tr><td>◎</td><td>DELHI</td><td>Sep-2022</td></tr><tr><td>◎</td><td>HARYANA</td><td>Sep-2022</td></tr><tr><td>◎</td><td>HP</td><td>Aug-2022</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Available</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Jun-2022</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jun-2022</td></tr><tr><td>◎</td><td>UP</td><td>Sep-2022</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Sep-2022</td></tr><tr><td>◎</td><td>BBMB</td><td>Sep-2022</td></tr></table>All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest .</td></tr>
<tr><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:<br><table><tr><td>◎</td><td>CHANDIGARH</td><td>Not Available</td></tr><tr><td>◎</td><td>DELHI</td><td>Increased</td></tr><tr><td>◎</td><td>HARYANA</td><td>Increased</td></tr><tr><td>◎</td><td>HP</td><td>Increased</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not increased</td></tr></table></td></tr>
</table>

| | | | | | |
|---|---|---|---|---|---|
| | | | ◎ | PUNJAB | Increased |
| | | | ◎ | RAJASTHAN | Increased |
| | | | ◎ | UP | Increased |
| | | | ◎ | 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.<br>Further, progress of FGD installation work on monthly basis is monitored in OCC meetings. | Status of the information submission (month) from states / utilities is as under: | | |
| | | | ◎ | HARYANA | Sep-2022 |
| | | | ◎ | PUNJAB | Sep-2022 |
| | | | ◎ | RAJASTHAN | Sep-2022 |
| | | | ◎ | UP | Sep-2022 |
| | | | ◎ | NTPC | Feb-2022 |
| | | | FGD status details are enclosed as **Annexure-A.I.II.**<br>All States/utilities are requested to update status of FGD installation progress on monthly basis. | | |
| 5 | Information about variable charges of all generating units in the Region | The variable charges detail for different generating units are available on the MERIT Order Portal. | All states/UTs are requested to submit daily data on MERIT Order Portal timely. | | |
| 6 | Status of Automatic Demand Management Sysytem in NR states/UT's | The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table: | Status: | | |
| | | | ◎ | DELHI | Fully implemented |
| | | | ◎ | HARYANA | Scheme not implemented |
| | | | ◎ | HP | Scheme not implemented |
| | | | ◎ | PUNJAB | Scheme not implemented |
| | | | ◎ | RAJASTHAN | Under implementation. Likely completion schedule is 31.12.2022. |
| | | | ◎ | UP | Scheme implemented by NPCIL only |

| 7 | Reactive compensation at 220 kV/ 400 kV level at 15 substations | | | |
|---|---|---|---|---|
| | State / Utility | Substation | Reactor | Status |
| i | POWERGRID | Kurukshetra | 500 MVAr TCR | Anticipated commissioning: Nov'22 2022 |
| ii | DTL | Peeragarhi | 1x50 MVAr at 220 kV | PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available. |
| iii | DTL | Harsh Vihar | 2x50 MVAr at 220 kV | PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available. |
| iv | DTL | Mundka | 1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV | Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision. |
| v | DTL | Bamnauli | 2x25 MVAr at 220 kV | Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision. |
| vi | DTL | Indraprastha | 2x25 MVAr at 220 kV | Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision. |
| vii | DTL | Electric Lane | 1x50 MVAr at 220 kV | Under Re-tendering due to Single Bid |
| viii | PUNJAB | Dhuri | 1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV | 400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA. |
| 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 | 1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022. |
| xii | RAJASTHAN | Bikaner | 1x25 MVAr | Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022. |
| xiii | RAJASTHAN | Suratgarh | 1x25 MVAr | Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022. |
| xiv | RAJASTHAN | Barmer & others | 13x25 MVAr | Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. |
| xv | RAJASTHAN | Jodhpur | 1x125 MVAr | Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. |

Annexure-A-I.I

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

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 1 | 400/220kV, 3x315 MVA Samba | Commissioned: 8<br>Total: 8 | Utilized: 6<br>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<br>Total: 6 | Utilized: 2<br>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<br>Total: 6 | Utilized: 6<br>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<br>Total: 8 | Utilized: 6<br>Unutilized: 2 | • 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line | - | HVPNL to update the status. |
| 5 | 400/220 kV, 2x315 MVA Dehradun | Commissioned: 6<br>Total: 6 | Utilized: 2<br>Unutilized: 4 | • Network to be planned for 4 bays | - | PTCUL to update the status. |
| 6 | Shahjahanpur, 2x315 MVA 400/220 kV | Commissioned: 6<br>Approved/Under Implementation:1<br>Total: 7 | Utilized: 5<br>Unutilized: 1<br>(1 bays to be utilized shortly)<br>Approved/Under Implementation:1 | • 220 kV D/C Shahajahanpur (PG) - Gola line | Dec'22 | Updated in 200th 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<br>Total: 8 | Utilized: 4<br>Unutilized: 4<br>(2 bays to be utilized shortly) | • 220 kV Hamirpur-Dehan D/c line | Commissioned | Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL |
| | | | | • Network to be planned for 4 bays | - | HPPTCL to update the status. |
| 8 | Sikar 400/220kV, 1x 315 MVA S/s | Commissioned: 8<br>Total: 8 | Utilized: 6<br>Unutilized: 2 | • LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG) | Commissioned | LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022 |
| | | | | • Network to be planned for 2 bays. | - | Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC |
| 9 | Bhiwani 400/220kV S/s | Commissioned: 6<br>Total: 6 | Utilized: 0<br>Unutilized: 6 | • 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line | Dec'22 | Updated in 197th OCC by HVPNL |
| | | | | • 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line. | Dec'22 | Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status. |
| | | | | • 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line. | Apr'24 | Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status. |
| 10 | Jind 400/220kV S/s | Commissioned: 4<br>Approved:4<br>Total: 8 | Utilized: 4<br>Unutilized: 0<br>Approved:4 | • LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor | May'24 | Updated in 197th OCC by HVPNL |
| 11 | 400/220kV Tughlakabad GIS | Commissioned: 6<br>Under Implementation: 4<br>Total: 10 | Utilized: 6<br>Unutilized: 0<br>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<br>Total: 6 | Utilized: 0<br>Unutilized: 6 | • HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s | Mar'23 | Updated in 198th OCC by HPPTCL |
| | | | | • Network to be planned for 4 bays | - | HPPTCL to update the status. |
| 13 | 400/220kV Kadarpur | 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. | Mar'23 | Updated in 197th OCC by HVPNL |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 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 | May'23 | Updated in 197th OCC by HVPNL |
| 14 | 400/220kV Sohna Road Sub-station | Commissioned: 8<br>Total: 8 | Utilized: 2<br>Unutilized: 4 | • LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road | Jun'23 | Updated in 197th OCC by HVPNL |
| | | | | • LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road | Jun'23 | Updated in 197th OCC by HVPNL |
| 15 | 400/220kV Prithla Sub-station | Commissioned: 8<br>Total: 8 | Utilized: 2<br>Unutilized: 4<br>Under Implementation:2 | • Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali | Commissioned | Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL |
| | | | | • LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line | - | HVPNL to update the status |
| | | | | • 220kV D/C for Sector78, Faridabad | 02.03.2023 | Updated in 198th OCC by HVPNL |
| | | | | • Prithla - Sector 89 Faridabad 220kV D/c line | 31.03.2024 | Under Implementation (Mar'24). Updated in 198th OCC by HVPNL |
| 16 | 400/220kV Sonepat Sub-station | Commissioned: 6<br>Under Implementation:2<br>Total: 8 | Utilized: 2<br>Unutilized: 2<br>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<br>Total: 6 | Utilized: 4<br>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<br>Total: 6 | Utilized: 4<br>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<br>Total: 10 | Utilized: 8<br>Unutilized: 2 | • Network to be planned for 2 bays | May'24 | LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL. |
| 20 | 400/220kV Roorkee Sub-station | Commissioned: 6<br>Total: 6 | Utilized: 4<br>Unutilized: 2 | • Roorkee (PG)-Pirankaliyar 220kV D/c line | Commissioned | Roorkee (PG)-Pirankaliyar 220kV D/c line comiisioned in 2020 as intimated by PTCUL in 197th OCC |
| 21 | 400/220kV Lucknow Sub-station | Commissioned: 8<br>Total: 8 | Utilized: 4<br>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<br>_____<br>• No planning for 2 no. of bays upated by UPPTCL in 196th OCC |
| 22 | 400/220kV Gorakhpur Sub-station | Commissioned: 6<br>Total: 6 | Utilized: 4<br>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<br>Under Implementation:2<br>Total: 10 | Utilized: 6<br>Unutilized: 2<br>Under Implementation:2 | • Network to be planned for 4 bays | - | • UPPTCL intimated that 02 no. of bays under finalization stage<br>_____<br>• No planning for 2 no. of bays updated by UPPTCL in 196th OCC |
| 24 | 400/220kV Abdullapur Sub-station | Commissioned: 10<br>Under Implementation:2<br>Total: 12 | Utilized: 10<br>Unutilized: 0<br>Under Implementation:2 | • Abdullapur – Rajokheri 220kV D/c line | Oct'22 | Updated in 198th OCC by HVPNL |
| | | Commissioned: 8<br>Under tender:2 | Utilized: 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 |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 25 | 400/220kV Pachkula Sub-station | Total: 10<br><br>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<br><br>Unutilized: 4<br><br>Under Implementation:2 | • Panchkula – Sadhaura 220kV D/c line: Sep'23 | Sept'23 | Updated in 194th OCC by HVPNL |
| 26 | 400/220kV Amritsar S/s | Commissioned:7<br><br>Approved in 50th NRPC- 1 no.<br><br>Total: 8 | Utilized: 6<br><br>Unutilized: 1<br><br>Approved in 50th NRPC- 1 no. | • Amritsar – Patti 220kV S/c line | May'23 | Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL. |
| | | | | • Amritsar – Rashiana 220kV S/c line<br>(2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC) | May'23 | Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL. |
| 27 | 400/220kV Bagpat S/s | Commissioned: 8<br><br>Total: 8 | Utilized:6<br><br>Unutilized: 2 | • Bagpat - Modipuram 220kV D/c line | Aug'22 | Updated in 196th OCC by UPPTCL, within 10 day tentative charging updated in 198th OCC by UPPTCL. |
| 28 | 400/220kV Bahardurgarh S/s | Commissioned: 4<br><br>Total: 4 | Utilized:2<br><br>Unutilized: 2 | • Network to be planned for 2 bays. | Mar'24 and July'24 | Updated in 198th OCC by HVPNL |
| 29 | 400/220kV Jaipur (South) S/s | Commissioned: 4<br><br>Total: 4 | Utilized:2<br><br>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<br><br>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<br>_____<br>• Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC |
| 31 | 400/220kV, Kankroli | Commissioned: 6<br><br>Total: 6 | Utilized: 4<br><br>Unutilized: 2 | • Network to be planned for 2 bays | - | RVPNL to update the status |
| 32 | 400/220kV, Manesar | Commissioned: 8<br><br>Total: 8 | Utilized: 4<br><br>Unutilized: 4 | • Network to be planned for 4 bays | - | One bay 220 kV Manesar (PG)-Panchgaon ckt commissioned on 05.09.2022 |
| 33 | 400/220kV, Saharanpur | Commissioned: 6<br><br>Under Implementation:2<br><br>Total: 8 | Utilized: 6<br><br>Unutilized: 0<br><br>Under Implementation:2 | • Network to be planned for 2 bays | Oct'22 | Saharanpur(PG)-Devband D/c line expected energization date Oct'22 updated by UPPTCL in 199th OCC |
| 34 | 400/220kV, Wagoora | Commissioned: 10<br><br>Total: 10 | Utilized: 6<br><br>Unutilized: 4 | • Network to be planned for 4 bays | - | PDD, J&K to update the status. |
| 35 | 400/220kV, Ludhiana | Commissioned: 9<br><br>Total: 9 | Utilized: 8<br><br>Unutilized: 1 | • Network to be planned for 1 bay | Mar'23 | Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by March 2023.Updated in 198th OCC by PSTCL. |

| Sl. No. | Substation | Downstream network bays | Status of bays | Planned 220 kV system and Implementation status | Revised Target | Remarks |
|---|---|---|---|---|---|---|
| 36 | 400/220kV, Chamba (Chamera Pool) | Commissioned: 3<br>Under tender:1<br>Total: 4 | Utilized:3<br>Unutilized: 0<br>Under tender:1 | • Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line | - | Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is not ready.Updated in 198th OCC by HPPTCL |
| 37 | 400/220kV, Mainpuri | Commissioned: 6<br>Under Implementation:2<br>Total: 8 | Utilized: 6<br>Unutilized: 0<br>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<br>Total: 8 | Utilized: 6<br>Unutilized: 2 | • Network to be planned for 2 bays | May'24 | 2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL. |

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

| Sl. No. | Name of Substation | MVA Capacity | Expected Schedule | | Downstream connectivity by States |
|---|---|---|---|---|---|
| 1 | 400/220kV Dwarka-I GIS (8 nos. of 220kV bays) | 4x 500 | Mar'22 | | DTL to update the status |
| 2 | 220/66kV Chandigarh GIS (8 nos. of 66kV bays) | 2x 160 | Apr'22 | | Chandigarh to update the status. |
| 3 | 400/220kV Jauljivi GIS<br>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<br>• 220kV Brammah-Jauljibi line<br>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 (17.10.2022)** |
| ANPARA TPS |
| HARDUAGANJ TPS |
| OBRA TPS |
| PARICHHA TPS |

| **PSPCL (15.09.2022)** |
| --- |
| GGSSTP, Ropar |
| GH TPS (LEH.MOH.) |
| **RRVUNL (12.10.2022)** |
| CHHABRA SCPP |
| CHHABRA TPP |
| KALISINDH TPS |
| KOTA TPS |
| SURATGARH SCTPS |
| SURATGARH TPS |

# Updated status of FGD related data submission

| |
|---|
| **Lalitpur Power Gen. Co. Ltd. (17.10.2022)** |
| Lalitpur TPS |
| **Lanco Anpara Power Ltd. (18.06.2022)** |
| ANPARA-C TPS |

| |
|---|
| **HGPCL (14.09.2022)** |
| PANIPAT TPS |
| RAJIV GANDHI TPS |
| YAMUNA NAGAR TPS |

| |
|---|
| **Adani Power Ltd. (18.02.2022)** |
| KAWAI TPS |

| |
|---|
| **Rosa Power Supply Company (18.06.2022)** |
| Rosa TPP Phase-I |
| **Prayagraj Power Generation Company Ltd. (17.10.2022)** |
| Prayagraj TPP |
| **APCPL (25.02.2022)** |
| INDIRA GANDHI STPP |

# Pending submissions

| **GVK Power Ltd.** |
| --- |
| GOINDWAL SAHIB |

| **NTPC** |
| --- |
| DADRI (NCTPP) |
| **Talwandi Sabo Power Ltd.** |
| TALWANDI SABO TPP |
| **L&T Power Development Ltd.** |
| Nabha TPP (Rajpura TPP) |

# Target Dates for FGD Commissioning (Utility-wise)

| | |
|---|---|
| **Adani Power Ltd.** | KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024) |
| **APCPL** | INDIRA GANDHI STPP U#1 (Target: 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: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026) |
| **Lanco Anpara Power Ltd.** | ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023) |
| **Prayagraj Power Generation Company Ltd.** | PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024) |
| **PSPCL** | GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), 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: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026) |
| **RRVUNL** | KOTA TPS U#5 (Target: 31-08-2022), KOTA TPS U#6 (Target: 31-08-2022), KOTA TPS U#7 (Target: 31-08-2022), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025) |
| **Talwandi Sabo Power Ltd.** | TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020) |
| **UPRVUNL** | ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024) |

पावरट्रॉंसमिशनकारपोरेशनऑफउत्तराखण्ड लि0
(उत्तराखण्डसरकारका उपक्रम)
मुख्य अभियन्ता, प्रान्तीय भारनिस्तारणकेन्द्रकार्यालय
विद्युतभवन, नजदीक–आई0एस0बी0टी0 क्रासिंग, सहारनपुररोड़, माजरा, देहरादून–248002
दूरभाश नं0 0135–2645768फैक्स नं0 0135–2645758email:- sldc1@rediffmail.com

**Letter No.** 913 **/SLDC/CE L-1** **Dated :** 07 **/10/2022**

**Superintending Engineer(Operation)**
Northern Regional Power Committee
18A, Saheed Jeet Sigh Marg, Katwaria Sarai,
New Delhi-110016.

**Sub: -** Regarding status on feasibility of Dehradun as proposed Islanding Scheme.

In reference to above mentioned subject, kindly find enclosed herewith feasibility study report of Dehradun as proposed islanding scheme as desired in reference to 198th OCC meeting of NRPC for kind information and further necessary action.
**Encls: As above.**

**(Rajiv Gupta)**
**Chief Engineer L-1 (SLDC)**

**Cc:-**
**1.** Director (Projects), PTCUL, Dehradun.
**2.** Superintending Engineer, SLDC, PTCUL, Dehradun.

# *Feasibilty study Report for Dehradun as a proposed Islanding scheme*

# Executive Summary

## 1.0 Introduction

Islanding of system is defined as isolation of critical and super critical feeders and supply of energy only to these feeders in case of major disturbance in the grid or in case of any type of transmission constraints.

It was also reiterated during 47th NRPC 49th NRPC meeting dated 23.09.2022 that Hon'ble minister of State for Power and New & Renewable Energy chaired meeting on 28.12.2020 to review Islanding scheme in the country and following were the deliberation from the meeting:

a) Islanding scheme shall be designed for all major cities of the country .The proposal of establishment of power plant in/around such city may also submitted for consideration to the ministry

b) All the strategic and essential loads should be covered in the Islanding Scheme. For the finalization of strategic loads, the Ministry of Defence may also be consulted.

c) Generating station which is near to essential loads shall be given priority in designing the islanding scheme.

d) All concerned entities to ensure the functionality of AUFLS and df/DT relays at all points of time all concerned entities to ensure the functionality of AUFLS and df/DT relays at all points of time.

Thereafter, series of meetings were held amongst NR constituents during Apr-Aug'21 to review the existing Islanding Schemes and expedite the implementation of newly proposed Schemes. A special TCC meeting for NR was also convened on 15.06.2021, wherein Uttarakhand was asked to submit the timelines for implementing Dehradun islanding scheme.

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 including Operational Coordination Committee(OCC). It was highlighted in meetings that PSDF funding for implementation of Islanding scheme shall as per meeting chaired by Hon'ble Cabinet minister (Power,New & renewable Energy)on 07.10.2021 and states were requested to submit the DPR for the implementation of Islanding scheme.

Uttarakhand asserted in the 190th OCC meeting that major hydro stations e.g. Chibro, Khodri etc at Dehradun Region in Yamuna valley are non-must run and peaking stations and the proposed Dehradun Islanding scheme appears to be infeasible. 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.

NRPC desired during meeting that 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. Further during 198th OCC meeting, NRPC Sectt. representative reiterated that a report may kindly be submitted to OCC forum after analyzing the past generation and demand data pertaining to the proposed scheme. Based on the report, further decision would be taken. Based on that the preliminary feasibility report has been prepared.

## 2.0 GENERAL PHILOSOPHY ON FORMATION OF ISLANDS

As per clause 10 of the Central Electricity Authority (Grid standards), Regulations 2010, the regional power Committee shall prepare Islanding schemes for separation of system with a view to save healthy system from total collapse in case of grid disturbance.

Islanding Schemes may be designed:

- For survival of some predefined generations and loads at the time of grid disturbance to avoid total blackout and quicker restoration of failed grid.
- For major cities having loads of VIP areas, Defense, Space, Airport, Metro, ports and important industries etc.

Islanding scheme is to be formed with anticipated loads-generation balance and with tripping of predetermined feeders/ICTS/generators. Islanding can take place at any time, monitoring of the following vital parameters have a significant role in successful Island formation

1) Anticipated /Actual Generation within the electrical boundary of the island.

2) Anticipated /actual loads within the electrical boundary of the island.

3) Voltage, frequency & Power flows along the peripheral lines which are required to be tripped to form the island and these parameters are to be monitored in real time basis in Control room of SLDC (installation of PMU at suitable locations if required)

The Essential loads are classified into two categories

a) Critical loads: consist of loads of hospitals, airport, railway, important industries

b) Super critical loads: consist of loads of defense areas, Raj Bhawan, residence of VIPs, Parliament house

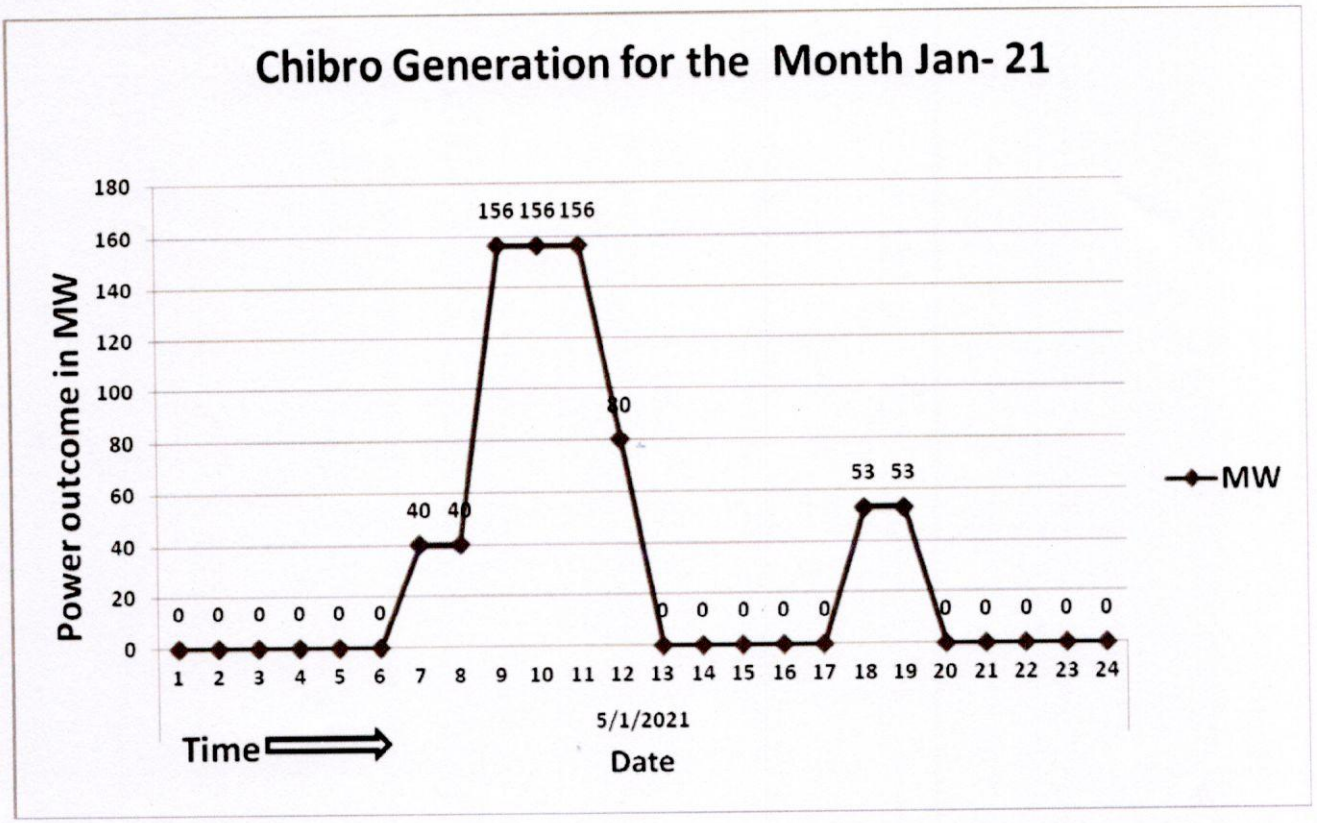
## 3.0 Preliminary Technical Feasibility

