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/106/01/2021/ 9649-9690 दिनांक: 12.10.2021

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 187वीं बैठक का कार्यवृत |

Subject: Minutes of 187th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 187वीं बैठक दिनांक 21.09.2021 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165/ पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

187th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 21.09.2021. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165/. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक: यथोपरि

सौमित्र 12/10/2021.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 187वीं बैठक का कार्यवृत्त

187th meeting of OCC of NRPC was held on 21.09.2021 through video conferencing.

खण्ड-क: उ.क्षे.वि.स. **PART-A: NRPC**

1. Confirmation of Minutes

Minutes of 186th OCC meeting was issued on 08.09.2021. OCC confirmed the minutes. NRLDC requested to add one paragraph in point no. 17 (Table Agenda No.1) of MoM. MS, NRPC asked NRLDC representative to submit their comment separately. NRLDC has submitted its comments vide email dated 22.09.2021. The comments have been examined, and incorporated suitably as under:

CGM (In-charge) NRLDC informed that NRLDC is analysing the reason for error in calculation. It was emphasized that the SCADA/SEM issue being related to telemetry has been deliberated in 6th and 7th Test meetings held on 10.9.2015 and 11.6.2016 respectively. Wherein all utilities including Punjab was requested for having its own calculation of the drawal as well for cross-verification. The issue of SCADA/SEM was also discussed in CERC (MOM and report prepared in reference to the meeting is attached). In 186th OCC meeting held 20th August, 2021, it was again requested that drawal calculation should be calculated at PSTCL end also to avoid such mis-happening in future.

Member Secretary, NRPC also advised PSTCL to make arrangement of its own drawal calculation for cross-verify purpose.

2. Review of Grid operations of August 2021

2.1. Anticipated vis-à-vis Actual Power Supply Position (Provisional) for August 2021

Reasons submitted by states for significant deviation of actual demand from anticipated figures during the month of August 2021 are as under:

Delhi

The demand of Delhi has not picked up due to post lockdown effect in Delhi to control second wave of COVID-19.

Himachal Pradesh

The anticipation in energy requirement and peak demand in respect of Himachal Pradesh for the month of August 2021 came on higher side due to dry weather & less monsoon than anticipation in the site.

Haryana

Variation in Energy Consumption of Haryana was observed due to less monsoon in the month of August-2021 (i.e., from dated 10.08.21 to 20.08.21 & 25.08.21 to 31.08.21).

Rajasthan

Actual energy consumption was higher due to weak monsoon and high temperature in the state.

OCC again expressed concern about non-participation of official from some of the states and UTs in the meeting and requested all the utilities to participate in the meeting.

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 August, 2021 was enclosed in the agenda and same was discussed in the meeting.

No significant deviation in any of the states was observed.

2.3. The highlights of grid operation during August 2021 are as follows:

2.3.1. Frequency remained within the IEGC band for 76.93% of the time during August 2021, which is lower than that of last year during same month (August 2020) when frequency (within IEGC band) remained 80.92% of the time. For further improvement, Utilities were advised to take necessary action to improve the frequency regime by not changing abruptly the loads at block boundaries and assuring primary response from the generators.

2.3.2. Maximum and minimum load for the region during August 2021 were 73,866 MW (18.08.2021 at 12:20 hrs) and 40,711 MW (01.08.2021 at 07:30 hrs).

2.3.3. The average Thermal generation in August 2021 increased by 20.21% (109.53 MU/day) with respect to the corresponding month in the previous year. The details are enclosed at **Annexure-A.I (A).**

2.3.4. The average Hydro generation in August 2021 increased by 4.24% (15.17 MU/day) with respect to the corresponding month in the previous year. The details are enclosed at **Annexure-A.I (B).**

2.3.5. The average Nuclear generation in August 2021 increased by 3.61 MU/day with respect to the corresponding month in the previous year. The details are enclosed at **Annexure-A.I (C).**

2.3.6. The average Renewable generation in August 2021 increased by 55.7% (32.02 MU/day) with respect to the corresponding month in the previous year. The details are enclosed at **Annexure-A.I (D).**

2.3.7. The new elements charged were discussed and the list is attached at **Annexure-A.I (E).**

3. Maintenance Programme of Generating Units and Transmission Lines

3.1. The maintenance programme of generating units and transmission lines for the month of October 2021 was deliberated in the meeting on 20.09.2021.