Proposed Islanding Scheme FOR Dehradun:

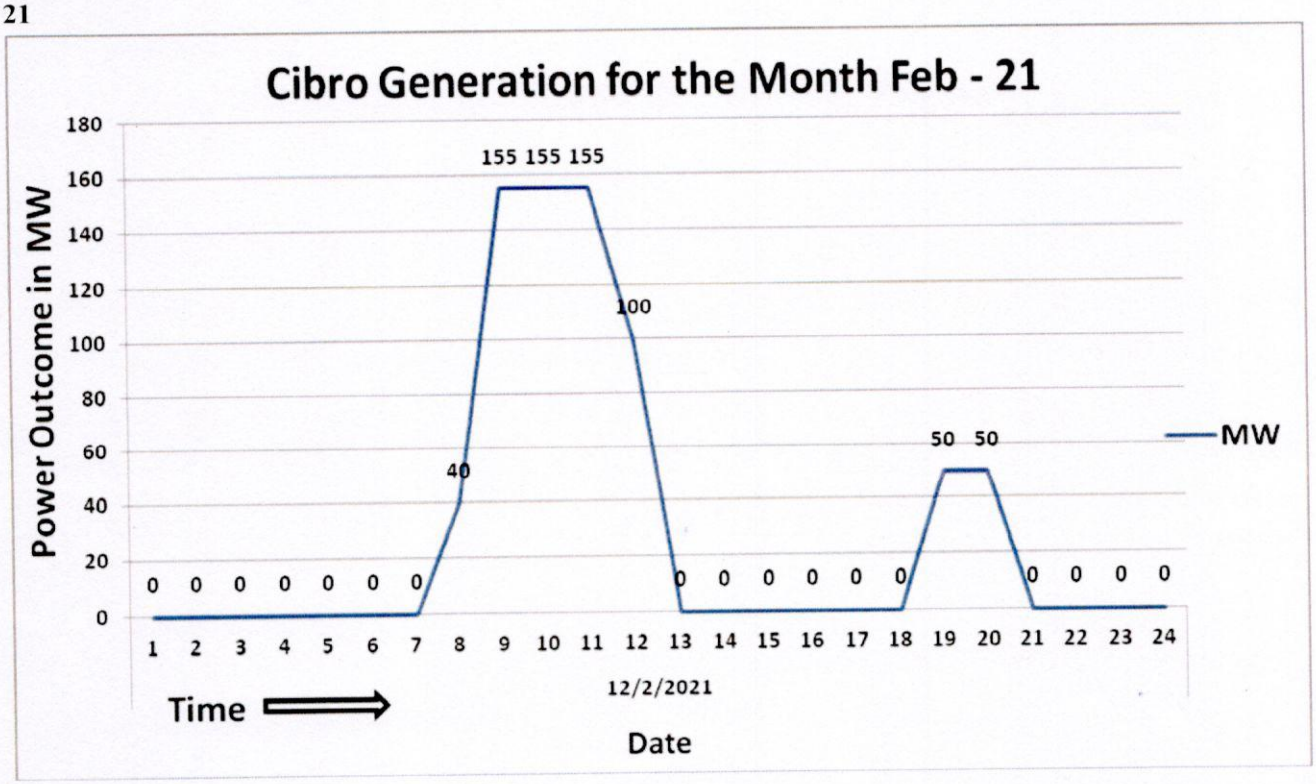
Based on the hourly reading register in SLDC, hydro generation of Chibro and Khodri power house (non- must run) of UJVN ltd is studied and is observed that generation is restricted with a minimum load of 40MW to 07-8 months.

The trend of hourly generation report of Chibro power house (monthwise) is illustrated below in the form of graph.

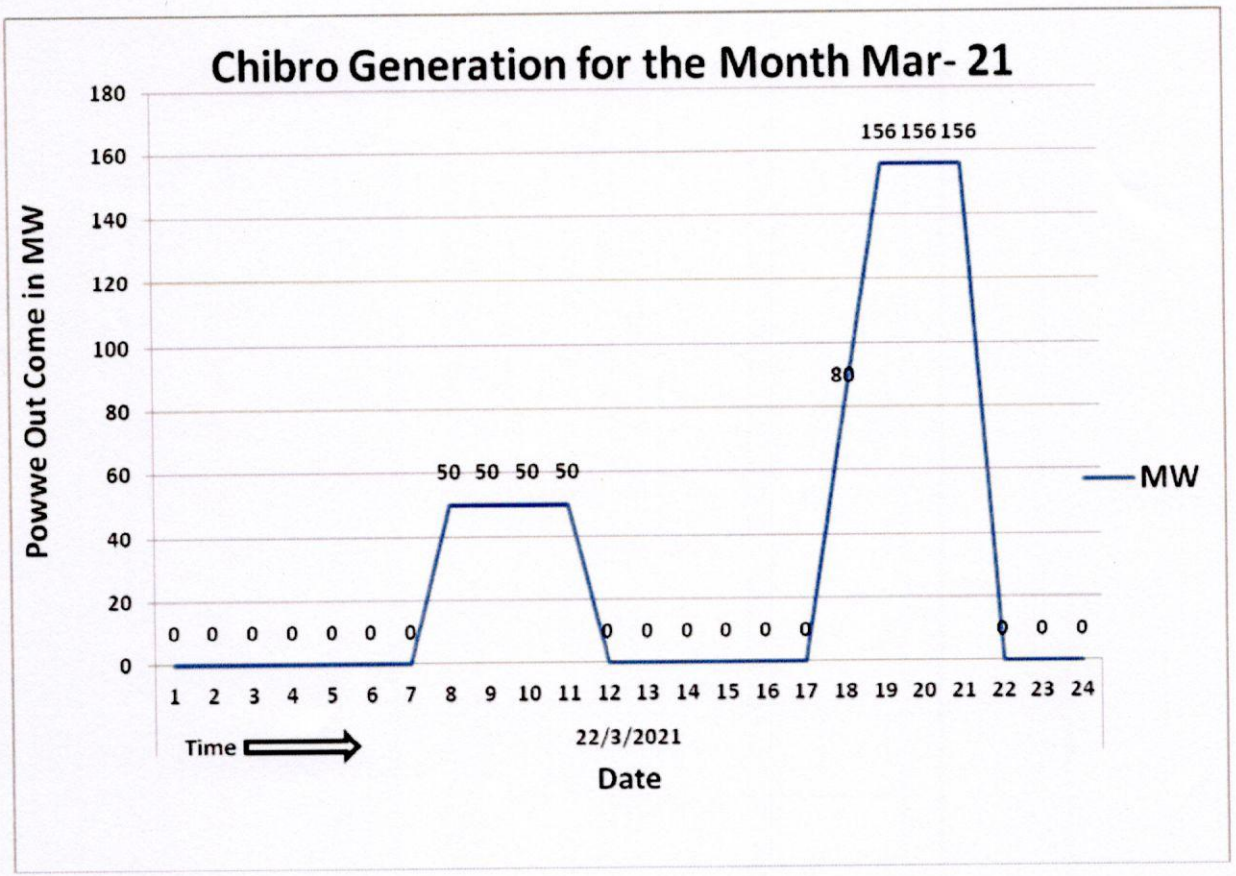
January- 21



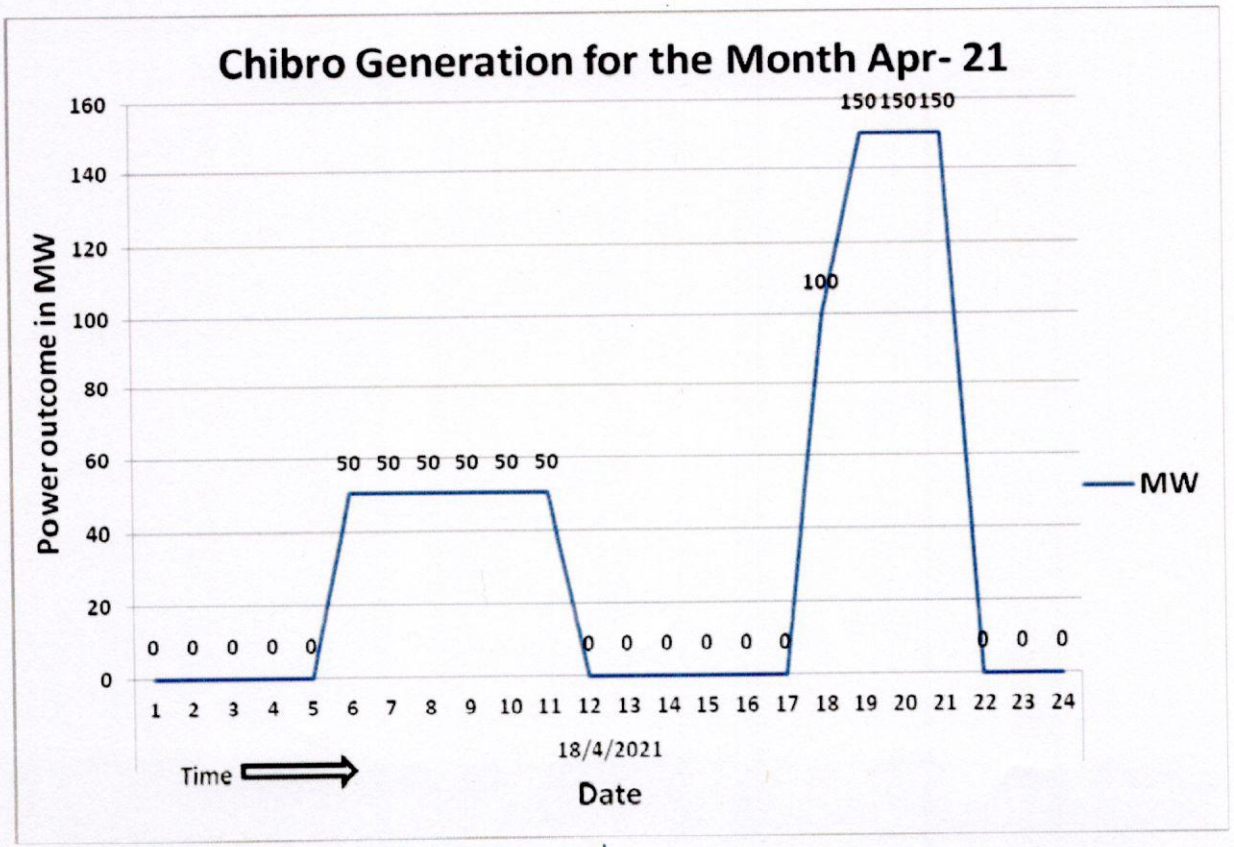

February- 21



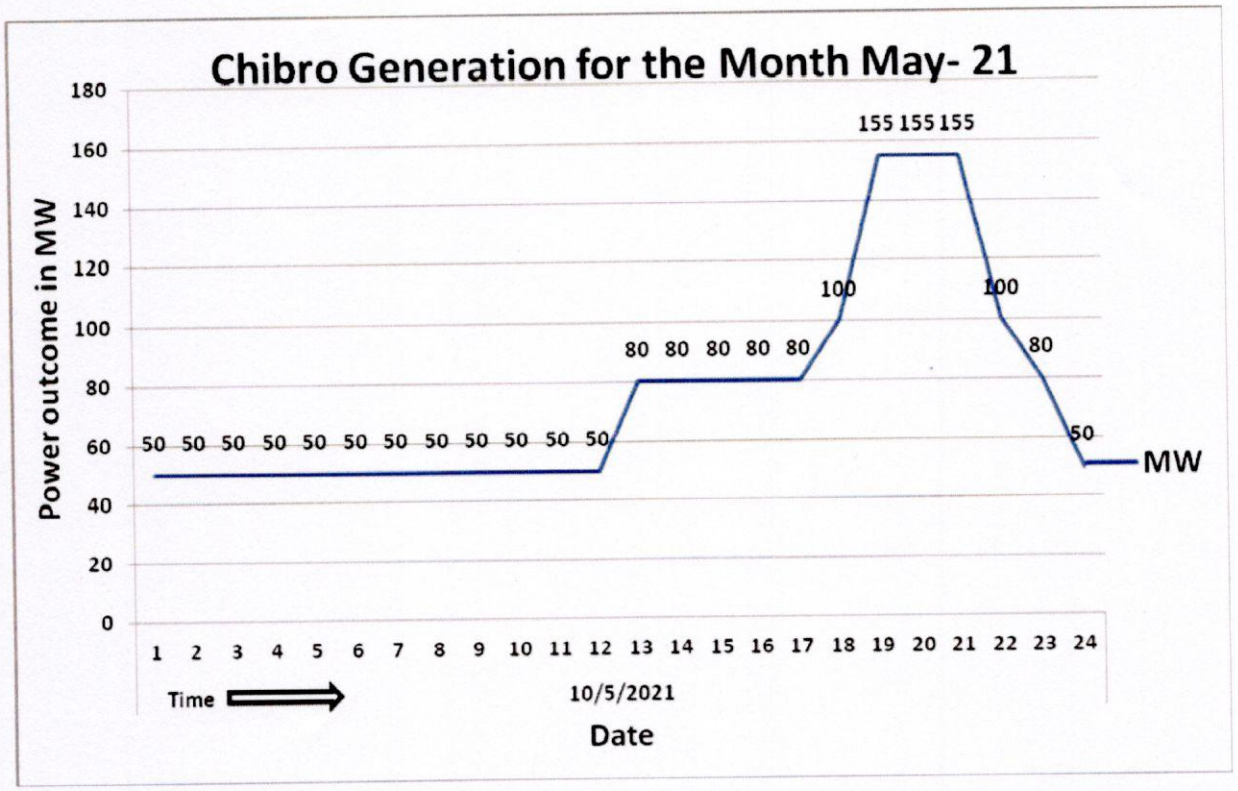
March-21



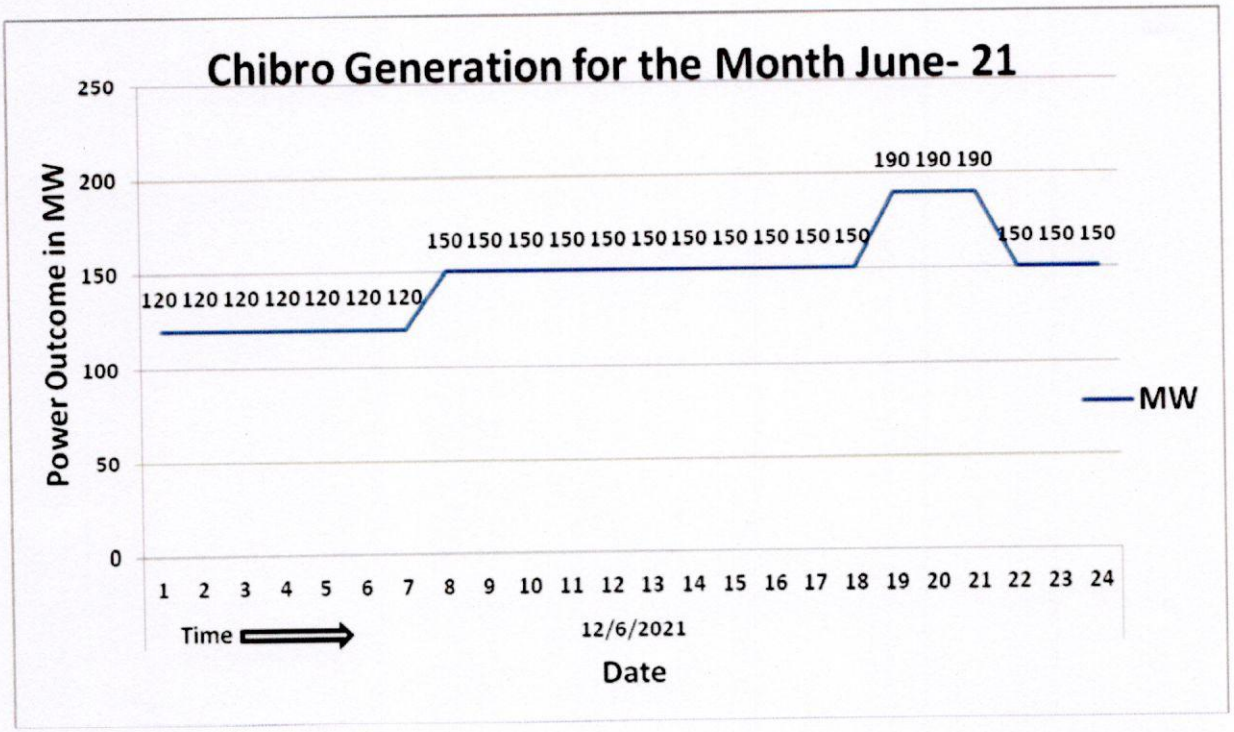

April- 21



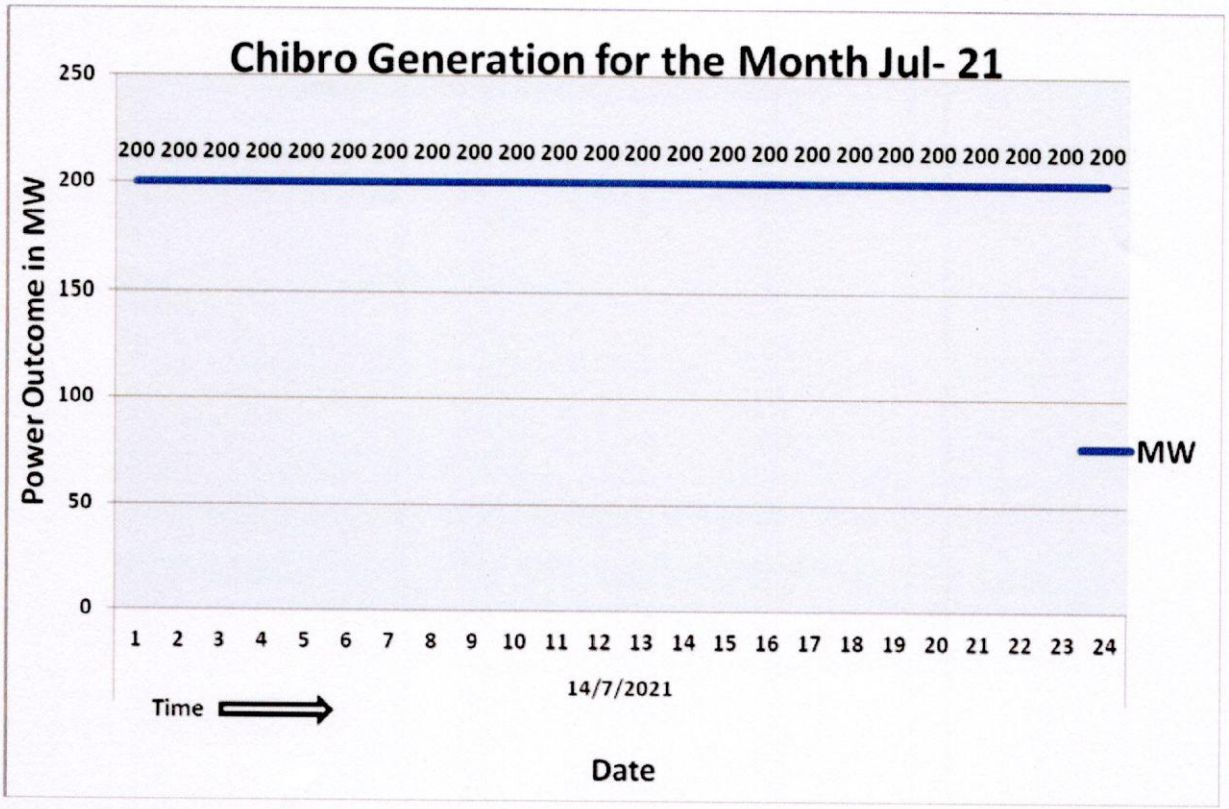
**May- 21**



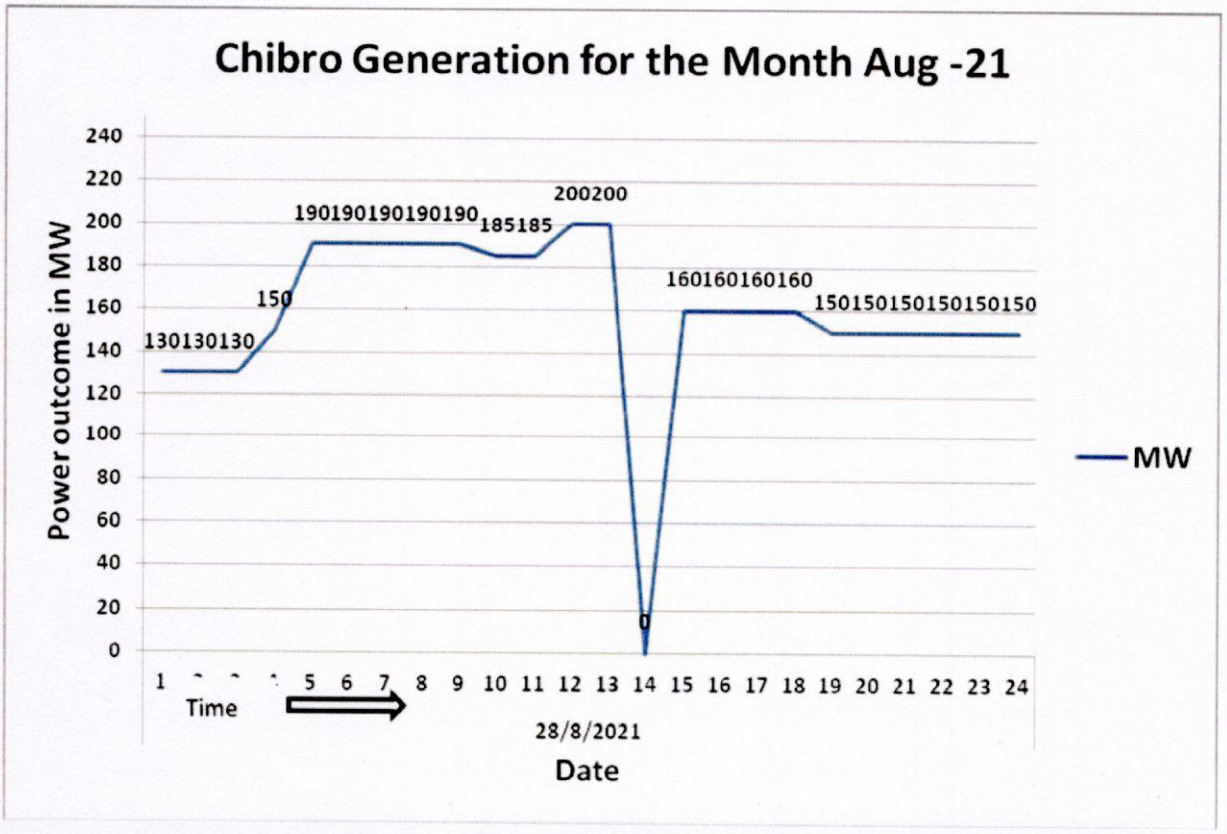

**June- 21**



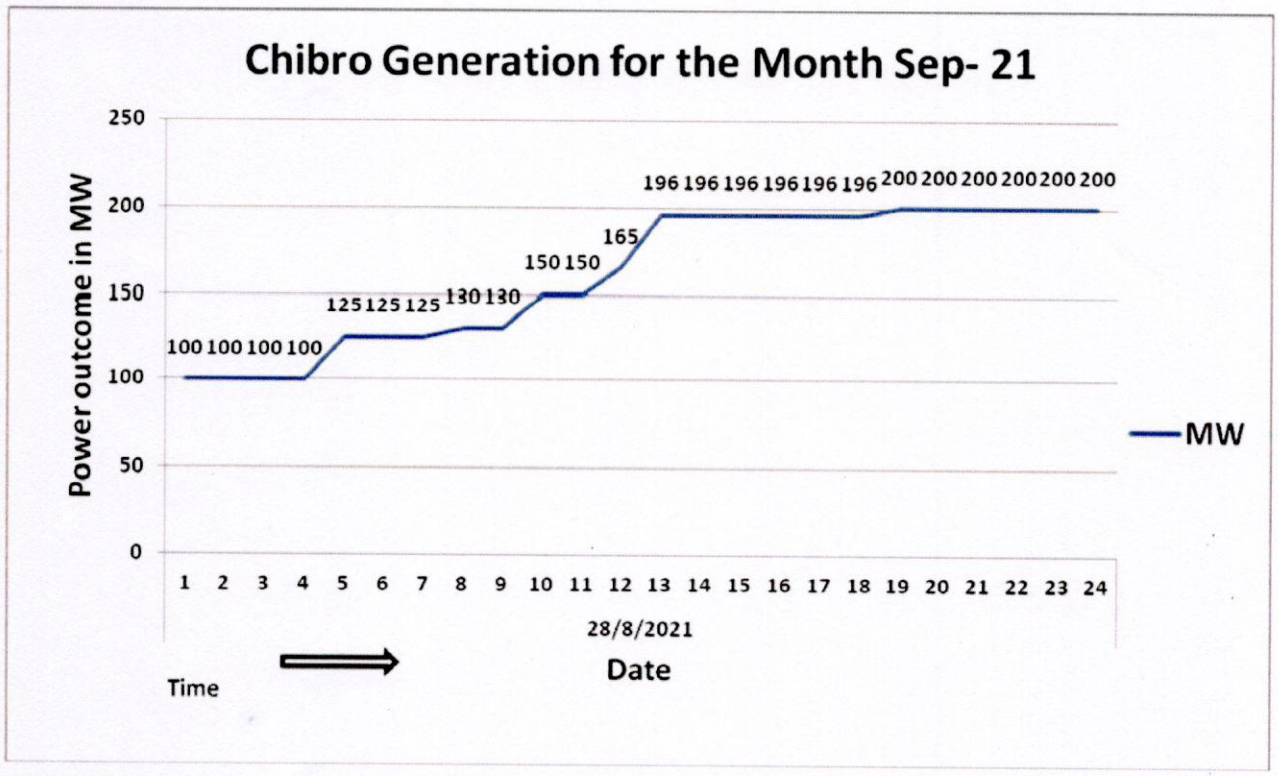
**July-21**



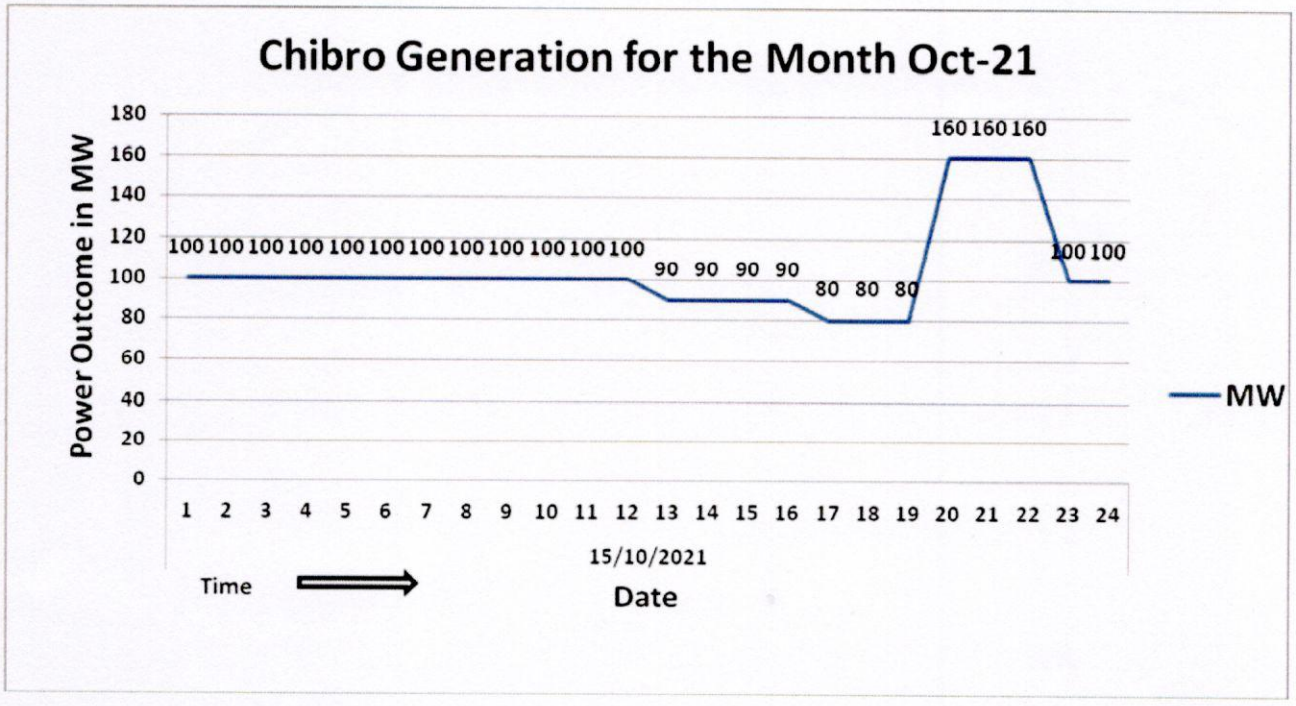

**August-21**



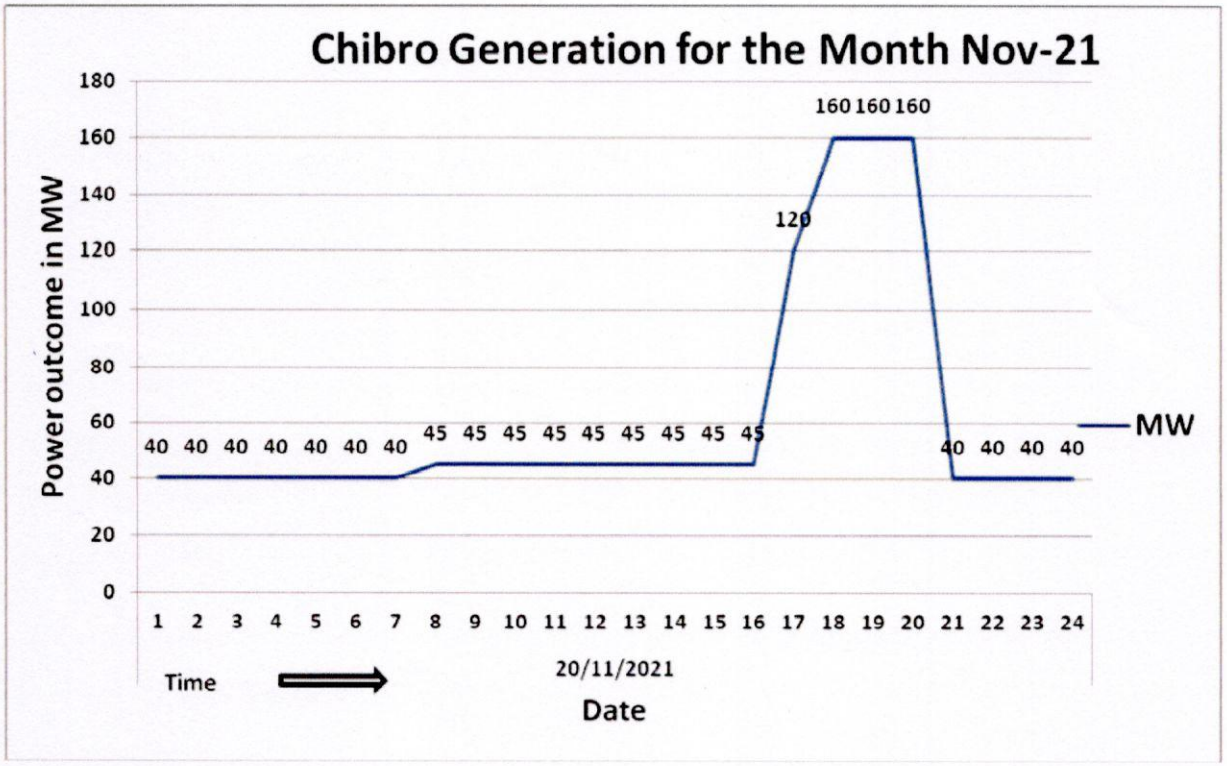
**September-21**



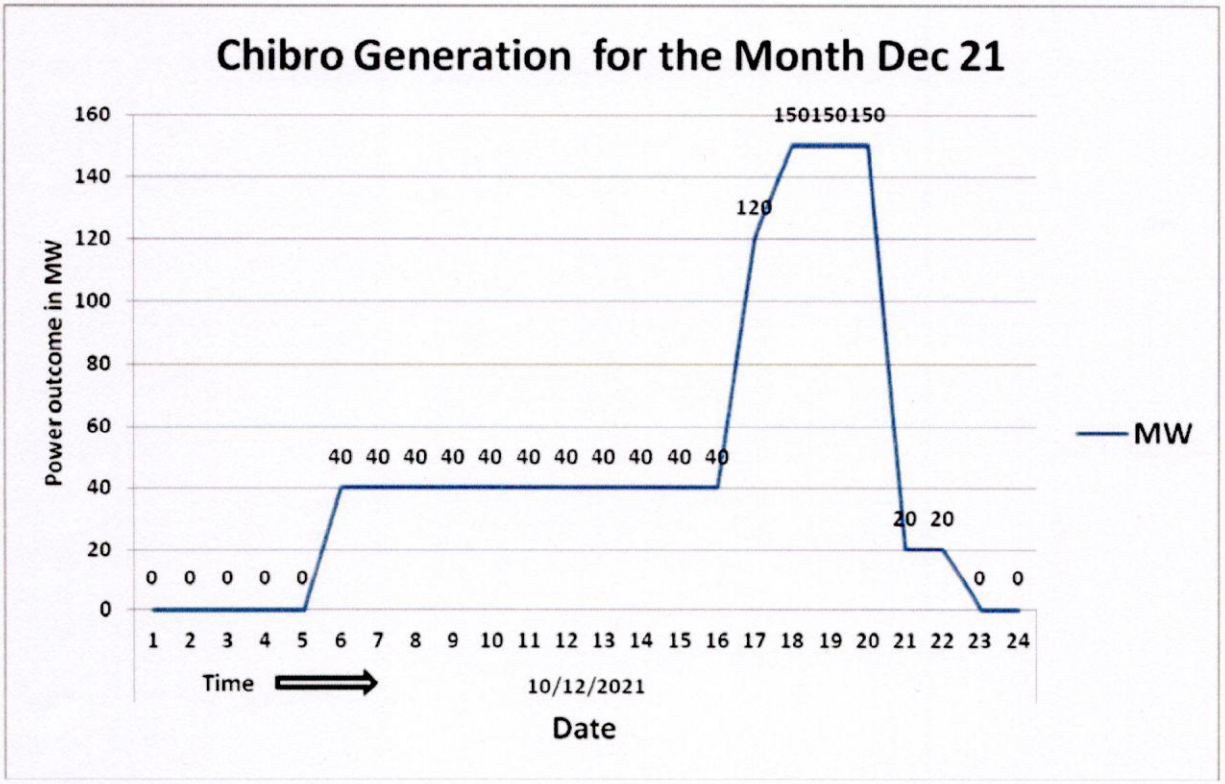

**October-21**




**November-21**




**December-21**




From the above graph, it is clear that generation is of more than 40 MW round the clock is available for 7 months and in rest of the months generation is not available for 24hours,hence islanding scheme based on these power house is not feasible.

It has been informed by EE(generation) that Chibro Power House operate safely for load variation from 40 MW to 56 MW and accordingly Khodri Power House operate from 20MW to 56 MW as per design characteristics of Francis turbine runner. Below this range Machine units makes a noise and vibration increases which is not safe for operation.

Islanding load to be identified shall exclude the anticipated impact due to load shedding under defense mechanism prior to islanding through existing UFR & df/dt relays. Also the essential load of Dehradun during islanding condition is identified from various PTCUL substation and data were also provided by PTCUL substations in coordination with UPCL for Jan-Dec, 2021. Details of load to be fed to achieve Load-Generation balance is as under:

| S.No | Name of the feeder | Max. Load (amp) | Average load (Amp) |
|---|---|---|---|
| **Emanating from 132 kV S/s Bindal** | | | |
| 1. | 33 kV MES | 79 | 42 |
| 2. | 11 kV Vishwakarma Bhawan | 25 | 25 |
| 3. | 11 kV Secretariat | 40 | 10 |
| 4. | 11 kV Yamuna Colony | 19 | 10 |
| 5. | 11kV Ganga Bhawan | 33 | 30 |
| 6. | 11 kV Bhandaribagh | 159 | 120 |
| 7. | 11 kV Lakhibagh | 190 | 110 |
| | **Total load fed through Bindal (MW)** | | **7.1** |
| **Emanating from 132 kV S/s Purkul** | | | |
| 1 | 11kV CM house | 23 | 15 |
| 2. | 11kV Beezapur | 64 | 30 |
| 3. | 11kV Jakhan | 184 | 120 |
| 4. | 11kV Usha colony I &II and 11 kV Pacific | 60 | 60 |
| 5. | 11 kV Mall road | 138 | 120 |
| 6. | 11 kV waterworks | 108 | 100 |
| | **Total load fed through Purkul (MW)** | | **7.4** |
| **Emanating from 132 kV S/s Majra** | | | |
| 1 | 33 kV IMA | 50 | 30 |
| 2. | 11 kV Vidhan Sabha | 10 | 10 |
| 3. | 11 kV Clement town | 282 | 270 |
| 4. | 33 kV Deal | 38 | 30 |
| | **Total load fed through Majra (MW)** | | **7.6** |
| **Emanating from 220 kV S/s Jhajjra** | | | |
| 1. | 11kV Air force | 26 | 20 |
| 2. | 11 kV AWH | 36 | 20 |
| 3. | 11 kV Rampur | 180 | 25 |
| 4. | 33 kV Linde | 138 | 120 |
| 5. | 11 kV Blood bank and synergy hospital | 210 | 114 |
| | **Total load fed through Jhajra (MW)** | | **9** |
| **Emanating from 132 kV S/s Laltappar** | | | |
| 1. | 33 kV Himalayan hospital | 46 | 52 |
| 2. | 33 kV Airport | 16 | 18 |
| | **Total load fed through Lalthapar (MW)** | | **3.5** |
| | **Total Essential Load(MW)** | | **35** |

From the above table, it is deduced that the maximum load contributes to approximately 48 MW and average load contributes to approximately 35 MW.

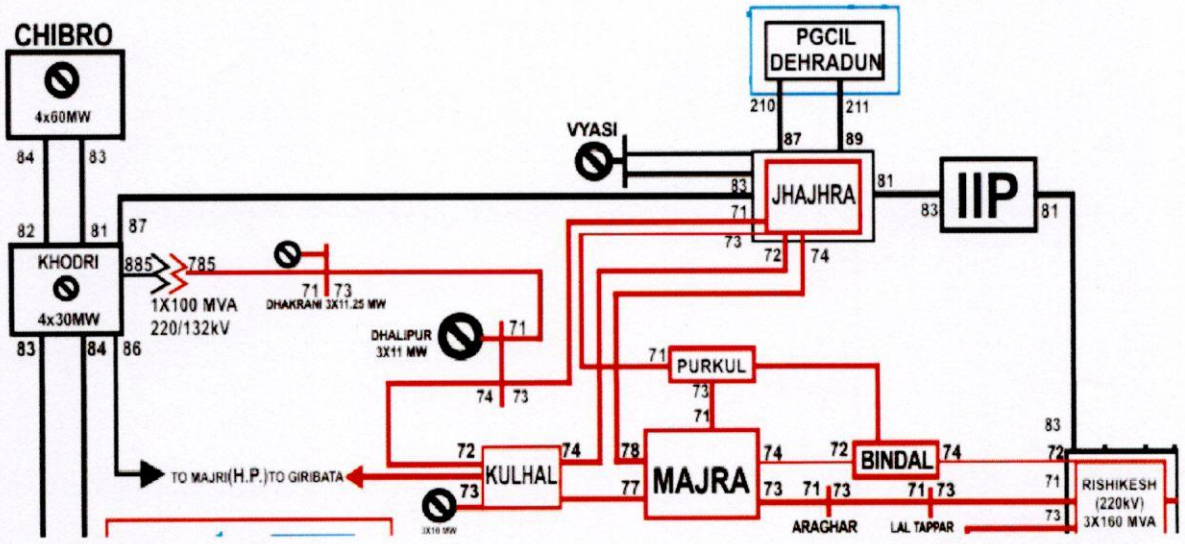
The transmission network diagram for dehradun is elaborated as below

The Dehradun is surrounded by following generators

a) Chibro Power house (4*60 MW)
b) Khodri power house (4*30MW)
c) Dhakrani power house (3*11.25 MW)
d) Dhalipur power house (3*11MW)
e) Vyasi power house (2*60MW)
f) Kulhal power house (3*10 MW)

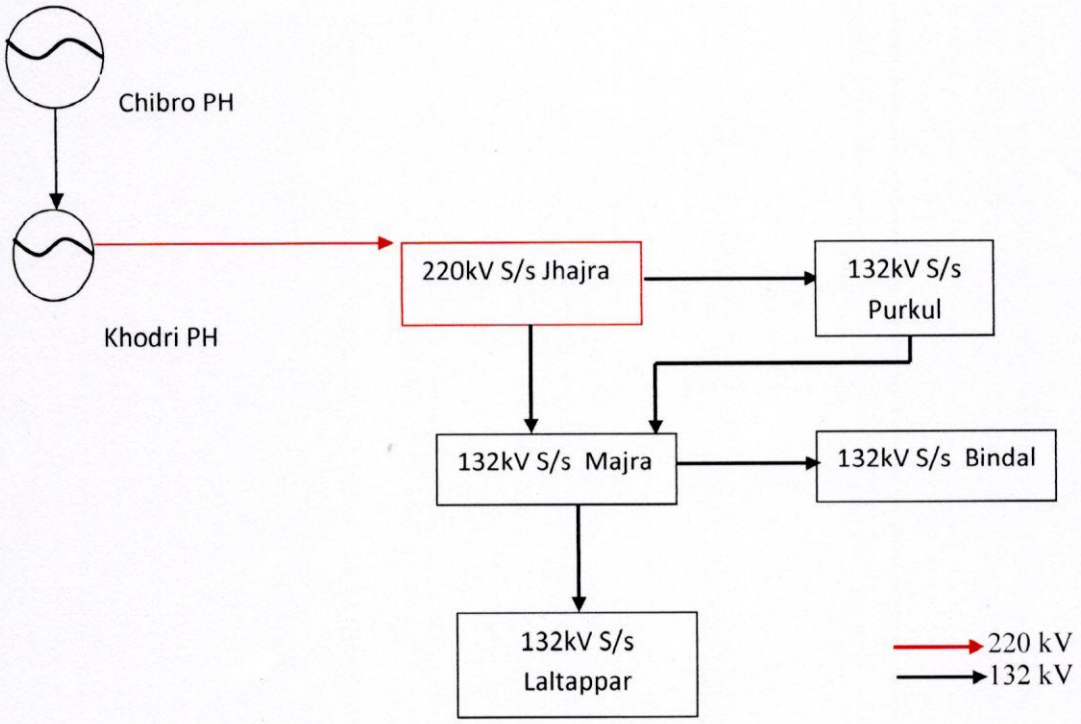
Through these Power house the load is being fed to Dehradun area through following PTCUL substation from where 33 kV distribution feeders are emanating:-

a) 220 kV Substation Jhajjra (2X160MVA, 220/132kV and 2X80MVA, 132/33kV T/f)
b) 220 kV Substation IIP (2X50MVA, 220/33kV T/f)
c) 132 kV Substation Purkul (1X20 and 1X40MVA. 132/33kV T/f)
d) 132 kV Substation Majra (3X40MVA, 132/33kV T/f)
e) 132 kV Substation Laltappar (2X40MVA, 132kV/33)
f) 132 kV Substation Bindal (3X40MVA, 132kV/33kV)




Details of Network identified to fed essential load through Chibro & Khodri Power House during Island formation:-

1. One unit of ( 60MW) Chibro Ph in tandem with one Unit of Khodri PH (30MW)
2. One Ckt of 220kV Chibro –Khodri line
3. 220kV Khodri-Jhajra line
4. One no. 160MVA, 220/132kV and 80MVA 132/33kV T/f at 220kV S/s Jhajra
5. 132kV Jhajra –Purkul line
6. 20MVA, 132/33kV T/f at Purkul S/s
7. 132kV Jhajra-Majra line
8. One no. 40MVA, 132/33kV T/f at Majra.
9. 132kV Majra- Bindal line
10. One no. 40MVA, 132/33kV T/f at Bindal.
11. 132kV Majra- lalthapar line
12. One no. 40MVA, 132/33kV T/f at Bindal.




**Network diagram connecting Chibro and Khodri connecting to load during islanding conditions**

**4.0 Conclusion**

Based on the load –generation data, it is observed that generation of more than 40 MW round the clock is available for 07 months and generation is not available round the clock during remaining 05 Months. Hence, the supply to the essential loads will not be available throughout the year during proposed islanding scheme of Dehradun. Further, the single machine of Chibro Power House operates safely for load variation from 40 MW to 56 MW and accordingly the single machine of Khodri Power House operates from 20MW to 26 MW as per design characteristics of Francis turbine runner. Below this range Machine units makes a noise and vibration increases which is not safe for operation. The above facts thus make the islanding scheme technically not feasible and unviable.

**Director (SLDC)**

**U.P. State Load Despatch Centre**
U.P. Power Transmission Corporation Ltd.
VibhutiKhand – II, Gomti Nagar,
Lucknow - 226010
Phone: 0522-2722864
E-mail: directorsldc@upsldc.org

No: 2813 Dir(SLDC)/Scheduling/Diff. in Sch. Dated: 29 Sep, 2022

Through e-mail

**Member Secretary, NRPC**
18-A, SJSS Marg, Katwaria Sarai,
New Delhi, 110016.

**Chief General Manager, NRLDC**
18-A, SJSS Marg, Katwaria Sarai,
New Delhi, 110016.

**Sub: Difference in drawl schedule finalised by NRLDC and drawl schedule used by NRPC for finalising the DSM and Energy Account of Uttar Pradesh.**

Dear Sir,

Kindly refer our earlier communication vide letter no. 1887/Dir(SLDC)/Scheduling/Implemented Schedule_DSM dated 07.07.2022 regarding above subject. In this regard it is to further intimate that there is a consistent difference of approximately 70 MW in each time block in the drawl schedule finalised by NRLDC and drawl schedule used by NRPC for finalising the DSM and Energy Account of Uttar Pradesh from 9th June 2022 onwards. Data from April 2022 to August 2022 is attached. It is apparent form the data that there is a difference of 1.5 to 2.0 MU on daily basis in NRPC & NRLDC data and drawl schedule shown by NRPC is always on lower side.

It appears that there is some change in methodology for preparing accounts at NRPC end due to which drawl schedule of Uttar Pradesh is not incorporated correctly in monthly Energy Account and DSM Account.

It is requested to kindly take up the above issue on urgent basis as it has commercial implications on Uttar Pradesh. If required a meeting of NRLDC, NRPC and UPSLDC may please be planned in first week of October 2022.

Regards.