3.2. Following shutdowns were also discussed in the OCC meeting:

Element Name	Owner	Daily/ Cont.	Reason	Requested From	Requested To	Decision of OCC
210 MW UNCHAHAR TPS - UNIT 2	NTPC	C	Boiler+ Turbine COH+ Condenser tube replacement	25-Sep-2021 00:00	08-Nov-2021 00:00	UP has given consent. S/d is approved from 10.10.2021 for 45 days.

4. Planning of Grid Operation

4.1. Anticipated Power Supply Position in Northern Region for October 2021

The updated anticipated Power Supply Position for October 2021 is as below:

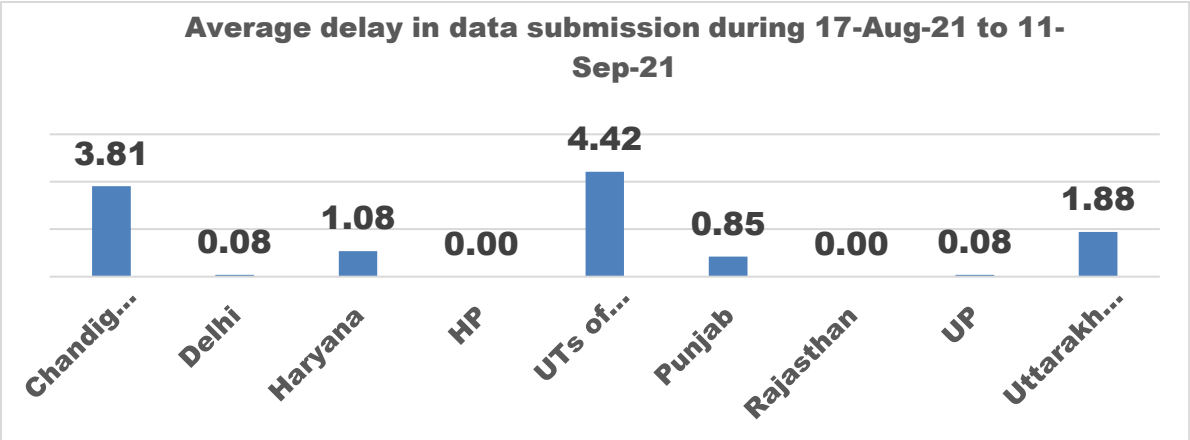
State / UT	Availability / Requirement	Energy (MU)	Peak (MW)	Date of revision
CHANDIGARH	Availability	120	330	No revision submitted
	Requirement	110	220	
	Surplus / Shortfall	10	110	
	% Surplus / Shortfall	9.1%	50.0%	
DELHI	Availability	3502	5225	24-Sep-21
	Requirement	2650	4925	
	Surplus / Shortfall	852	300	
	% Surplus / Shortfall	32.1%	6.1%	
HARYANA	Availability	4710	10260	20-Sep-21
	Requirement	4508	8470	
	Surplus / Shortfall	202	1790	
	% Surplus / Shortfall	4.5%	21.1%	
HIMACHAL PRADESH	Availability	902	1545	07-Sep-21
	Requirement	889	1551	
	Surplus / Shortfall	13	-6	
	% Surplus / Shortfall	1.5%	-0.4%	
J&K and LADAKH	Availability	1230	3320	No revision submitted
	Requirement	1490	2480	
	Surplus / Shortfall	-260	840	
	% Surplus / Shortfall	-17.4%	33.9%	
PUNJAB	Availability	4700	9210	21-Sep-21
	Requirement	4870	9210	
	Surplus / Shortfall	-170	0	
	% Surplus / Shortfall	-3.5%	0.0%	