**(Amrendra Singh Kushwaha)**
Director (SLDC)

No: Dir(SLDC)/Scheduling/Diff. in Sch. Dated: Sep, 2022

Copy forwarded to the following for information and necessary action:

1. Chief Engineer (C & S), UPSLDC, Vibhuti Khand- II, Gomti Nagar, Lucknow.
2. SE (OA & Sch.), UPSLDC, Vibhuti Khand- II, Gomti Nagar, Lucknow.

**(Amrendra Singh Kushwaha)**
Director (SLDC)

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र
उ0प्र0 पॉवर ट्रांसमिशन कारपोरेशन लि0
(उत्तर प्रदेश सरकार का उपक्रम)
यू0पी0एस0एल0डी0सी0 परिसर, विभूति खण्ड–II
गोमती नगर, लखनऊ–226010
ई–मेल: directorsldc@upsldc.org

U.P. State Load Despatch Centre
U.P. Power Transmission Corporation Ltd.
(A U.P. Govt. Undertaking)
UPSLDC Complex, Vibhuti Khand – II
Gomti Nagar, Lucknow- 226010
E-mail: directorsldc@upsldc.org

No- 1887 /Dir(SLDC)/Scheduling/Implemented Schedule_DSM/ Dated: 07.07.2022

Member Secretary
Northern Regional Power Committee
18-A, Qutab Institutional Area, Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016

Also through email

**Subject: Regarding difference between UP schedule at NRLDC portal and NRPC DSM account**

Dear Sir,

Your kind attention is drawn to the DSM account of UP prepared by NRPC for the period 09.06.2022 to 19.06.2022. It seems there is an error in the DSM account released by NRPC as it is seen that there is a significant difference between the schedules of UP as per NRLDC final revision and as shown in NRPC DSM account (copy enclosed). As you would kindly appreciate that this difference would have impact on the DSM account of UP.

It is requested that the DSM account released by NRPC may be verified and if there is any error, same may be corrected. We shall be grateful if the corrections are done and DSM account is revised accordingly at the earliest.

Encl.: As above

(Amrendra Singh Kushwaha)
Director (UPSLDC)

No- /Dir(SLDC)/Scheduling/Implemented Schedule_DSM/ Dated: 07.07.2022

**Copy forwarded to following for information and necessary action:**

1. CGM(NRLDC), POSOCO, 18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016
2. Chief Engineer (C&S), UPSLDC, Vibhuti Khand-II, Gomti Nagar, Lucknow.
3. Chief Engineer (PSO), UPSLDC, Vibhuti Khand-II, Gomti Nagar, Lucknow.
4. S E (System Control), UPSLDC Vibhuti Khand-II, Gomti Nagar, Lucknow.
5. S E (OA&Sch), UPSLDC Vibhuti Khand-II, Gomti Nagar, Lucknow.

(Amrendra Singh Kushwaha)
Director (UPSLDC)

| Date | Schedule (MU) | | Difference (MU) |
|---|---|---|---|
| | As per NRPC DSM Account | As per NRLDC Final Revision | |
| 01-06-22 | 241.042 | 241.510 | -0.468 |
| 02-06-22 | 247.027 | 247.423 | -0.396 |
| 03-06-22 | 250.236 | 250.647 | -0.411 |
| 04-06-22 | 247.278 | 247.690 | -0.412 |
| 05-06-22 | 250.739 | 251.203 | -0.464 |
| 06-06-22 | 253.455 | 254.213 | -0.758 |
| 07-06-22 | 260.894 | 261.544 | -0.650 |
| 08-06-22 | 266.601 | 267.297 | -0.696 |
| 09-06-22 | 268.866 | 269.983 | -1.117 |
| 10-06-22 | 264.222 | 265.462 | -1.240 |
| 11-06-22 | 261.020 | 262.253 | -1.233 |
| 12-06-22 | 267.251 | 268.298 | -1.047 |
| 13-06-22 | 238.411 | 239.185 | -0.774 |
| 14-06-22 | 242.528 | 243.405 | -0.877 |
| 15-06-22 | 279.097 | 280.576 | -1.479 |
| 16-06-22 | 258.072 | 259.412 | -1.340 |
| 17-06-22 | 229.797 | 231.454 | -1.657 |
| 18-06-22 | 206.356 | 208.057 | -1.701 |
| 19-06-22 | 206.623 | 208.395 | -1.772 |

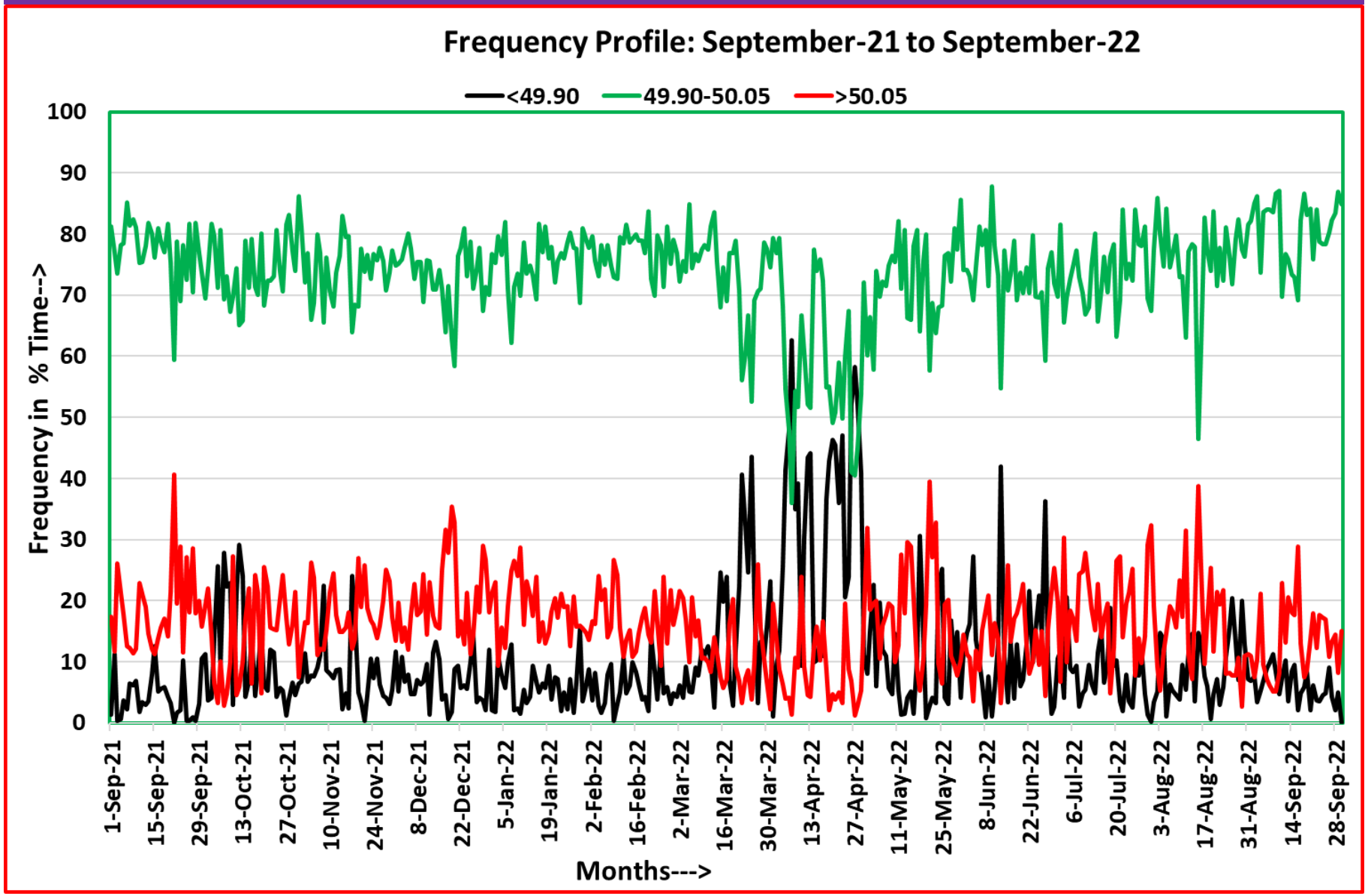
Annexure-B.I

# प्रचालन समन्वय उपसमिति की बैठक
# सितम्बर - 2022

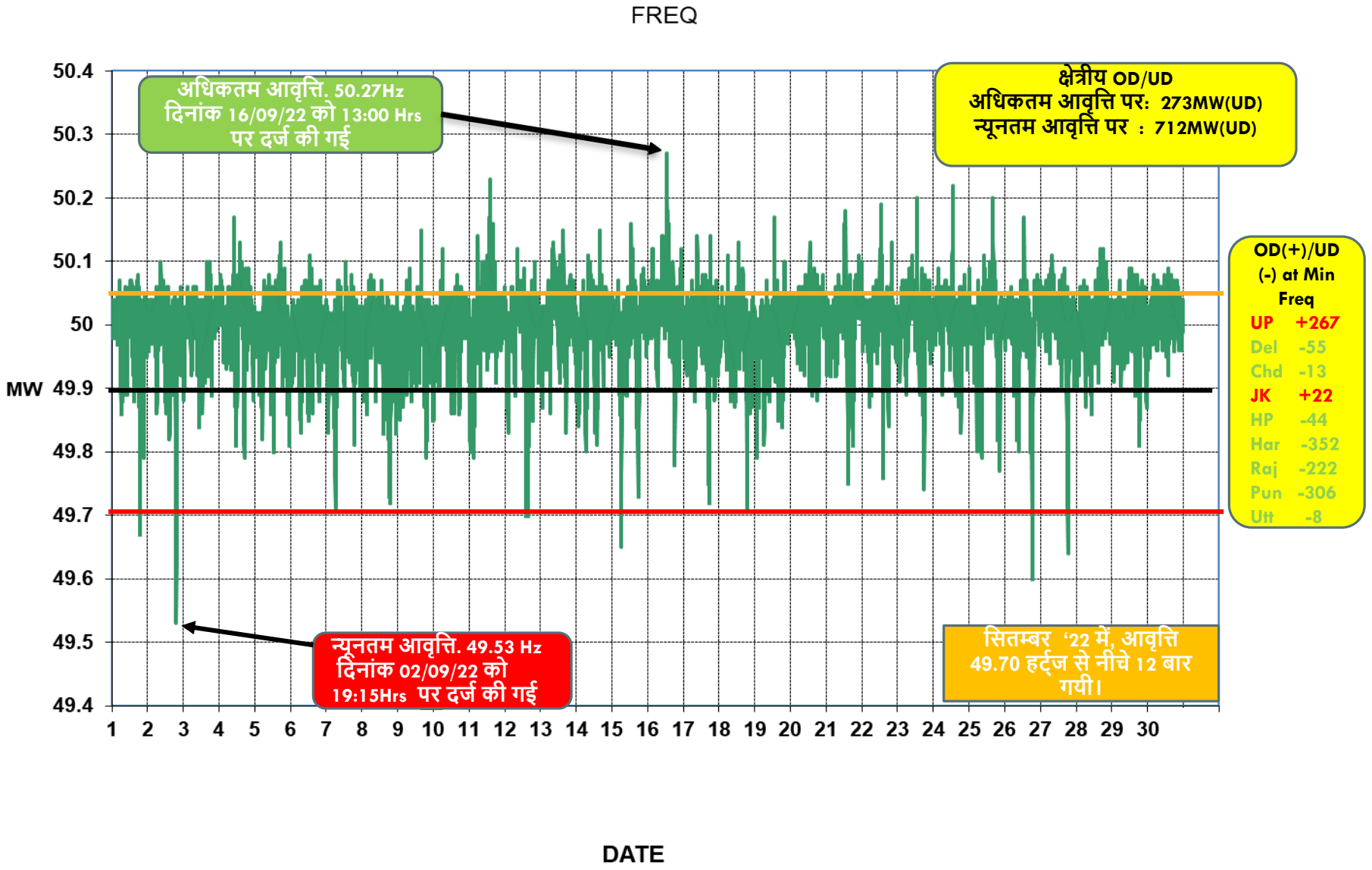
# पिछले एक साल मे आवृत्ति की स्थिति

| आवृत्ति बैंड | सितम्बर 2021 | अक्टूबर 2021 | नवम्बर 2021 | दिसम्बर 2021 | जनवरी 2022 | फ़रवरी 2022 | मार्च 2022 | अप्रैल 2022 | मई 2022 | जून 2022 | जुलाई 2022 | अगस्त 2022 | सितम्बर 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < 49.7 Hz(%) | 0.21 | 0.31 | 0.09 | 0.03 | 0.02 | 0.08 | 0.46 | 4.94 | 0.27 | 0.42 | 0.42 | 0.49 | 0.17 |
| <49.8 Hz(%) | 0.69 | 2.43 | 1.17 | 0.71 | 0.53 | 0.55 | 2.92 | 13.60 | 1.94 | 2.41 | 1.78 | 2.02 | 0.91 |
| <49.9 Hz(%) | 4.18 | 11.10 | 8.02 | 6.92 | 5.84 | 5.99 | 14.50 | 31.98 | 9.83 | 12.45 | 7.82 | 8.77 | 5.94 |
| **49.90-50.05 Hz(%)** | **77.01** | **74.38** | **74.10** | **73.14** | **75.66** | **77.06** | **73.42** | **59.30** | **72.23** | **73.38** | **73.45** | **75.77** | **80.77** |
| 50.05-50.10 Hz(%) | 15.83 | 12.70 | 14.77 | 15.09 | 15.17 | 14.36 | 10.28 | 7.35 | 12.95 | 11.46 | 14.84 | 11.99 | 11.55 |
| >50.10 Hz(%) | 2.26 | 1.81 | 3.05 | 3.89 | 3.21 | 2.51 | 1.72 | 1.35 | 4.11 | 2.43 | 3.58 | 3.00 | 1.65 |
| >50.20 Hz(%) | 0.03 | 0.06 | 0.07 | 0.25 | 0.11 | 0.08 | 0.08 | 0.08 | 0.88 | 0.28 | 0.31 | 0.47 | 0.08 |
| औसत आवृत्ति | 50.00 | 49.99 | 50.00 | 50.00 | 50.00 | 50.00 | 49.98 | 49.93 | 50.00 | 49.99 | 50.00 | 50.00 | 50.00 |

# आवृत्ति की स्थिति: सितम्बर -2021 से 2022



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

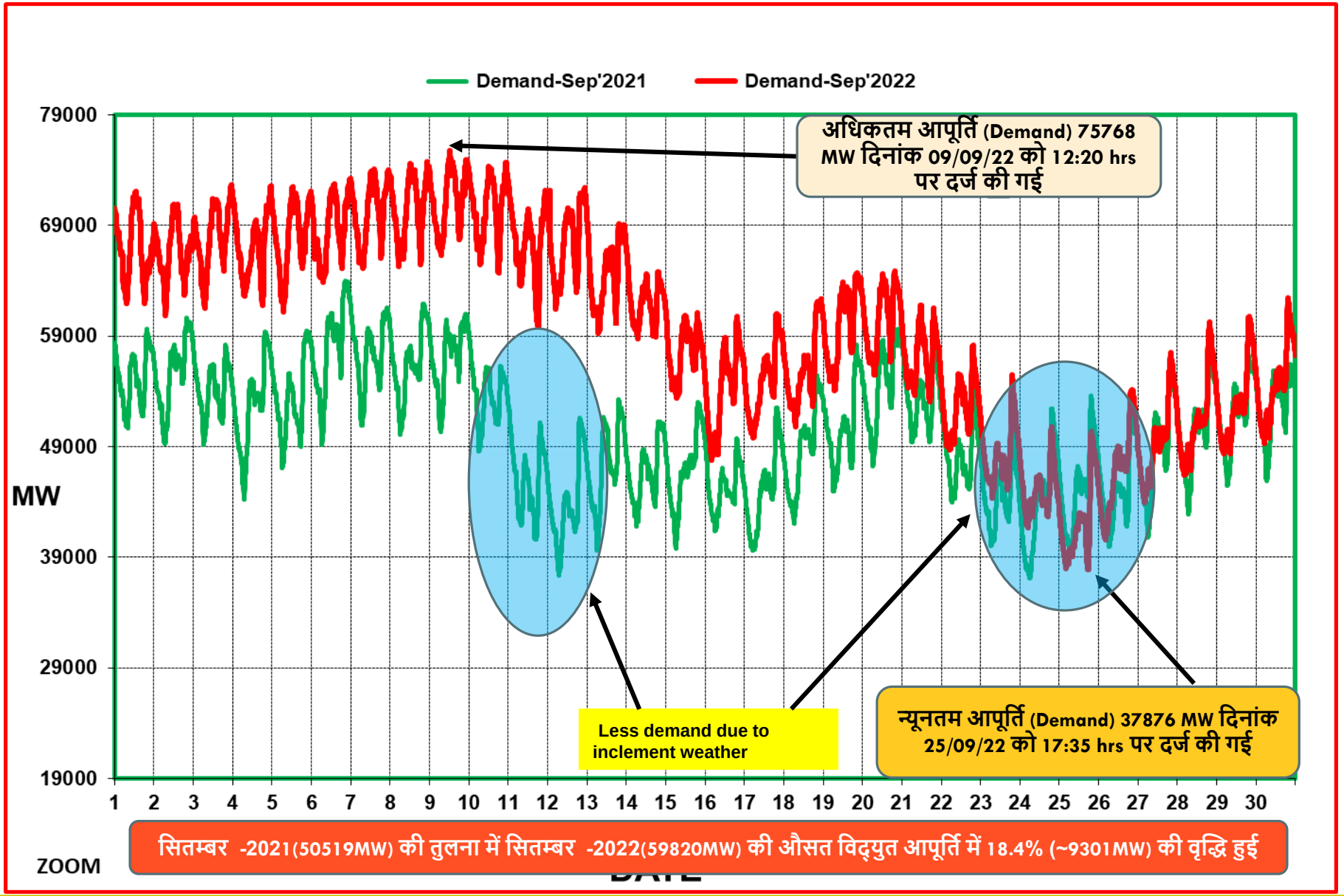


# सितम्बर -2022 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

| राज्य | अधिकतम मांग (MW) (in Sept'22) | दिनांक / समय | रिकॉर्ड अधिकतम मांग (in MW) (upto Aug'22) | दिनांक / समय | अधिकतम ऊर्जा खपत (MU) (in Sept'22) | दिनांक | रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Aug'22) | दिनांक |
|---|---|---|---|---|---|---|---|---|
| पंजाब | 14140 | 04.09.22 at 13:00 | 14295 | 22.08.22 को 14:45 बजे | 320.67 | 04.09.22 | 334.45 | 29.06.22 |
| हरियाणा | 12018 | 09.09.22 at 12:00 | 12768 | 28.06.22 को 11:56 बजे | 257.94 | 09.09.22 | 266.15 | 07.07.21 |
| राजस्थान | 15772 | 09.09.22 at 14:00 | 16012 | 28.06.22 को 14:00 बजे | 328.86 | 09.09.22 | 323.84 | 09.06.22 |
| दिल्ली | 6634 | 08.09.22 at 23:00 | 7695 | 29.06.22 को 15:10 बजे | 139.01 | 09.09.22 | 153.52 | 28.06.22 |
| उत्तर प्रदेश | 26002 | 10.09.22 at 22:00 | 25951 | 15.07.22 को 23:00 बजे | 537.82 | 10.09.22 | 547.360 | 19.08.22 |
| उत्तराखंड | 2313 | 07.09.22 at 20:00 | 2594 | 14.06.22 को 21:00 बजे | 49.00 | 09.09.22 | 54.27 | 15.06.22 |
| हिमाचल प्रदेश | 1748 | 09.09.22 at 07:30 | 2030 | 07.01.22 को 10:00 बजे | 36.24 | 09.09.22 | 36.91 | 28.06.22 |
| जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT) | 2967 | 30.09.22 at 07:00 | 2826 | 03.02.22 को 19:00 बजे | 55.10 | 30.09.22 | 59.95 | 17.01.22 |
| चंडीगढ़ | 374 | 01.09.22 at 15:00 | 426 | 08.07.21 को 15:00 बजे | 7.31 | 01.09.22 | 8.41 | 08.07.21 |
| उत्तरी क्षेत्र # | 75768 | 09.09.22 at 12:20 | 77006 | 28.06.22 को 11:50 बजे | 1710.43 | 09.09.22 | 1737.09 | 28.06.22 |

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

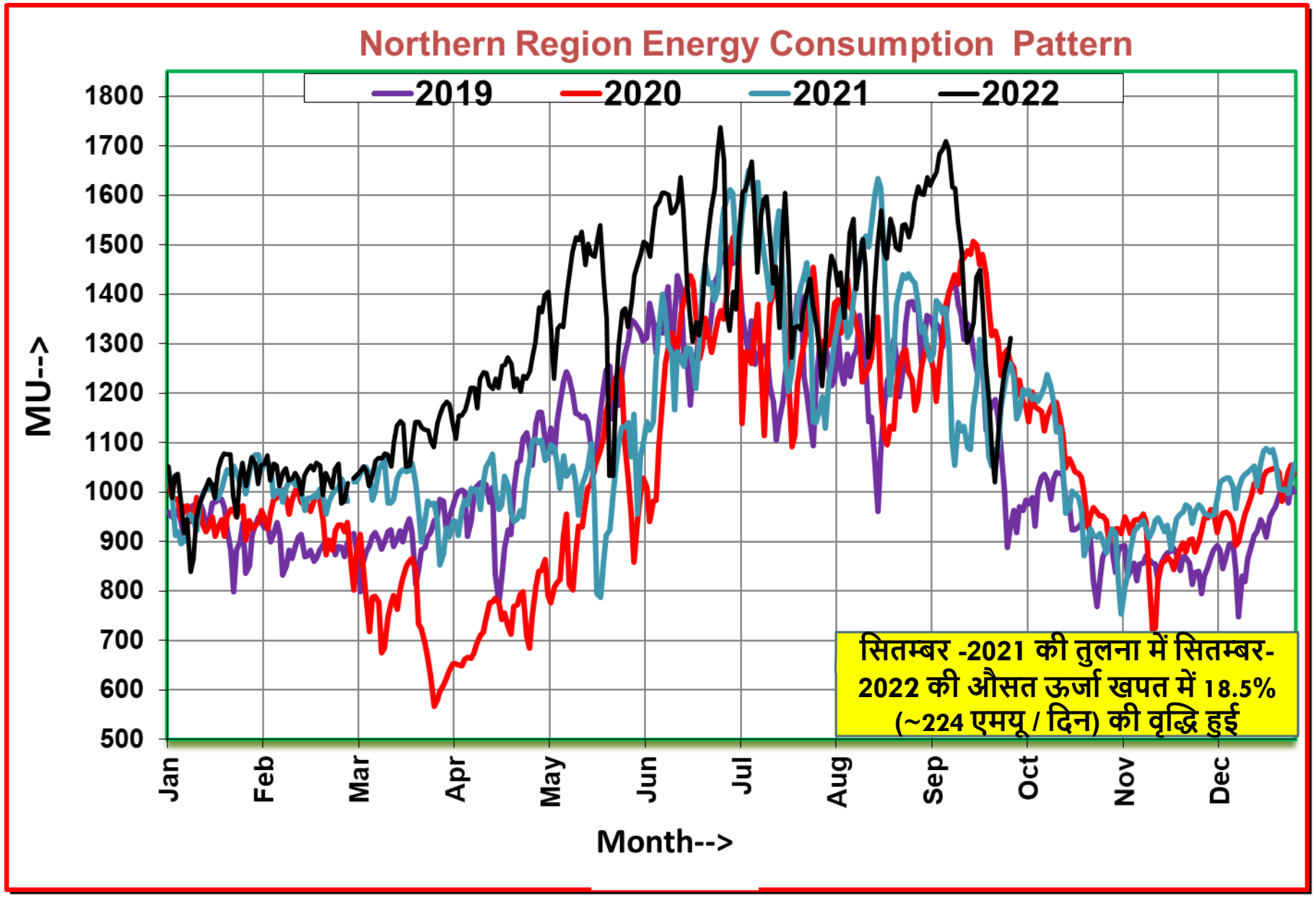
# क्षेत्रीय विद्युत आपूर्ति (Demand) सितम्बर 2021 बनाम सितम्बर 2022 (As per 5 Minute SCADA data)