State / UT	Availability / Requirement	Energy (MU)	Peak (MW)	Date of revision
RAJASTHAN	Availability	7590	16740	No revision submitted
	Requirement	8080	13610	
	Surplus / Shortfall	-490	3130	
	% Surplus / Shortfall	-6.1%	23.0%	
UTTAR PRADESH	Availability	11160	21500	14-Sep-21
	Requirement	11005	21500	
	Surplus / Shortfall	155	0	
	% Surplus / Shortfall	1.4%	0.0%	
UTTARAKHAND	Availability	970	2640	No revision submitted
	Requirement	1160	1960	
	Surplus / Shortfall	-190	680	
	% Surplus / Shortfall	-16.4%	34.7%	
NORTHERN REGION	Availability	34884	66400	
	Requirement	34762	60000	
	Surplus / Shortfall	122	6400	
	% Surplus / Shortfall	0.4%	10.7%	

NRLDC Representative from NRLDC highlighted that Rajasthan need to review its peak data.

5. Information about variable charges of all generating units in the Region

5.1. Members were informed about the average delay in submission of data of variable charges details on MERIT order portal during 17.08.2021 to 11.09.2021. The average delay is given below:



5.2. Delay in case of Uttarakhand is improving but still noticeable.

5.3. All SLDCs were requested for timely submission of information on MERIT Portal.

6. Submission of breakup of Energy Consumption by the states

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

State / UT	From	To
Delhi	Apr-2018	Jun-2021
Haryana	Apr-2018	Jul-2021
Himachal Pradesh	Apr-2018	Jun-2021
Punjab	Apr-2018	Jul-2021
Rajasthan	Apr-2018	Jul-2021
Uttar Pradesh	Apr-2018	Jul-2021

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

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

7.1 OCC forum was intimated that NRPC in its 48th meeting decided that the study report for 2019-20 along with the guidelines for finding the capacitor requirement at 11/33 kV level in NR would be submitted by CPRI. Accordingly, CPRI have submitted the system study report on 24.02.2021 and thereafter same was shared with the constituent states. The recommended capacitor compensation, additionally required as per the report was 352MVAr. The report brought out the additional requirement of 137MVar and 215MVar compensation for Punjab and J&K respectively. Moreover, empirical relationship for capacitor requirement against voltage profile at 11 kV, based on two configurations was been worked out in the report.

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

7.3 In 181st OCC meeting, the forum decided that sub-group would study the report and submit the recommendation report within two weeks.

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

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

7.6 The meeting of sub-group was held on 03.05.2021. In the meeting, sub-group members decided to get PSSE file from CPRI for better understanding, which was later shared with them.

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

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

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

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

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

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

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

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

7.14 In the meeting (187th OCC), forum was apprised that although last date for submission of comments was 24.08.2021, NRPC Sectt. received comments from Himachal Pradesh, Punjab, Rajasthan, Delhi, and NRLDC vide mails dtd. 24.08.2021, 25.08.2021, 26.08.2021, 31.08.2021, and 03.09.2021 respectively. As the received comments were also on the base-case data, a meeting was held

on 06.09.2021 among officers of NRPC Sectt, NRLDC and above four states for discussing comments before sending to CPRI. After detailed discussions, following were decided:

A. Himachal Pradesh:

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

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

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

ii. Capacitors at 132 kV level

iii. Nodes of major voltage profile mismatch

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

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

B. Punjab:

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

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

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

C. Rajasthan:

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

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

c) Rajasthan was requested to submit

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

ii. Voltage profile of generator buses.

D. Delhi:

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

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

7.16 In the meeting, UP representative stated that they will send reply on mail of NRPC Sectt. dtd. 10.08.2021 for submission of their comments.

7.17 It was decided that data received at NRPC Sectt. may be sent to NRLDC for tuning of base-case.

7.18 NRLDC representative stated that base-case tuning may be completed by 30.09.2021.

8. Automatic Demand Management System

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

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

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

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

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

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

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

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

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

9.1. The updated status of agenda items is enclosed at **Annexure-A.II.**

9.2. MS, NRPC stated that it may be apprised to PSPM Division, CEA that if DTL is unable to commission the reactors, the task may be handed over to POWERGRID.

10. Deemed availability of outage of Transmission lines due to tripped caused by kite thread / flying (Agenda by POWERLINKS Transmission Limited)

10.1. NRPC representative apprised that POWERLINKS Transmission Limited has intimated vide letter dtd. 07.09.2021 that they are facing problem of line tripping due to kite thread / kite flying and they have requested for deemed availability of the same.

10.2. POWERLINKS Transmission Limited representative stated that they are facing problem of line tripping due to kite thread / kite flying and they have requested for deemed availability of the same. They have faced 3 tripping in July'21 month. They also highlighted that the incident is more at the time of Makar Sankranti every year.

10.3. Representatives from NR-3/POWERGRID sated that they have faced 9 tripping in May'21 - Aug'21. Other representatives from POWERGRID also highlighted that they are facing generally 10-12 tripping in a year. NR-1 representative stated that 18 hours outage in a month has also been observed.

10.4. Representative from INDIGRID mentioned that they are also facing same issue specifically during festive months.

10.5. NRLDC representative stated that deemed availability is permitted for incidents caused by act of god or natural calamity etc. Tripping due to kite thread may not be considered for deemed availability as there will be lack of witness and issues in verification of facts.

10.6. MS, NRPC stated that in past under CERC performance regulations, those incidents which were beyond the control of licensee have been considered. On similar lines, he suggested that deemed availability may be given for 2 hours each for 2 trippings per month for 4 months in a year, subject to proper documentation and verification. NRLDC representative suggested that time stamping on photographs may be ensured for documentary evidence. The forum agreed with the aforementioned suggestions.

11. Regarding Installation of Proposed SPS Scheme at 400kV S/S Lucknow (PG) & Sohawal (PG) (Agenda by UP SLDC)

11.1. NRPC representative apprised that commissioning of SPS (System Protection Scheme) at 400kV Lucknow (PG) and Sohawal (PG) was discussed in the 184th OCC meeting and it was decided that proposal for SPS at 400kV s/s Lucknow (PG) & Sohawal (PG) shall be submitted by UP SLDC. UPSLDC has submitted the SPS logic details.

11.2. NRLDC representative stated that the logic seems to be in order.

11.3. POWERGRID representative stated that PLC based logic shall be adopted for this work. SAS is goose based logic and is not reliable for protection. He also desired to know the cost-bearing party in implementation.

11.4. MS, NRPC opined that since SPS is already implemented at Nakodhar and SPS implementation cost was minimal there. So, POWERGRID shall deliberate the logic with counterparts at Punjab. Further, he suggested that connected load at downstream system is of UP completely, so cost may be borne by UP.

12. Tower failure report of 400 KV Kaithal – Bagpat D/C Line in Northern Region (Agenda by NR-II, POWERGRID)

12.1. NRPC representative apprised that NR-II, POWERGRID vide e-mail dtd. 16.07.2021 has requested for considering the following tower failure during availability certification for the month of July 2021.

Affected tower Loc. No.: - 388, 389, 390 & 391

Type of Tower: - All DA+0

Wind Zone: - 4
Configuration: - Double Circuit Type Tower
Date of Tower Failure: 20:51 hrs at 08/07/2021
Date of Restoration: 20:44 hrs at 15/07/2021
Extent of Damage: (i) Tower no. 388 – One earth wire peak damaged
(ii) Tower no. 389 – Tower Collapsed
(iii) Tower no. 390 – Both earth wire peak damaged
(iv) Tower no. 391 – One middle cross arm damaged

12.2. A committee of POWERGRID officials was nominated to find out the cause of occurrence and committee has submitted their report which was attached as *Annexure-A.IV* of agenda.

12.3. The reason of failure identified by committee members is as under:

"Based on the observation of damaged trees in the vicinity, it appears that the high-speed windstorm/ thunderstorm was prevailing in the vicinity of affected stretch of transmission line.