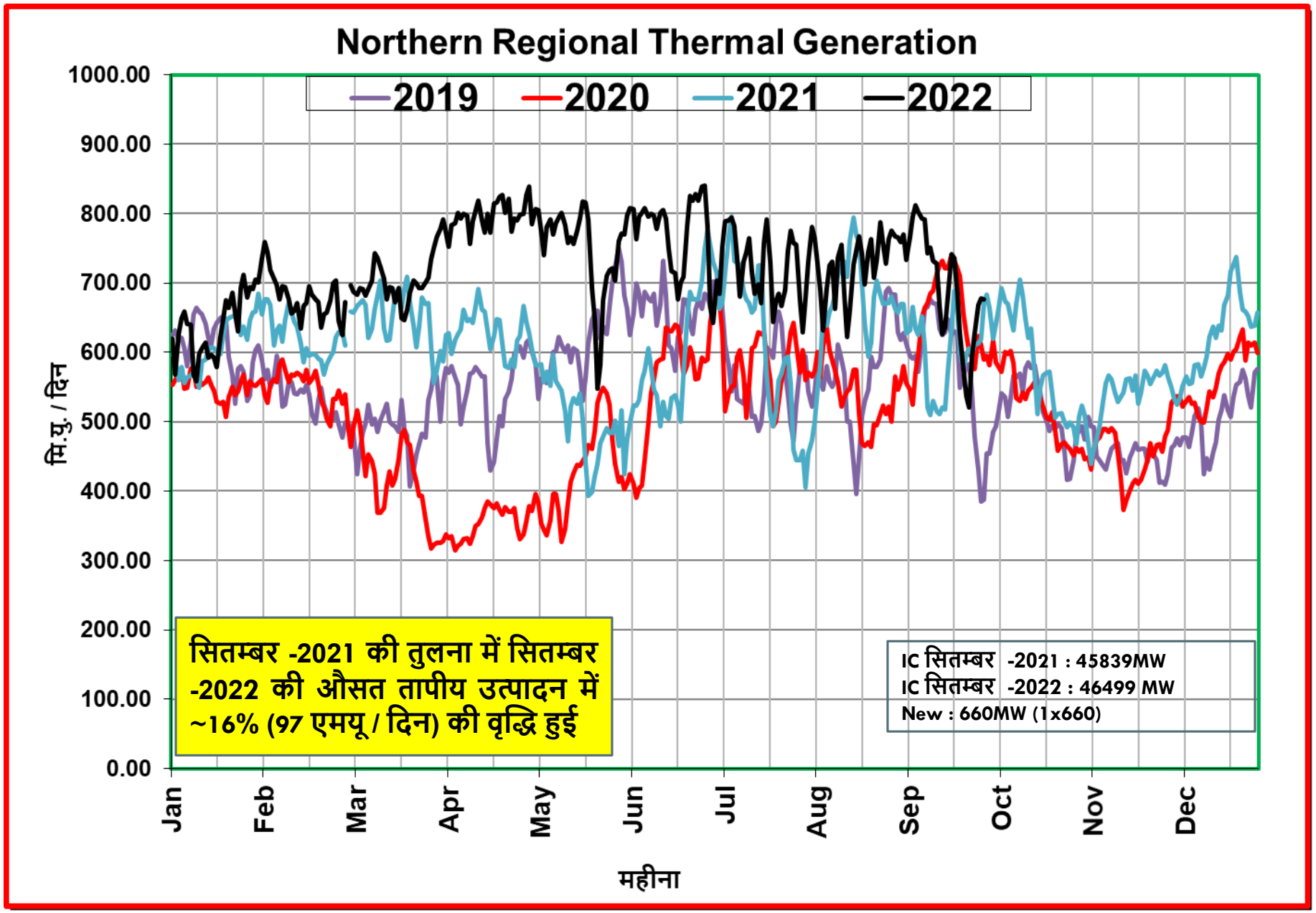
# उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि( % में) सितम्बर -2022/ सितम्बर -2021 / सितम्बर -2020

| राज्य | सितम्बर - 2020 | सितम्बर - 2021 | सितम्बर - 2022 | % वृद्धि (सितम्बर -2021 vs सितम्बर -2020 ) | % वृद्धि (सितम्बर -2022 vs सितम्बर -2021 ) |
|---|---|---|---|---|---|
| पंजाब | 242.87 | 218.24 | 256.86 | -10.14% | 17.70% |
| हरियाणा | 200.06 | 165.16 | 204.85 | -17.44% | 24.03% |
| राजस्थान | 236.75 | 218.29 | 290.30 | -7.80% | 32.99% |
| दिल्ली | 112.48 | 100.20 | 114.67 | -10.92% | 14.44% |
| उत्तर प्रदेश | 444.05 | 386.46 | 437.59 | -12.97% | 13.23% |
| उत्तराखंड | 41.61 | 42.19 | 43.40 | 1.39% | 2.87% |
| चंडीगढ़ | 5.65 | 5.53 | 5.85 | -2.12% | 5.82% |
| हिमाचल प्रदेश | 31.41 | 31.35 | 32.83 | -0.20% | 4.71% |
| जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT) | 47.46 | 44.46 | 49.58 | -6.32% | 11.52% |
| उत्तरी क्षेत्र | 1362.34 | 1211.88 | 1435.92 | -11.04% | 18.49% |

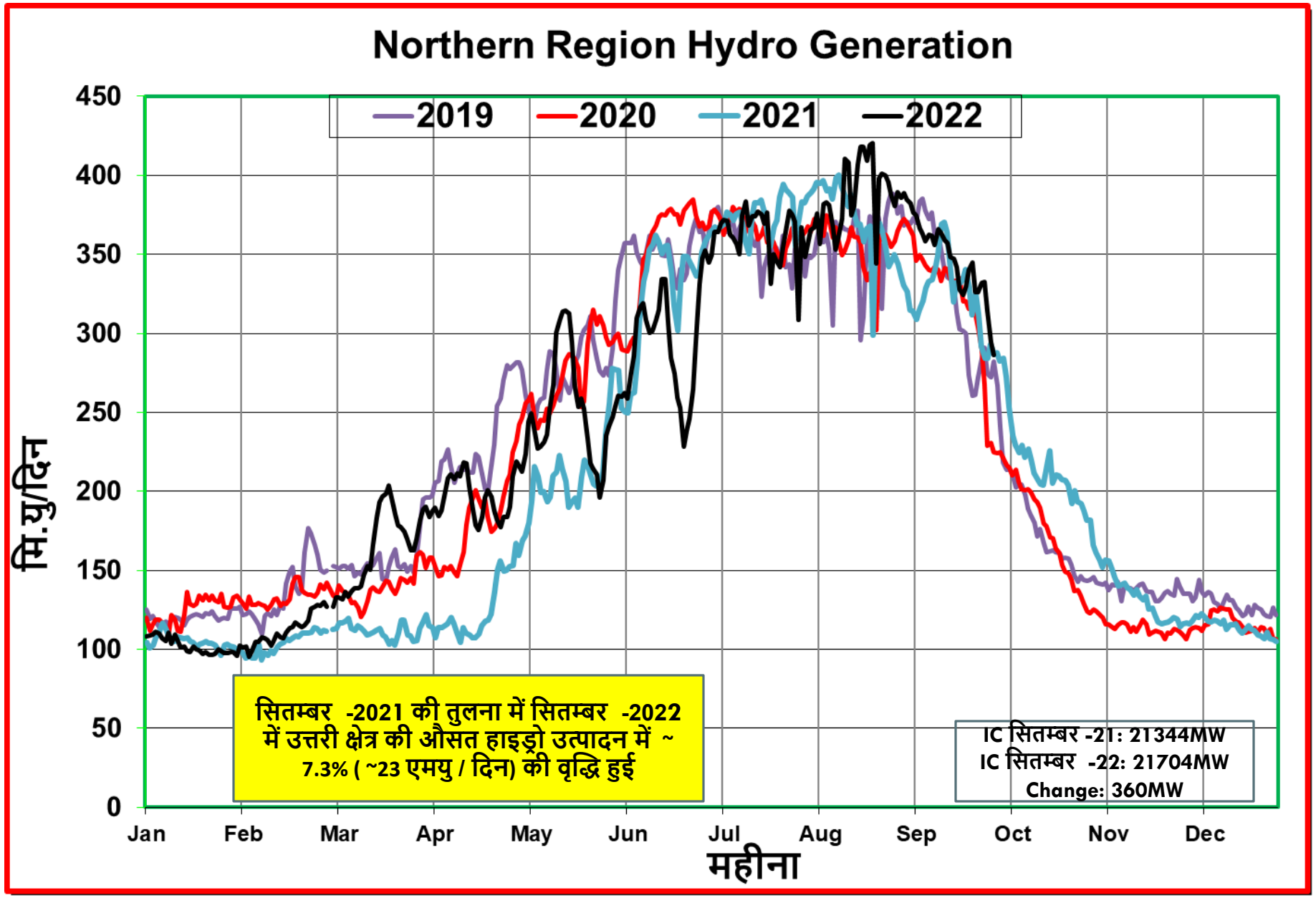
# उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



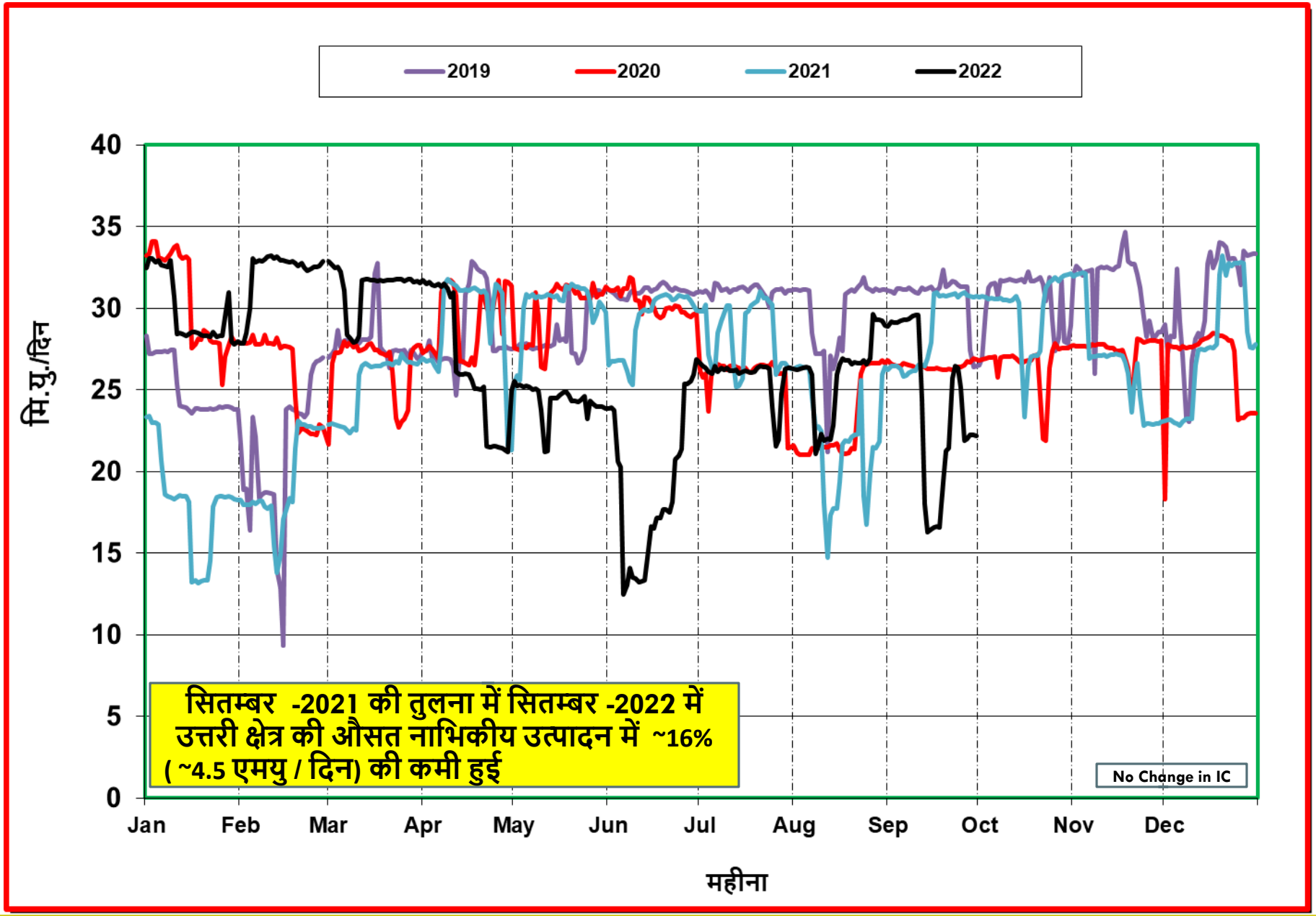
# उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



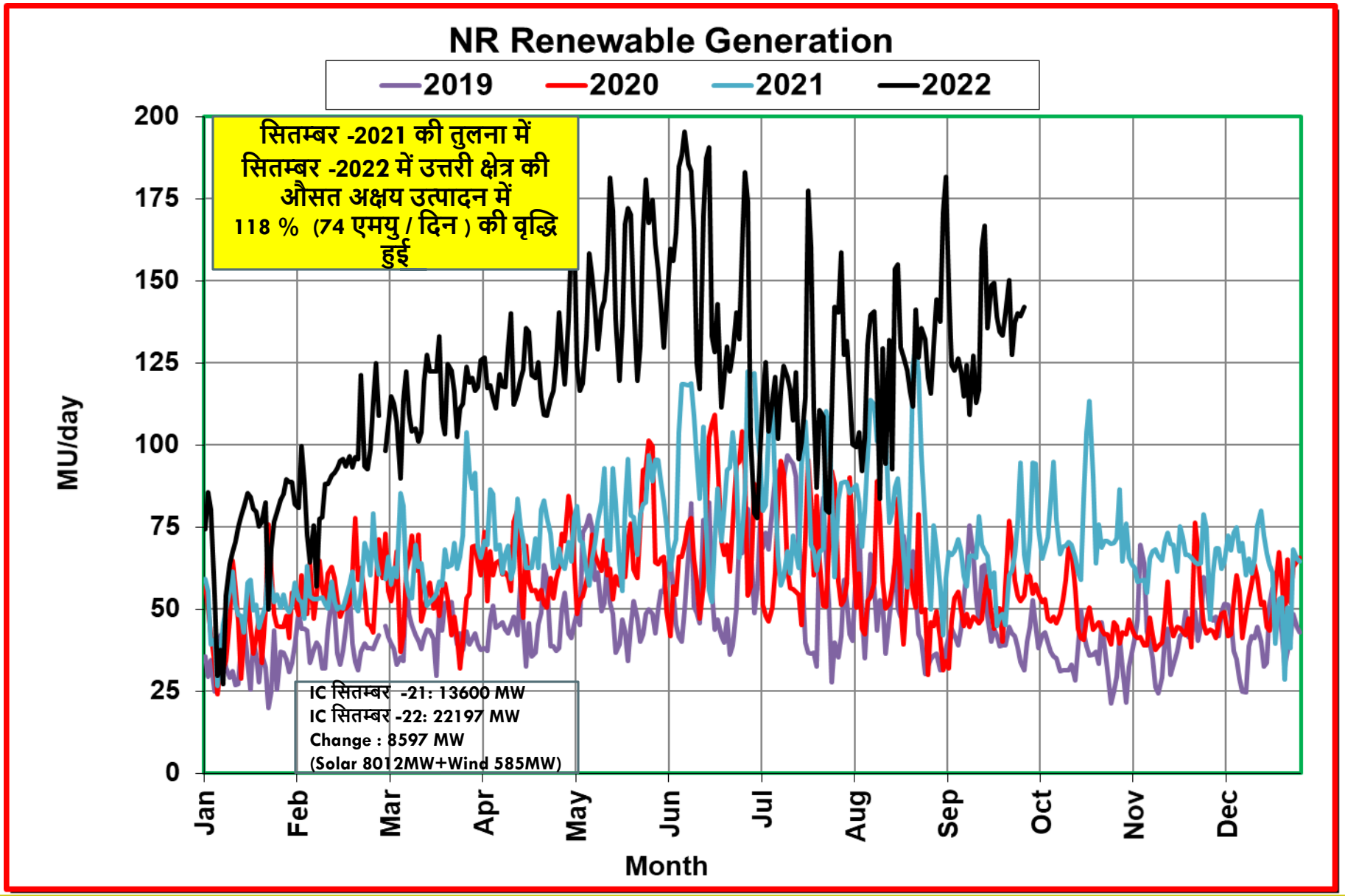
# उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



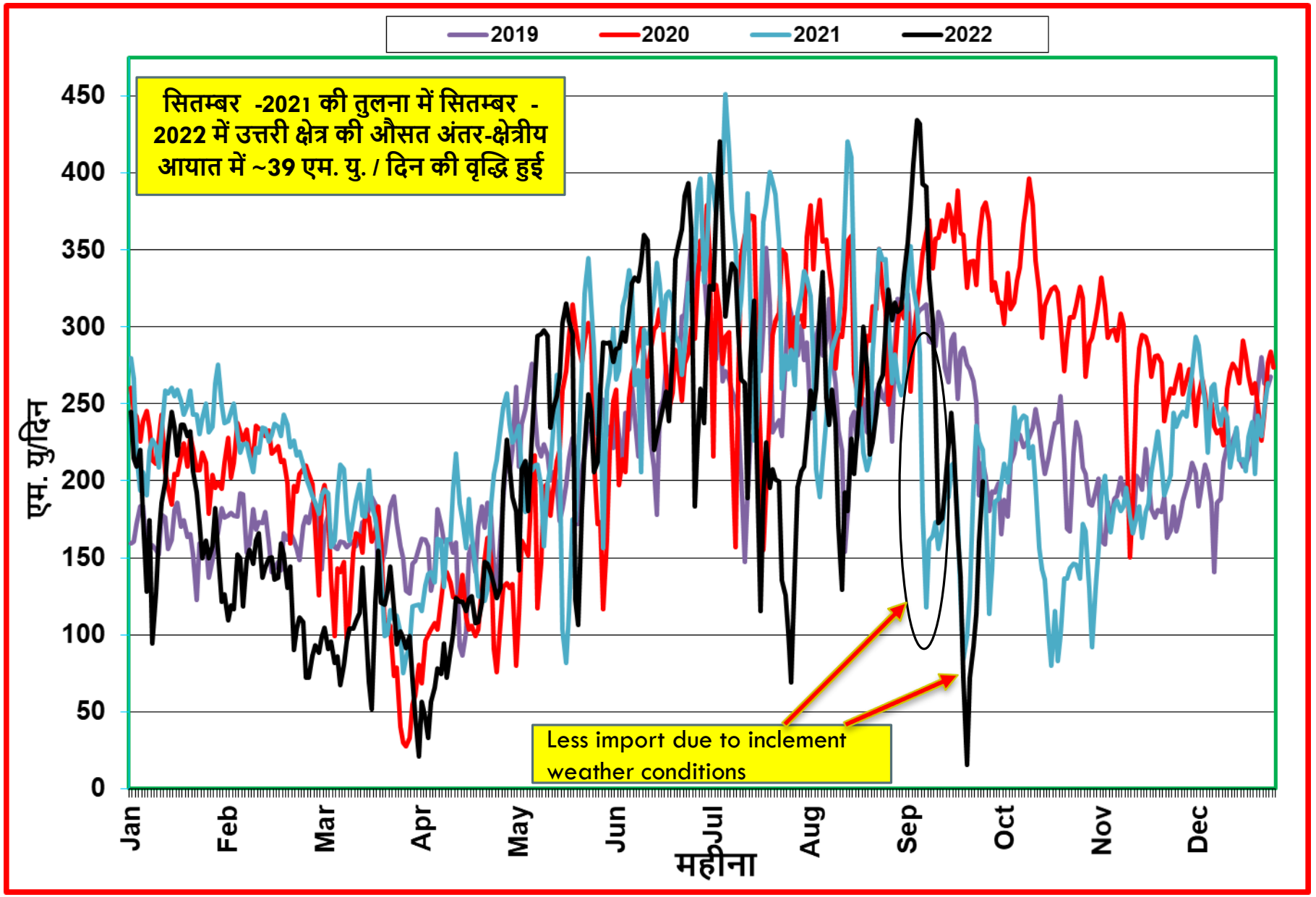
# उत्तरी क्षेत्र की नाभिकीय उत्पादन की स्थिति (Mus/Day)



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



# अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



# RE Penetration

| | Maximum Daily MU Penetration | | | |
|---|---|---|---|---|
| | September '2022 | | Record upto August '2022 | |
| | Max % Penetration | Date | Max % Penetration | Date |
| Punjab | 5.02 | 25-09-2022 | 12.28 | 01-04-2020 |
| Rajasthan | 25.68 | 04-09-2022 | 36.47 | 22-10-2021 |
| UP | 2.56 | 18-09-2022 | 4.07 | 30-10-2021 |
| NR | 14.72 | 25-09-2022 | 13.91 | 21-05-2022 |

| | Maximum Instantaneous Penetration in MW | | | |
|---|---|---|---|---|
| | September '2022 | | Record upto August '2022 | |
| | Max % Penetration | Date | Max % Penetration | Date |
| Punjab | 9.05 | 25-09-2022 | 26.87 | 22-04-2020 |
| Rajasthan | 40.93 | 04-09-2022 | 68.38 | 31-03-2020 |
| UP | 9.98 | 27-09-2022 | 15.13 | 01-04-2021 |
| NR | 37.53 | 25-09-2022 | 32.84 | 22-02-2022 |

# वास्तविक सारांश -
# सितम्बर -2021 वनाम सितम्बर -2022

| | सितम्बर -2021 (मि.यु. /दिन) | सितम्बर - 2022 (मि.यु. /दिन) | सितम्बर माह में वृद्धि (मि.यु./दिन) |
|---|---|---|---|
| तापीय (Thermal) उत्पादन | 603.99 | 700.58 | 96.59 |
| जलीय (Hydro) उत्पादन | 324.44 | 347.90 | 23.46 |
| नाभिकीय (Nuclear) उत्पादन | 28.62 | 24.12 | -4.50 |
| अंतर-क्षेत्रीय (Inter-Regional) कुल आयात | 211.50 | 250.24 | 38.74 |
| अक्षय (Renewable) उत्पादन | 63.11 | 137.54 | 74.43 |
| **कुल उपलब्धता** | **1231.66** | **1460.38** | **224.72** |