The tower at location no-389 collapsed in transverse direction of line and subsequently due to jerk during collapse, peak of tower at location no-388, 390 and cross arm at location no-391 were also damaged".

12.4. POWERGRID has claimed that reason of failure of said tower is due to highly localized thunderstorm, which comes under natural calamity and beyond the control of POWERGRID. During the storm, the uprooting of high growth trees and LT electric pole were also noticed. They have requested considering the same during availability certification for the month of July 2021.

12.5. MS, NRPC stated that report of POWERGRID's internal committee may not be considered for deemed availability and such issues are dealt in the tower failure report of CEA's standing committee.

12.6. Forum decided that tower failure report of CEA's committee may be considered. POWERGRID was requested to approach CEA in this regard.

13. Report on SPS operation during grid event at 500kV HVDC Rihand-Dadri at 04:15 hrs on 21st August, 2021

13.1. NRPC representative apprised that UPSLDC vide e-mail dtd. 01.09.2021 has submitted the report on SPS operation during grid event at 500KV HVDC Rihand-Dadri at 04:15 hrs on 21st August, 2021 (attached as *Annexure-A.V of agenda)*.

13.2. UPPTCL has informed that load shedding at 220 kV Substation Modipuram and Muradnagar did not occur as per planned operation. As per field authority, SPS is not healthy at 220kV substation Modipuram and Muradnagar and same has been intimated by UPSLDC to POWERGRID vide letters dtd. 15.04.2021 & 20.04.2021.

13.3. NRLDC representative stated that they will do a mock test every month for the SPS already commissioned and any shortcoming shall immediately be intimated and corrective response should come from transmission licensee in this regard.

14. Frequent outages of Wind/Solar generation in Northern Region

14.1. NRPC representative apprised that NLDC vide its letter dtd. 06.09.2021 has highlighted that there have been instances of frequent outages of renewable generation in Rajasthan area during the last one year. The list of incidents along with frequency observed during these incidents was attached as Annexure-A.VI of agenda.

14.2. Based on the information available at NRLDC, it appears that generation loss is primarily due to either evacuation loss or inability of inverters to ride through the low voltage/high voltage conditions as specified in regulations.

14.3. NLDC has suggested a separate sub-group with members from RE developers, RVPNL, NRLDC, CTU, POWERGRID and NRPC may be formed specifically for the deliberations of incidents resulting in loss of RE based generation. In this regard, stakeholders are requested to nominate officials for this sub-group to deliberations of incidents resulting in loss of RE based generation.

14.4. MS, NRPC stated that a committee already exist for RE generation comprising of representatives from CEA, NRPC and NRLDC. The committee was formed in November 2019. CTU representative may also be included in this committee. A meeting may be called soon to take up the issue.

15. Coal Supply Position of Thermal Plants in Northern Region

15.1. NRPC representative apprised that BRPL vide letter dtd. 03.09.2021 (attached as *Annexure-A.VII of agenda*) has brought to notice severe coal shortage in the Central Generating power plants supplying power in the NCT of Delhi. Similar issues have been highlighted by other states also.

15.2. Considering the severity of the situation, it is proposed that coal stock position of generating stations in northern region may be reviewed in the OCC meetings on the monthly basis.