B.20

| Outage Summary For September 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 | 315 | 237 | 163 | 74 | 65.9% | 34.1% | 68.8% | 31.2% | 552 |
| UPPTCL | 102 | 185 | 69 | 116 | 59.6% | 40.4% | 37.3% | 62.7% | 287 |
| RRVPNL | 97 | 77 | 32 | 45 | 75.2% | 24.8% | 41.6% | 58.4% | 174 |
| HVPNL | 29 | 39 | 22 | 17 | 56.9% | 43.1% | 56.4% | 43.6% | 68 |
| BBMB | 19 | 41 | 23 | 18 | 45.2% | 54.8% | 56.1% | 43.9% | 60 |
| PSTCL | 14 | 27 | 12 | 15 | 53.8% | 46.2% | 44.4% | 55.6% | 41 |
| DTL | 7 | 19 | 8 | 11 | 46.7% | 53.3% | 42.1% | 57.9% | 26 |
| Adani Solar | 13 | 7 | 1 | 6 | 92.9% | 7.1% | 14.3% | 85.7% | 20 |
| PDD JK | 7 | 13 | 6 | 7 | 53.8% | 46.2% | 46.2% | 53.8% | 20 |
| PTCUL | 7 | 12 | 3 | 9 | 70.0% | 30.0% | 25.0% | 75.0% | 19 |
| NTPC | 7 | 11 | 8 | 3 | 46.7% | 53.3% | 72.7% | 27.3% | 18 |
| PFTL | 16 | 1 | 0 | 1 | 100.0% | 0.0% | 0.0% | 100.0% | 17 |
| HPPTCL | 8 | 8 | 4 | 4 | 66.7% | 33.3% | 50.0% | 50.0% | 16 |
| AEPL | 6 | 6 | 2 | 4 | 75.0% | 25.0% | 33.3% | 66.7% | 12 |
| PKTSL | 5 | 3 | 2 | 1 | 71.4% | 28.6% | 66.7% | 33.3% | 8 |
| PKTCL | 1 | 5 | 3 | 2 | 25.0% | 75.0% | 60.0% | 40.0% | 6 |
| APCPL | 5 | 0 | 0 | 0 | 100.0% | 0.0% | 0.0% | 0.0% | 5 |
| Renew Solar | 3 | 2 | 2 | 0 | 60.0% | 40.0% | 100.0% | 0.0% | 5 |
| ATIL | 2 | 2 | 2 | 0 | 50.0% | 50.0% | 100.0% | 0.0% | 4 |
| NRSS XXIX | 3 | 1 | 1 | 0 | 75.0% | 25.0% | 100.0% | 0.0% | 4 |
| GPTL | 2 | 2 | 2 | 0 | 50.0% | 50.0% | 100.0% | 0.0% | 4 |
| FBTL | 0 | 4 | 1 | 3 | 0.0% | 100.0% | 25.0% | 75.0% | 4 |
| ACME | 0 | 3 | 1 | 2 | 0.0% | 100.0% | 33.3% | 66.7% | 3 |
| NTPC_SL | 1 | 2 | 2 | 0 | 33.3% | 66.7% | 100.0% | 0.0% | 3 |
| PATRAN | 0 | 3 | 1 | 2 | 0.0% | 100.0% | 33.3% | 66.7% | 3 |
| ADHPL | 0 | 2 | 0 | 2 | 0.0% | 0.0% | 0.0% | 100.0% | 2 |
| Cleansolar_Jodhpur | 0 | 2 | 1 | 1 | 0.0% | 100.0% | 50.0% | 50.0% | 2 |
| MEGA_SURYAURJA | 1 | 1 | 0 | 1 | 100.0% | 0.0% | 0.0% | 100.0% | 2 |
| POWERLINK | 1 | 1 | 0 | 1 | 100.0% | 0.0% | 0.0% | 100.0% | 2 |
| Saurya Urja | 1 | 1 | 0 | 1 | 100.0% | 0.0% | 0.0% | 100.0% | 2 |
| Azure | 0 | 1 | 1 | 0 | 0.0% | 100.0% | 100.0% | 0.0% | 1 |
| ESUCRL | 1 | 0 | 0 | 0 | 100.0% | 0.0% | 0.0% | 0.0% | 1 |
| NHPC | 1 | 0 | 0 | 0 | 100.0% | 0.0% | 0.0% | 0.0% | 1 |
| NRSS36 | 1 | 0 | 0 | 0 | 100.0% | 0.0% | 0.0% | 0.0% | 1 |
| SBSRPC-11 | 1 | 0 | 0 | 0 | 100.0% | 0.0% | 0.0% | 0.0% | 1 |
| PAPTL | 0 | 1 | 1 | 0 | 0.0% | 100.0% | 100.0% | 0.0% | 1 |
| NPCIL | 0 | 1 | 1 | 0 | 0.0% | 100.0% | 100.0% | 0.0% | 1 |
| PVTSL | 0 | 1 | 1 | 0 | 0.0% | 100.0% | 100.0% | 0.0% | 1 |
| BKTL | 0 | 1 | 0 | 1 | 0.0% | 0.0% | 0.0% | 100.0% | 1 |
| Tata Power | 0 | 1 | 0 | 1 | 0.0% | 0.0% | 0.0% | 100.0% | 1 |
| THDC | 0 | 1 | 0 | 1 | 0.0% | 0.0% | 0.0% | 100.0% | 1 |
| **TOTAL** | **676** | **724** | **375** | **349** | **64.3%** | **35.7%** | **51.8%** | **48.2%** | **1400** |

# B.20

| OUTAGE SUMMARY OF LAST THREE MONTHS | | | | | | | |
|---|---|---|---|---|---|---|---|
| MONTH | PLANNED | FORCED OUTAGES | EMERGENCY SHUTDOWNS | TRIPPING | % PLANNED as of TOTAL S/D | % EMERGENCY SHUTDOWNS | TOTAL OUTAGES (A+B) |
| | (A) | (B=C+D) | (C) | (D) | (A/(A+C)) | (C/(A+C)) | |
| June-22 | 640 | 766 | 363 | 403 | 63.8% | 36.2% | 1406 |
| July-22 | 453 | 720 | 303 | 417 | 59.9% | 40.1% | 1173 |
| August-22 | 458 | 626 | 278 | 348 | 62.2% | 37.8% | 1084 |
| **September-22** | **676** | **724** | **375** | **349** | **64.3%** | **35.7%** | **1400** |

B.20

# New Elements First Time Charged During September 2022

| S. No. | Type of transmission element | Total No |
|---|---|---|
| 1 | 400kV, 220kV lines modification | 05 |
| 2 | LILO of 220kV lines | 01 |
| 3 | ICTs | 08 |
| 4 | Bus Reactors | 02 |
| 5 | FSCs | 01 |
| 6 | 400kV, 220 kV Bays & Buses | 51 |
| Total New Elements charged | | 67 |

**B.20**

## TRANSMISSION LINES MODIFICATION

| S.NO. | Agency/Owner | LINE NAME | Length (KM) | Conductor Type | DATE | Remarks |
|---|---|---|---|---|---|---|
| 1 | PSTCL | 220kV Manesar(PG)-Panchgaon (HV)-1 | 0.217 | Moose | 05-Sep-22 | |
| 2 | Avaada_Sunrays | 220kV Avaada Sunrays_SL_BHD2_PG -Bhadla_2 (PG)-1 | 22.5 | AL59 Moose | 08-Sep-22 | |
| 3 | NTPC Kolayat | 400kV Kolayat Solar NTPC_1 Kolayat Solar NTPC_2 | 1.7 km | Quad Moose | 09-Sep-22 | |
| 4 | UPPTCL | 220kV Baghpat(PG)-Modipuram II (UP)-1 | 38.3 KM | ZEBRA | 30-Sep-22 | |
| 5 | UPPTCL | 220kV Baghpat(PG)-Modipuram II (UP)-2 | 38.3 KM | ZEBRA | 30-Sep-22 | |

## LILO OF TRANSMISSION LINES

| S.NO. | Agency/Owner | LINE NAME | Length (KM) | Conductor Type | DATE | Remarks |
|---|---|---|---|---|---|---|
| 1 | UPPTCL | 220kV Kanpur(PG)-Kidwai Nagar Kanpur (UP) -1 | 17.56 | ZEBRA | 30-Sep-22 | After LILO of 220 KV PANKI- KANPUR(PG) LINE at 220 KV KIDWAI NAGAR (UP)) |

**B.20**

| ICTs/ GTs / STs | | | | | | | |
|---|---|---|---|---|---|---|---|
| S.NO. | Agency/Owner | SUB-STATION | ICT NO | Voltage Level (kV) | CAPACITY (MVA) | DATE | Remarks |
| 1 | POWERGRID | Bhadla_2 (PG) | 6 | 400/220/33 | 500 | 01-Sep-22 | |
| 2 | Avaada Sunrays | Avaada Sunrays_SL_BHD2_PG | 1 | 220/33/33 | 150 | 08-Sep-22 | |
| 3 | Avaada Sunrays | Avaada Sunrays_SL_BHD2_PG | 2 | 220/33/33 | 150 | 09-Sep-22 | |
| 4 | Avaada Sunrays | Avaada Sunrays_SL_BHD2_PG | 3 | 220/33/33 | 150 | 09-Sep-22 | |
| 5 | NTPC Kolayat | Kolayat Solar NTPC_2 | 1 | 400/33 | 100 | 09-Sep-22 | |
| 6 | NTPC Kolayat | Kolayat Solar NTPC_2 | 2 | 400/33 | 100 | 09-Sep-22 | |
| 7 | NTPC Kolayat | Kolayat Solar NTPC_2 | 3 | 400/33 | 100 | 10-Sep-22 | |
| 8 | POWERGRID | Fatehgarh_II(PG) | 9 | 400/220/33 | 500 | 30-Sep-22 | Charged on no load from HV side |

# B.20

## BUS REACTORS

| S.NO. | Agency/Owner | SUB-STATION | ICT NO | Voltage Level (kV) | CAPACITY (MVA) | DATE |
|---|---|---|---|---|---|---|
| 1 | UPPTCL | Rasra (UP) | 1 | 400 | 125 | 24-Sep-22 |
| 2 | POWERGRID | Maharanibagh (PG) | 1 | 400 | 125 | 29-Sep-22 |

## FSCs

| S.NO. | Agency/Owner | ELEMENT NAME | SUBSTATION | Voltage Level (kV) | DATE |
|---|---|---|---|---|---|
| 1 | POWERGRID | 137.33*3 MVAR Fixed Series Capacitor (39%) of 765KV Meerut (PG) -Koteshwar (PG) line- 2 | Meerut (PG) | 765 | 24-Sep-22 |

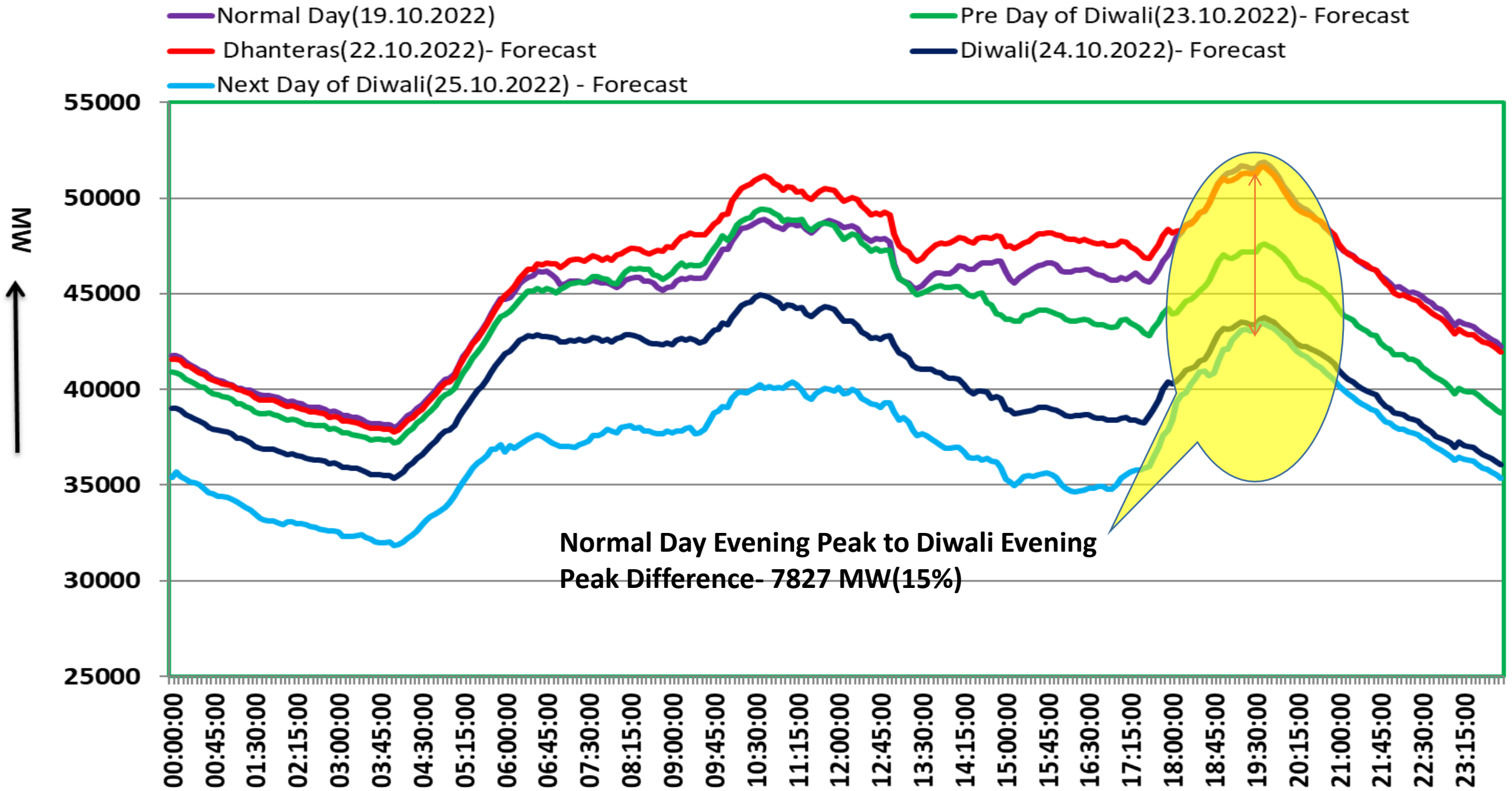
**B.20**

| GENERATING UNITS | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SL. NO.** | **Location** | **OWNER/UNIT NAME** | **Unit No/Source** | **Capacity added (MW)** | **Total/Installed Capacity (MW)** | **DATE** | **Remarks** |
| 1 | Rajasthan | Thar Surya1_Bikaner (PG) | Solar | 19 | 300 | 29.09.2022 | |
| 2 | Rajasthan | Avaada Sunrays_Bhadla_2 (PG) | Solar | 153.6 | 320 | 10.09.2022 | |
| 3 | Rajasthan | NTPC Auraiya_Floating Solar | Solar | 20 | 20 | 13.09.2022 | |
| 4 | Rajasthan | NTPC Kolayat 2_Bhadla_2 (PG) | Solar | 150 | 300 | 14.09.2022 | |
| 5 | Rajasthan | Avaada Sunrays_Bhadla_2 (PG) | Solar | 112 | 320 | 28.09.2022 | |
| 6 | Rajasthan | AHEJ4L PSS4_Fatehgarh (FBTL) | Wind | 8.5 | 260 | 23.09.2022 | |
| 7 | Rajasthan | AHEJ4L PSS3_Fatehgarh (FBTL) | Wind | 4.3 | 250 | 27.09.2022 | |
| 8 | Rajasthan | AHEJ4L PSS4_Fatehgarh (FBTL) | Wind | 10.5 | 260 | 30.09.2022 | |
| 9 | Rajasthan | AHEJ4L PSS3_Fatehgarh (FBTL) | Wind | 15 | 250 | 26.09.2022 | |
| | | **Total Solar Generation addition** | | **454.6** | | | |
| | | **Total Wind Generation addition** | | **38.3** | | | |


धन्यवाद

# Estimated Demand of Northern Region during Diwali Week


# Northern Region

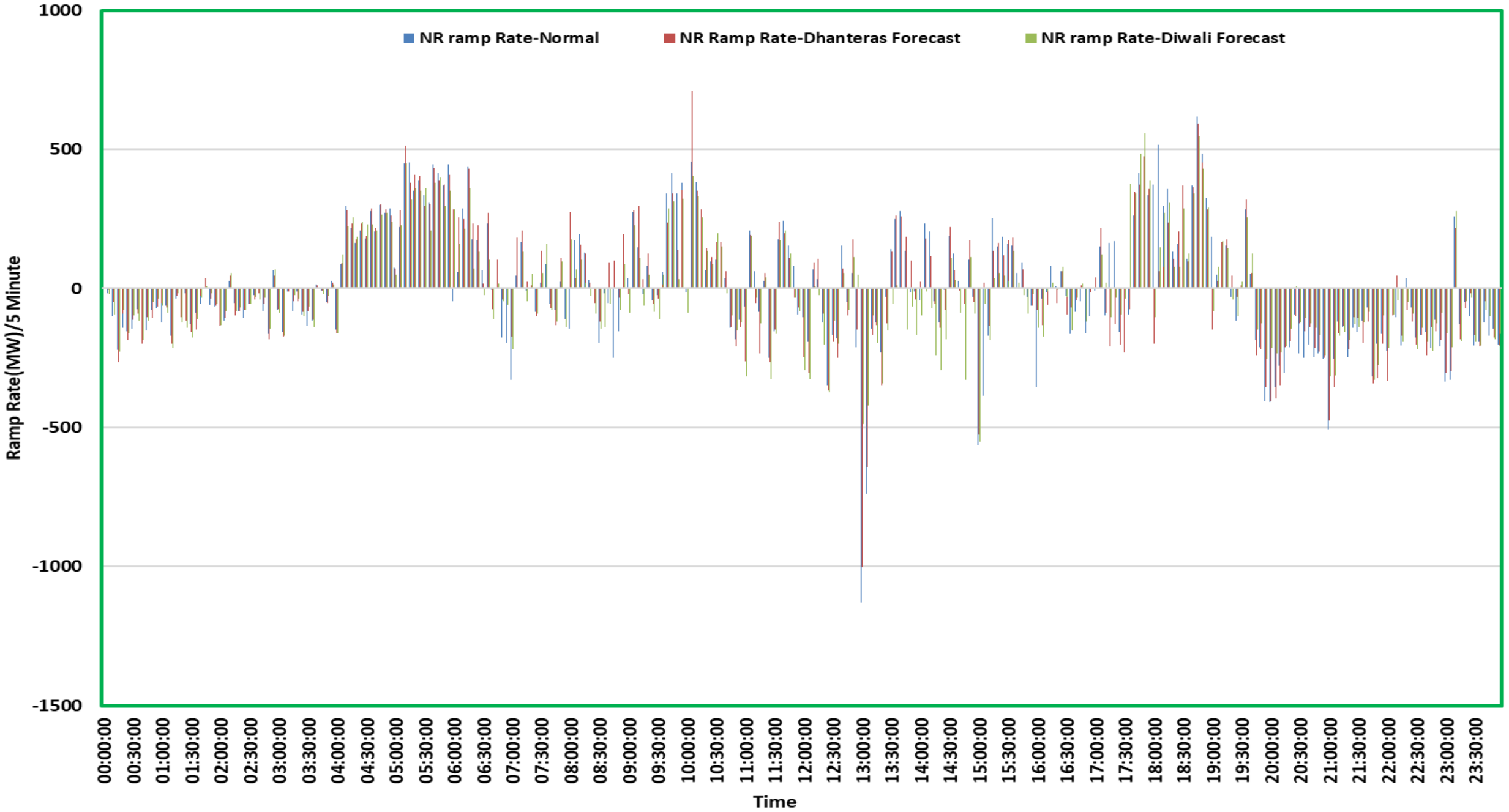


# Estimated Demand Summary of Northern Region

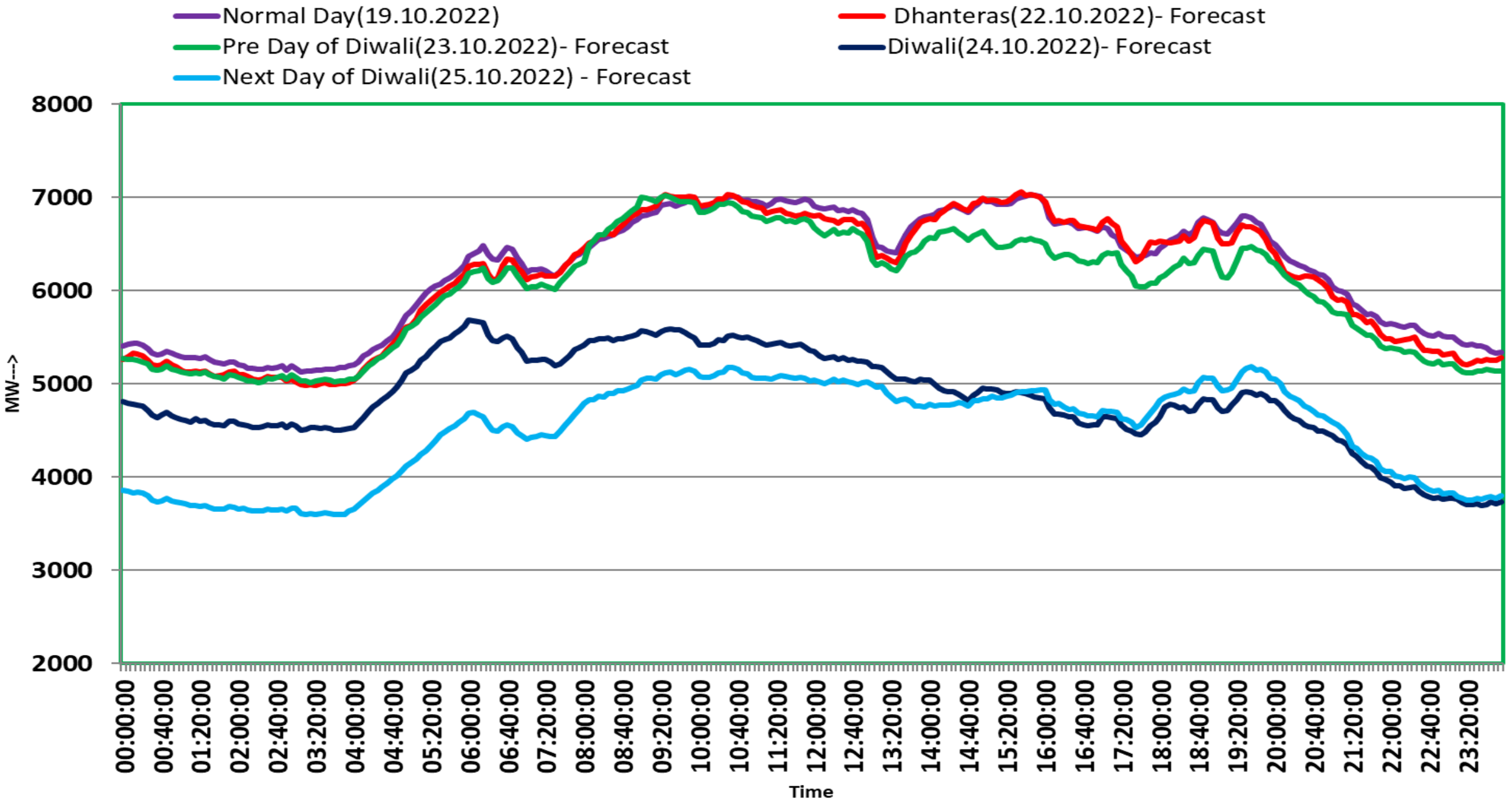
| Description | Dhanteras(22.10.2022 | Pre Day of Diwali-(23.10.2022) | Diwali (24.10.2022) | Next Day of Diwali (25.10.2022) |
|---|---|---|---|---|
| Energy Consumption( MU) | 1099 | 1047 | 966 | 891 |
| Max Demand(MW) | 51652 | 49409 | 44930 | 43423 |
| Min Demand(MW) | 37770 | 37206 | 35352 | 31840 |
| Avg Demand(MW) | 45803 | 43611 | 40239 | 37110 |

| Description | MW/Minute | Time |
|---|---|---|
| Normal Day Average Ramp Rate | 68 | 17:40 to 18:55 |
| Normal day Maximum Ramp Rate | 123 | 18:45 to 19:00 |
| Estimated Average Ramp Rate during Dhanteras | 49 | 17:40 to 18:55 |
| Estimated Maximum Ramp Rate during Dhanteras | 118 | 18:45 to 19:00 |
| Estimated Average Ramp Rate during Diwali | 58 | 17:40 to 18:55 |
| Estimated Maximum Ramp Rate during Diwali | 110 | 18:45 to 19:00 |

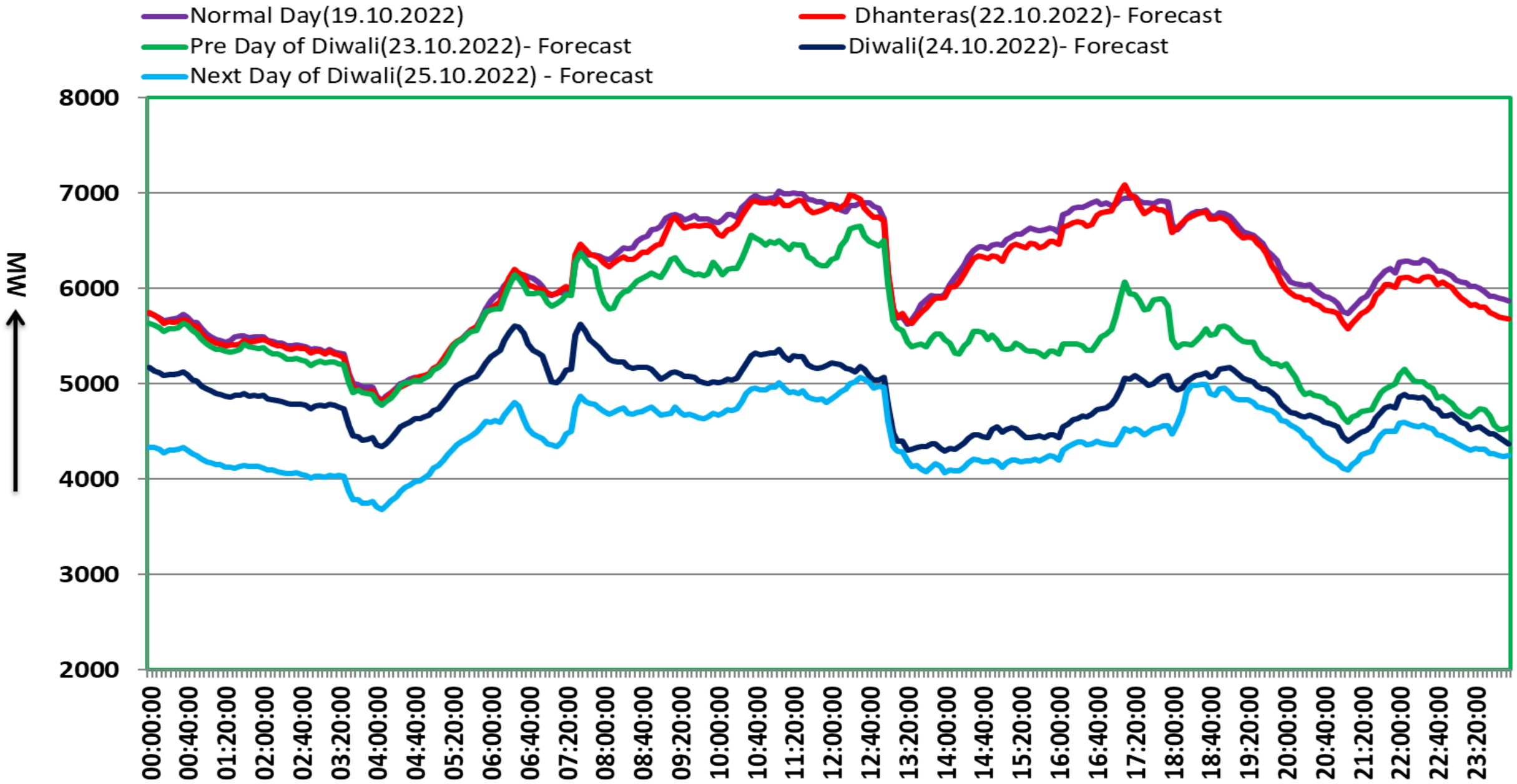
# Northern Region Ramp Rate



# Punjab


Normal Day(19.10.2022)
Dhanteras(22.10.2022)- Forecast
Pre Day of Diwali(23.10.2022)- Forecast
Diwali(24.10.2022)- Forecast
Next Day of Diwali(25.10.2022) - Forecast
8000
7000
6000
5000
4000
3000
2000
MW--->
00:00:00
00:40:00
01:20:00
02:00:00
02:40:00
03:20:00
04:00:00
04:40:00
05:20:00
06:00:00
06:40:00
07:20:00
08:00:00
08:40:00
09:20:00
10:00:00
10:40:00
11:20:00
12:00:00
12:40:00
13:20:00
14:00:00
14:40:00
15:20:00
16:00:00
16:40:00
17:20:00
18:00:00
18:40:00
19:20:00
20:00:00
20:40:00
21:20:00
22:00:00
22:40:00
23:20:00
Time

# Haryana


Normal Day(19.10.2022)
Dhanteras(22.10.2022)- Forecast
Pre Day of Diwali(23.10.2022)- Forecast
Diwali(24.10.2022)- Forecast
Next Day of Diwali(25.10.2022) - Forecast
MW
8000
7000
6000
5000
4000
3000
2000
00:00:00
00:40:00
01:20:00
02:00:00
02:40:00
03:20:00
04:00:00
04:40:00
05:20:00
06:00:00
06:40:00
07:20:00
08:00:00
08:40:00
09:20:00
10:00:00
10:40:00
11:20:00
12:00:00
12:40:00
13:20:00
14:00:00
14:40:00
15:20:00
16:00:00
16:40:00
17:20:00
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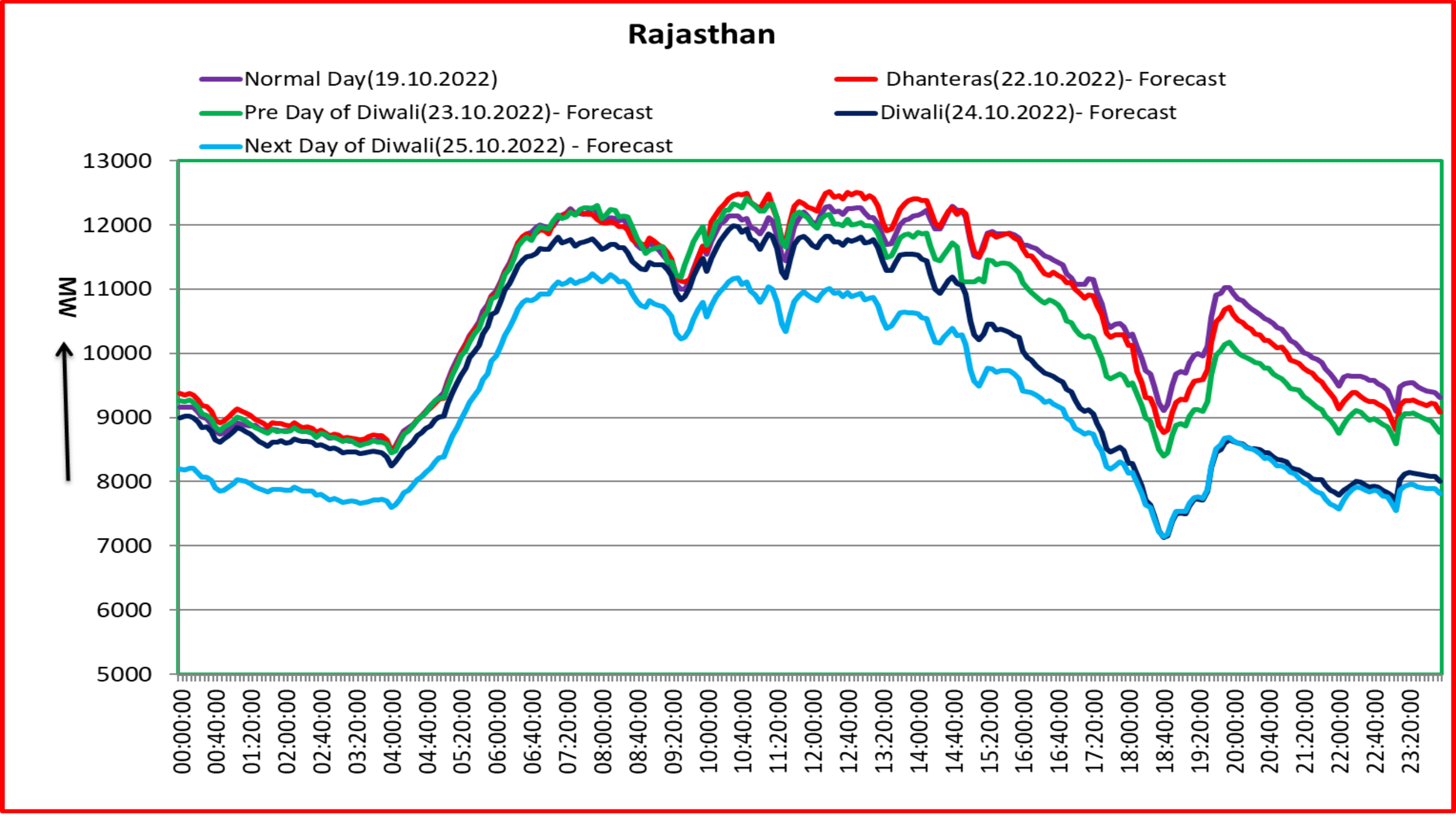
21:20:00
22:00:00
22:40:00
23:20:00


Rajasthan
Normal Day(19.10.2022)
Dhanteras(22.10.2022)- Forecast
Pre Day of Diwali(23.10.2022)- Forecast
Diwali(24.10.2022)- Forecast
Next Day of Diwali(25.10.2022) - Forecast
MW
13000
12000
11000
10000
9000
8000
7000
6000
5000
00:00:00
00:40:00
01:20:00
02:00:00
02:40:00
03:20:00
04:00:00
04:40:00
05:20:00
06:00:00
06:40:00
07:20:00
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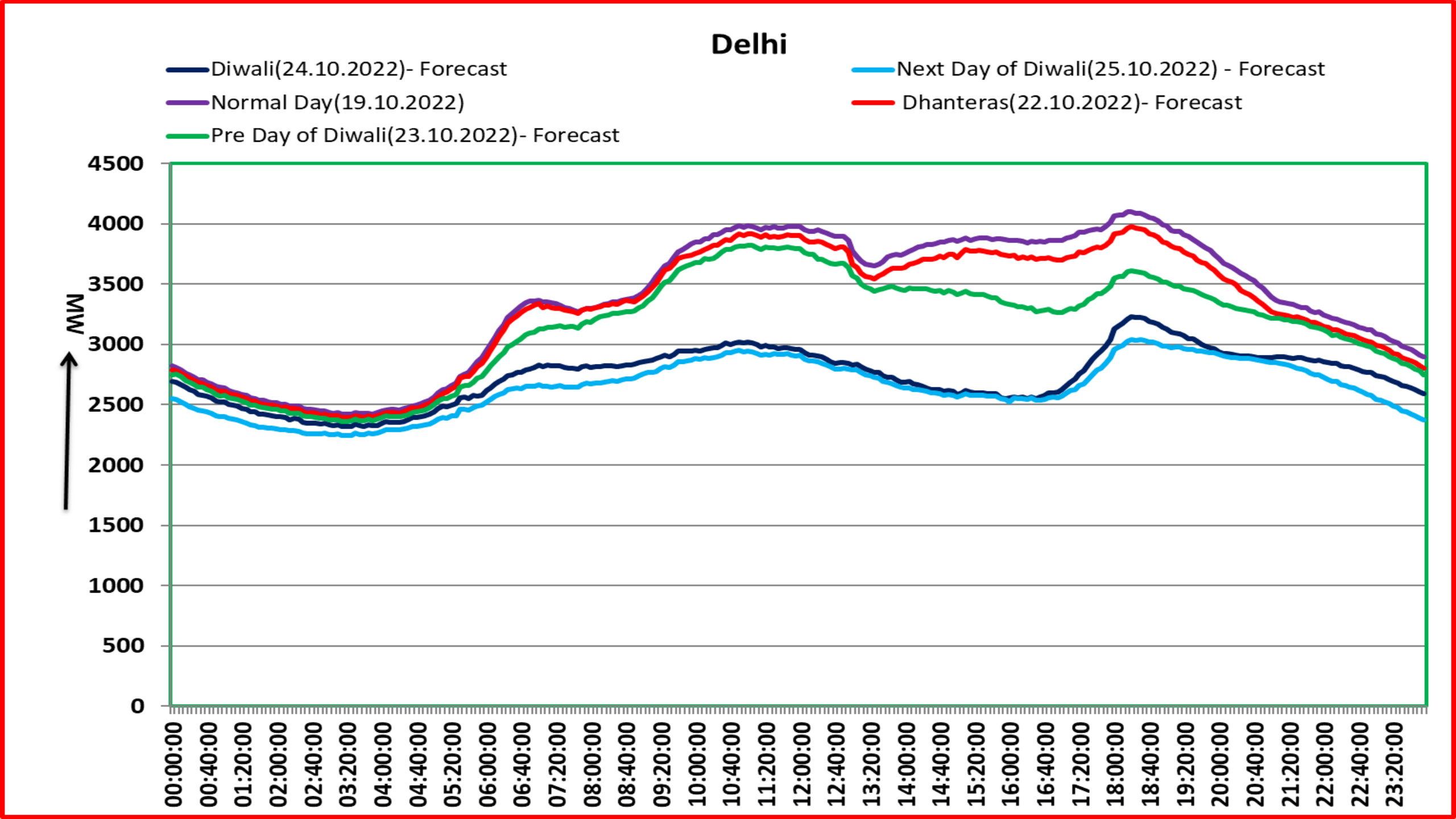
21:20:00
22:00:00
22:40:00
23:20:00


Delhi
Diwali(24.10.2022)- Forecast
Next Day of Diwali(25.10.2022) - Forecast
Normal Day(19.10.2022)
Dhanteras(22.10.2022)- Forecast
Pre Day of Diwali(23.10.2022)- Forecast
MW
4500
4000
3500
3000
2500
2000
1500
1000
500
0
00:00:00
00:40:00
01:20:00
02:00:00
02:40:00
03:20:00
04:00:00
04:40:00
05:20:00
06:00:00
06:40:00
07:20:00
08:00:00
08:40:00
09:20:00
10:00:00
10:40:00
11:20:00
12:00:00
12:40:00
13:20:00
14:00:00
14:40:00
15:20:00
16:00:00
16:40:00
17:20:00
18:00:00
18:40:00
19:20:00
20:00:00
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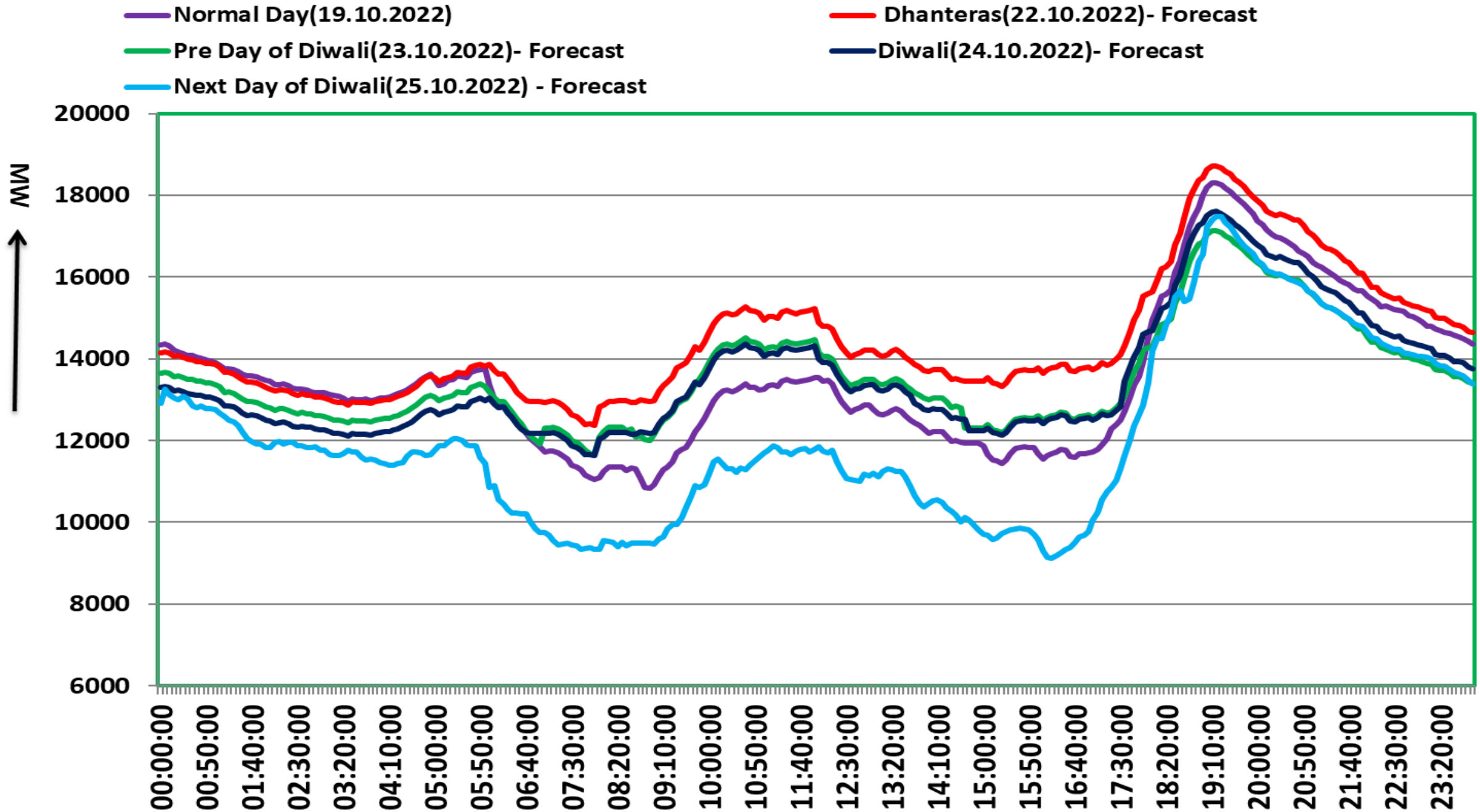
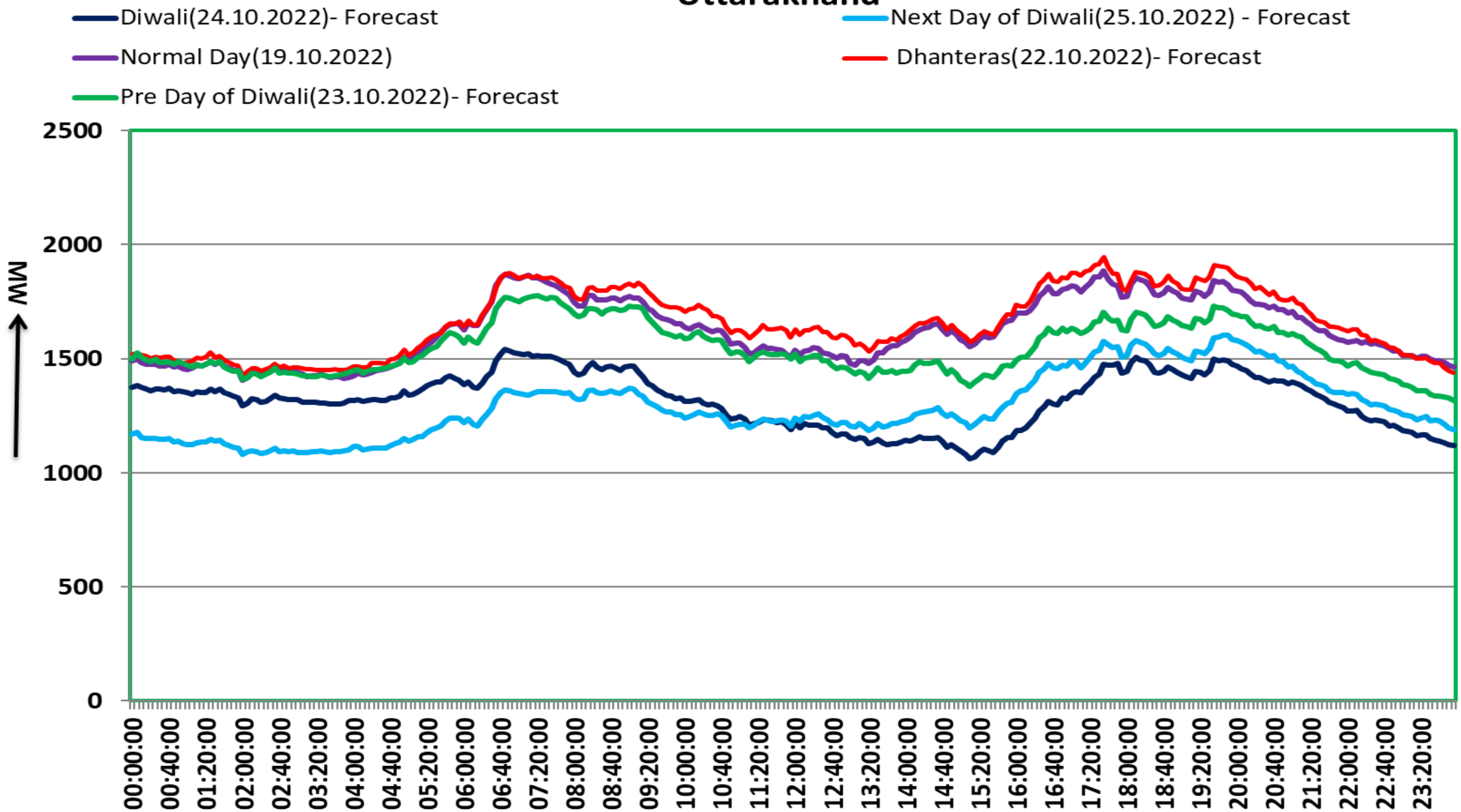
21:20:00
22:00:00
22:40:00
23:20:00

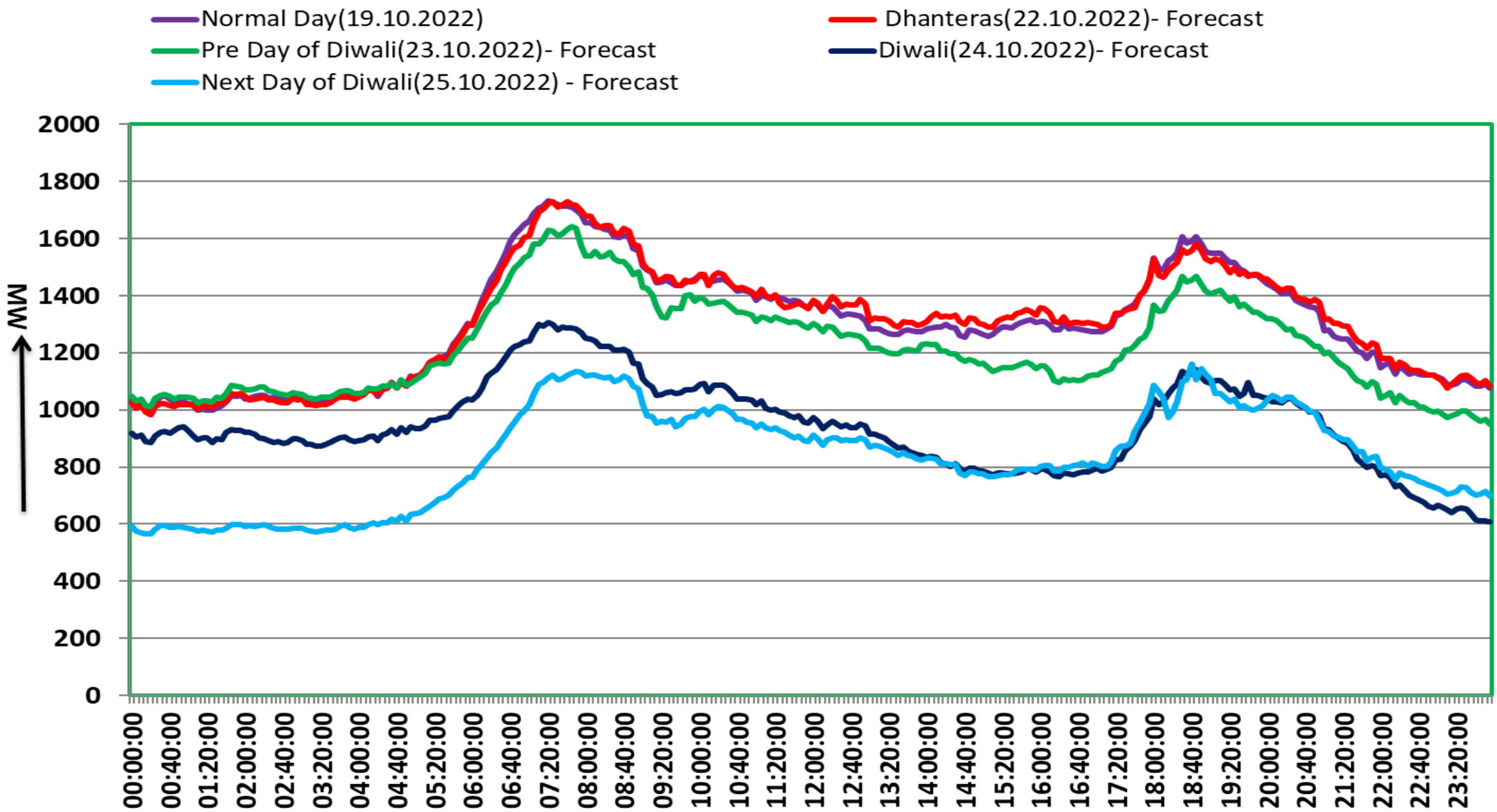
# Uttar Pradesh



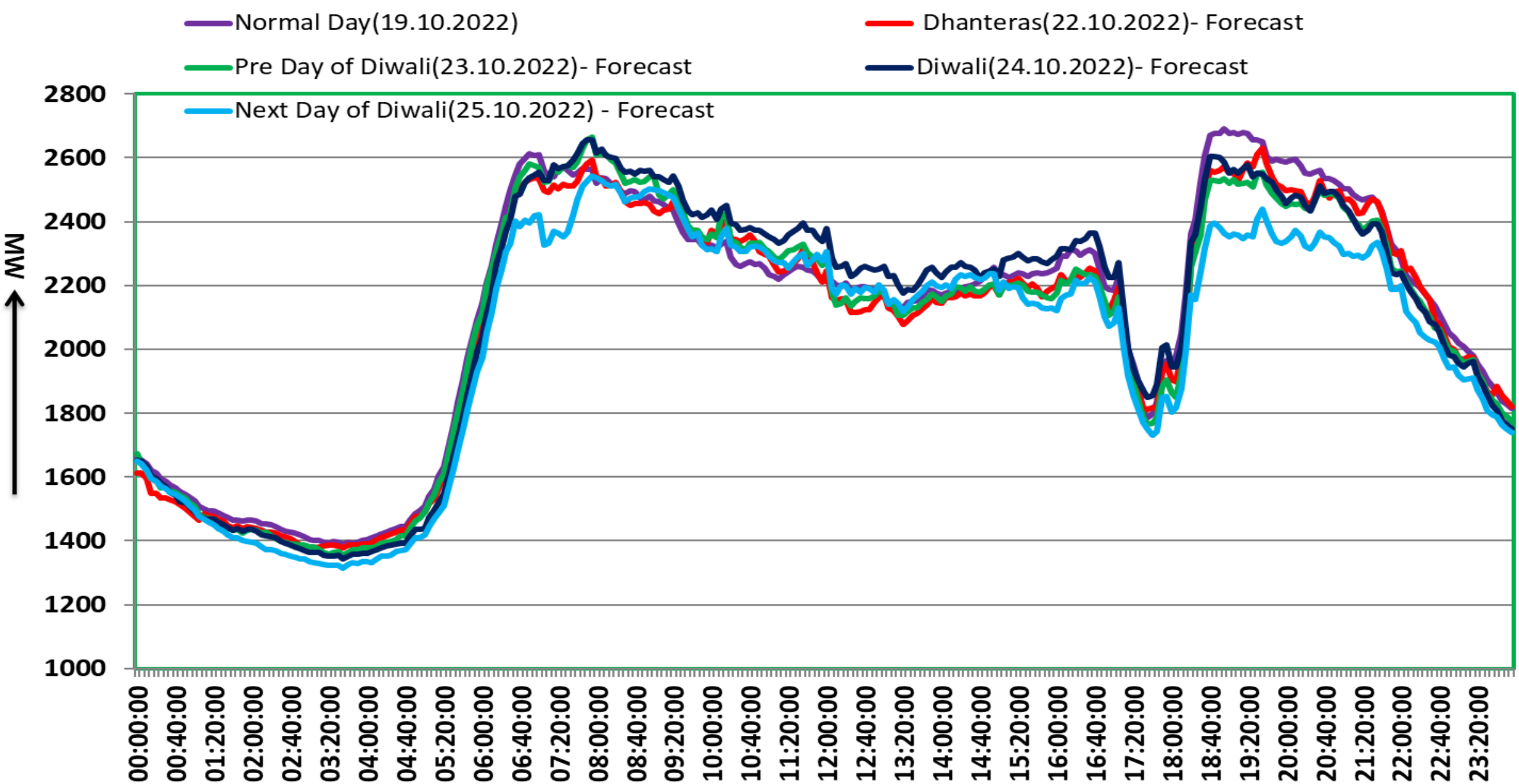
# Uttarakhand



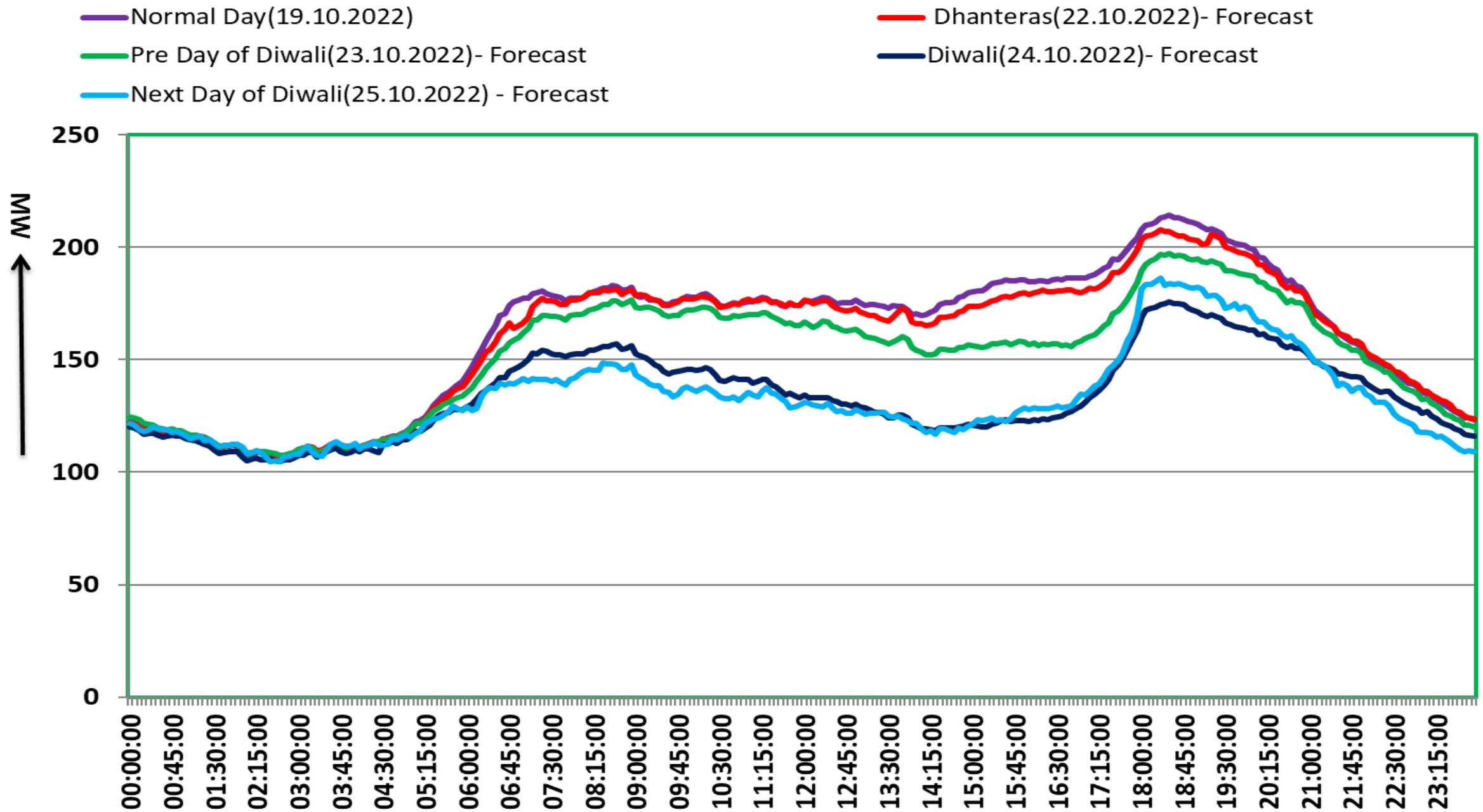
# Himachal Pradesh



# Jammu &kashmir(UT) and Ladakh(UT)



# Chandigarh


Normal Day(19.10.2022)
Dhanteras(22.10.2022)- Forecast
Pre Day of Diwali(23.10.2022)- Forecast
Diwali(24.10.2022)- Forecast
Next Day of Diwali(25.10.2022) - Forecast
MW
250
200
150
100
50
0
00:00:00
00:45:00
01:30:00
02:15:00
03:00:00
03:45:00
04:30:00
05:15:00
06:00:00
06:45:00
07:30:00
08:15:00
09:00:00
09:45:00
10:30:00
11:15:00
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16:30:00
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18:00:00
18:45:00
19:30:00
20:15:00
21:00:00
21:45:00
22:30:00
23:15:00


Thank you!

Annexure-B.III

## A. Details of Long Duration Transmission elements Outage as on 13.10.2022:-

| S.No | Element Name | Type | Owner | Outage | | | Reason / Remarks | Status updated during last OCC |
|---|---|---|---|---|---|---|---|---|
| 1 | 400/220 kV 315 MVA ICT 2 at Mundka(DV) | ICT | DTL | 20-09-2019 | 00:19 | 1119 | Due to fire in ICT | 31.10.2022 |
| 2 | 80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ) | BR | SJVNL | 17-10-2019 | 12:58 | 1091 | Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection. | 31.10.2022 |
| 3 | 50 MVAR LR on Akal-Jodhpur (RS) Ckt-1 @Akal(RS) | LR | RRVPNL | 17-08-2021 | 23:47 | | Akal: DT Receive Jodhpur: DT Send, 400 kV Reactor Manually Trip at 400 kV GSS, Jodhpur due to low voltage(before tripping reactor was charged as a bus reactor) | 30.11.2022 |
| 4 | 400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP) | ICT | UPPTCL | 13-03-2020 | 02:46 | 944 | Buccholz relay alarm and Local Breaker Backup protection operated. Tripped along with Hapur-Muradnagar line. Flags are not reset because of cable flashover. | TWC approved on 09.12.2021 for replacement with 500MVA new ICT .<br>30 Dec 2022 |
| 5 | 400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP) | ICT | UPPTCL | 19-08-2020 | 08:12 | 785 | ICT tripped on REF protection. Transformer caught fire and got damaged. | 30 Nov 2022 |
| 6 | 50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP) | LR | UPPTCL | 28-10-2021 | 22:27 | 349 | R and Y phase bushing damaged at Agra(UP). Concerned written to OEM for inspection of reactor. Order placed for testing by manufacturer | Testing done by OEM, Report awaited. |
| 7 | 220 KV AGRA(PG)-FEROZABAD(UP) (UP) CKT-1 | Line | UPPTCL | 27-11-2021 | 09:55 | 320 | Jumpering work for making Lilo point of 220 kv Firozabad(400)-Agra(765) PG line at 220 kv Tundla | Jumpering work for making Lilo point of 220 kv Firozabad(400)- Agra(765) PG line at 220 kv Tundla. FTC process completed but yet to be charged due to PLCC issue at Tundla end. |
| 8 | 400KV Bus 1 at Vishnuprayag(JP) | BUS | JPVL | 02-12-2021 | 14:42 | 314 | Bus bar protection operated at Vishnuprayag. Sparking in Bus Coupler CB. | March 2023 |
| 9 | 400/220 kV 240 MVA ICT 3 at Moradabad(UP) | ICT | UPPTCL | 13-12-2021 | 22:38 | 303 | Due to high DGA values, Hydrogen gas is above permissible limit. | 30 Dec 2022 |
| 10 | 50 MVAR Bus Reactor No 1 at<br>400KV Moradabad | BR | UPPTCL | 03-12-2021 | 00:00 | 313 | Bushing Damged , Not available in UPPTCL . Written to designe circle . | 30 Dec 2022 |
| 11 | 50 MVAR BUS REACTOR NO 1 AT 400KV PANKI(UP) | BR | UPPTCL | 29-01-2022 | 08:56 | 257 | Replacement of 50 MVAR Bus reactor by new 125 MVAR Bus Reactor. | 30.10.2022 |
| 12 | 765 KV ANPARA_D-UNNAO (UP) CKT-1 | Line | UPPCL | 08-02-2022 | 10:06 | 247 | Shifting of Line Reactor from Anpara-D to Obra-C S/S (OCC 190) | LILO of the line at Obra C under processing. Annexure-B documents awaited. |
| 13 | 220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1 | Line | PDD JK | 19-02-2022 | 21:45 | 235 | Tower no. 170 collapsed. | |
| 14 | 400 KV Parbati_3(NH)-Sainj(HP) (PKTCL) Ckt-1 | Line | PKTCL | 11-03-2022 | 03:21 | 216 | Phase to earth fault R-N , Zone-1 from Parbati_3(NH). R-phase XLPE cable has been punctured between GIS and Pothead yard of Parbati-III PS. | |
| 15 | 400 KV Sainj(HP) - Bus 2 | ICT | HPPTCL | 11-03-2022 | 03:21 | 216 | Phase to earth fault R-N xlpe cable puncture at parawti 3 end which led to tripping of the line as well as bus | |
| 16 | 220 KV Gazipur(DTL)-Shahibabad(UP) (UP) Ckt-2 | Line | UPPTCL | 30-04-2022 | 19:30 | 165 | Line remains charge at No load from UP end. Manually open at 19:30 on 30/04/22 due bending of tower no. 4 | |
| 17 | 220 KV Gazipur(DTL)-Noida Sec62(UP) (UP) Ckt-1 | Line | UPPTCL | 30-04-2022 | 22:55 | 165 | Tower tilted on one side at tower no 10 from Gazipur (DTL) end. | |
| 18 | 401A MAIN BAY - 400/66 KV 250 MVA ICT 1 AT HMEL (PS) (PSTCL) AND 400 KV HMEL (PS) - BUS 1 AT 400 KV HMEL (PS) (PSTCL) | BAY | PSTCL | 12-05-2022 | 14:05 | 153 | Transformer Differential protection operated. | |
| 19 | 400/66 kV 250 MVA ICT 1 at HMEL (PS) | ICT | PSTCL | 12-05-2022 | 14:05 | 153 | Differential relay operated. | |
| 20 | FSC of 400 KV Koteshwar-Meerut (PG) Ckt-1 at Meerut(PG) | FSC | POWERGRID | 20.02.2020 | 10:02 | | FSC out for upgradation work at 765kV. Upgraded to 765kV. Expected revival status awaited from PG-NR1.Waiting for CEA clearance. | FTC under processing |
| 21 | FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri(PG) | FSC | POWERGRID | 24.10.2021 | 21:07 | 290 | BHEL breaker hydraulic pressure could not be developed in B phase and (loss of N2 pressure) doesn't allow the FSC-1 taken into service as reported by CPCC3. | |
| 22 | FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri(PG) | FSC | POWERGRID | 29.01.2022 | 08:25 | 194 | VME protection system was blocking the FSC back in service as reported by CPCC3. | |
| 23 | 407 MAIN BAY - 80 MVAR BUS REACTOR NO 1 AT 400KV AGRA SOUTH(UP) AND SELECT | BAY | UPPTCL | 21-07-2022 | 00:00 | 84 | Due To Problem In Reactor Side Isolator While Shut Down Return Of 80 MVAR Bus Reactor. Opened At 15:58 Of 07/04/22 | 30.11.2022 |
| 24 | 50 MVAR Non-Switchable LR on Akal-Jodhpur (RS) Ckt-1 @Jodhpur(RS) | LR | RRVPNL | 07-07-2022 | 21:10 | 97 | To take-out Line Reactor out of service due to high DGA violation; for internal inspection by OEM. | |
| 25 | 400/220 kV 500 MVA ICT 1 at Bhiwani(BB) | ICT | BBMB | 31-07-2022 | 04:42 | 74 | Tripped due to tripping of 220 KV Bhiwani-Hissar ckt-2.ICT under inspection. | |
| 26 | 220/33 kV 125 MVA ICT 4 at Saurya Urja Solar(SU) | ICT | Saurya Urja | 31-07-2022 | 16:28 | 73 | Differential, PRD, HV REF and Buchholz tripping | |
| 27 | 125 MVAR Bus Reactor No 1 at 400KV Chamera_1(NH) | BR | NHPC | 14-08-2022 | 11:31 | 60 | High Acetylene content found during DGA of Y-Phase Bus Reactor. | |
| 28 | 765 KV Agra-Gwalior (PG) Ckt-1 | Line | POWERGRID | 25-08-2022 | 05:12 | 49 | Phase to earth fault R-N , Dist. 37km, Fault current 12.2kA from Agra. Charging attempt failed at 07:11Hrs (25.08.2022). During patrolling, 01 no. Tower found collapsed at Loc. no. 247. | |
| 29 | 412 MAIN BAY - 400KV AKAL-JODHPUR (RS) CKT-1 AT JODHPUR(RS) | BAY | RRVPNL | 02-09-2022 | 15:05 | 40 | Replacement of circuit breaker (Bus B side breaker 852B CB of 400kV Jodhpur-Akal line at jodhpur end) Line will remain in service with 852 A CB. | |
| 30 | 400/220 kV 315 MVA ICT 3 at Mundka(DV) | ICT | DTL | 05-09-2022 | 19:18 | 37 | Fire observed on both sides bushing of 315 MVA ICT-3. | |
| 31 | 400 KV BAREILLY-UNNAO (UP) CKT-2 | Line | UPPTCL | 13-09-2022 | 10:26 | 30 | for Preventive Maintenance | |
| 32 | 400KV Bus 2 at Parbati_3(NH) | BUS | NHPC | 14-09-2022 | 16:32 | 28 | Rectification work in Generator GIS Bay CB. | |
| 33 | 400/220 kV 240 MVA ICT 2 at Orai(UP) | ICT | UPPTCL | 24-09-2022 | 00:03 | 19 | Differential protection Trip, REF protection Trip. | |
| 34 | FSC(40%) of 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt-1 at Kala Amb(PKTL) | FSC | POWERGRID | 26-09-2022 | 09:47 | 17 | To attend Unbalance current that is rapidly increasing in B phase. Charging code was issued as NR2209-4483, but cancelled due to Unbalance alarm is still not rectified. | |

## B. Details of Long Duration Generating Units Outage :-

| S.No | Element Name | Type | Owner | Outage | | | Reason / Remarks | Status updated during last OCC |
|---|---|---|---|---|---|---|---|---|
| 1 | 250 MW Chhabra TPS - UNIT 4 | | RRVPNL | 09-09-2021 | 00:47 | 399 | Due to Electrostatic precipitators (ESP) structure damage | |
| 2 | 100 MW Koteshwar HPS - UNIT 1 | | THDC | 04-11-2021 | 22:58 | 342 | Due to fault in GT | |
| 3 | 108 MW Bhakra HPS - UNIT 1 | | BBMB | 15-12-2021 | 12:05 | 301 | Renovation Modernization and upgradation of capacity to 126MW | |
| 4 | 34 MW Delhi Gas Turbines - UNIT 9 | | DTL | 12-02-2022 | 20:00 | 242 | STG Governor oil leakage | |
| 5 | 30 MW Delhi Gas Turbines - UNIT 5 | | DTL | 12-02-2022 | 21:04 | 242 | Due to tripping of associated STG at 20:00 hrs | |
| 6 | 660 MW Suratgarh SCTPS - UNIT 7 | | RRVPNL | 15-03-2022 | 01:32 | 212 | FAILURE OF R PHASE BUSHING OF GT-7A. | |
| 7 | 210 MW Guru Hargobind Singh TPS (Lehra Mohabbat) - UNIT 2 | | PSPCL | 13-05-2022 | 21:36 | 152 | ESP breakdown. Rectification works under progress as confirmed by SLDC-PS. | |
| 8 | 253 MW Bawana GPS - UNIT 5 | | DTL/Pragati CCGT | 03-06-2022 | 22:04 | 131 | C&I problem | |
| 9 | Ramgarh GPS - UNIT 2 | | RRVPNL | 04-06-2022 | 01:17 | 131 | Due to fire accident in GT - 2 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 | 109.3 MW Auraiya GPS - UNIT 6 | | NTPC | 28-06-2022 | 22:50 | 106 | hunting in line pressure of Liquid fuel (now RSD) | |
| 11 | 250 MW Suratgarh TPS - UNIT 1 | | RRVPNL | 30-06-2022 | 18:24 | 104 | Stator earth fault | |
| 12 | 210 MW Kota TPS - UNIT 3 | | RRVPNL | 08-08-2022 | 23:44 | 65 | Due to problem in seal oil flow of generator. | |

| S.No. | Element Name | Date of Outage | Tenative date of revival | Outage reason |
|---|---|---|---|---|
| 1 | 400/220 kV 315 MVA ICT 1 at Muradnagar old | 13-03-2020 | TWC approved on 09.12.2021 for replacement with 500MVA new ICT . November 2023 | Damged |
| 2 | 400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP) | 19-08-2020 | ICT received from BHEL ,December 2022 | Damaged |
| 3 | 240 MVA ICT - III at 400kV Moradabad | 13-12-2021 | Alloted from Unnao and will be lifted from Unnao after installation of 500 MVA ICT at Unnao which will be delivered in Dec 2022 | It has been informed that 315MVA ICT has been aproved |
| 4 | 50 MVAR Bus Reactor No 1 at 400KV Moradabad | 03-12-2021 | Alloted from 400 kV design ,15 Dec 2022 | Bushing Damged , Not available in UPPTCL . Written to designe circle . |
| 5 | 400kV Bus - I at Vishnuprayag HEP | 02.12.21 | Mar 2023 | Order placed on 14.09.2022 to GE |
| 6 | 765kV Anpara D-Unnao line | 08.02.22 | OCBTL to take modification in LILO of 765 kV Anpara D -Unnao line | |
| 7 | 50 MVAR BUS REACTOR NO 1 AT 400KV PANKI(UP) | 29.01.22 | 30 Dec 2022 | |