15.3. SE(O), NRPC apprised the forum about the coal stock position (till 10th September 2021) of generating stations in northern region as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	84.25	15	**1.5**
ANPARA TPS	2630	66.42	15	10.8
BARKHERA TPS	90	57.93	20	**3.9**
CHHABRA TPP	2320	56.10	25	**0.0**
DADRI (NCTPP)	1820	41.22	30	**0.1**
GH TPS (LEH.MOH.)	920	57.98	30	8.6
GOINDWAL SAHIB TPP	540	67.69	30	**2.7**
HARDUAGANJ TPS	605	41.31	30	**1.1**
INDIRA GANDHI STPP	1500	48.12	30	**3.0**
KAWAI TPS	1320	70.50	25	6.2
KHAMBARKHERA TPS	90	57.93	20	5.9
KOTA TPS	1240	48.53	30	**2.4**
KUNDARKI TPS	90	70.46	25	7.8
LALITPUR TPS	1980	75.44	25	5.0
MAHATMA GANDHI TPS	1320	77.69	25	6.3
MAQSOODPUR TPS	90	58.11	20	4.1
MEJA STPP	1320	78.32	20	**0.2**
OBRA TPS	1094	45.34	20	9.5
PANIPAT TPS	710	33.18	30	11.5
PARICHHA TPS	1140	51.28	30	**2.5**
PRAYAGRAJ TPP	1980	68.38	20	**3.9**
RAJIV GANDHI TPS	1200	30.00	30	8.7
RAJPURA TPP	1400	91.57	25	9.0
RIHAND STPS	3000	85.13	15	7.1
ROPAR TPS	840	50.73	30	14.3
ROSA TPP Ph-I	1200	59.90	25	**3.3**
SINGRAULI STPS	2000	68.71	15	4.0
SURATGARH TPS	1500	29.83	30	**1.3**
TALWANDI SABO TPP	1980	41.99	25	11.9
TANDA TPS	1760	69.29	25	**2.0**
UNCHAHAR TPS	1550	63.89	25	**1.9**
UTRAULA TPS	90	66.70	20	**3.5**
YAMUNA NAGAR TPS	600	33.79	25	9.4

16. Operational challenges in despatch of Gas based stations under RRAS

16.1. NRLDC apprised operational challenges in dispatch of Gas based stations under RRAS as below: -

i Revision of DC by plant at the time of despatch instruction.

ii Ensuring fuel adequacy by plant as per the provisions of tariff regulations.

iii Lack of sufficient man power in plants.

iv Delayed execution/Non-execution of NLDC/NRLDC instructions regarding maintenance of hot reserves.

v Non-utilization of closed cycle mode of operation.

vi Declaration of ramp-rates by plants.

vii Furnishing of data regarding ambient temperature-installed capacity curve of GTs.

16.2. NRLDC representative highlighted that adequate fuel stock shall be maintained by NTPC since it is already counted under working capital in Tariff Regulations.

16.3. NTPC representative stated that they are getting schedule for gas plants after 3 years. Therefore, they are unable to manage the supply of fuel. He also mentioned that NTPC require one-month advance intimation for arranging fuel for gas plants.

16.4. NTPC stated that they will submit data regarding ambient temperature-installed capacity curve of GTs.

16.5. MS, NRPC stated that NRLDC may provide a format for gas-based plants that may have every detail w.r.t. plant operation. The format may be discussed and finalized bilaterally between NTPC and NRLDC. Once finalized, NTPC is requested to send details of plant in the same format every day to NRLDC.

17. Streamlining of RLDC FTC Procedure and Software Modification (Agenda by POWERGRID)

17.1. NR-1/POWERGIRD apprised that clearances for First Time Charging of New elements are being obtained in line with the latest procedure updated by NLDC dated 3rd June 2020. Since after adopting the online procedure for submission of application and subsequent approval, little modifications are required to be made in software to overcome some practical problems observed as below;

17.2. Undertaking for statutory clearances has to be submitted in Annex.B-5, however it is insisted to submit the Final CEA Certificate for processing of other internal clearances on part of NRLDC/ NLDC without any relevance, since both are different and independent entity. Hence submission of Annexure B-5, should not be a pre-condition and may be done separately.

17.3. It is observed that complete application is rejected by NRLDC for requirement of some additional data, clarification etc. sought by its own departments and that too cannot be accepted/ uploaded in the software until its complete rejection. This delays total process of clearances, hence there should be following provisions in the software;

i. Requirement of any such data/ document may be informed to the applicant through mail/ notification so that it may be submitted accordingly.

ii. Such data/ document/clarification should be accepted by NRLDC through mail, also with a provision for uploading in the portal by themselves OR by the applicant directly

17.4. In-charge, NRLDC stated that FTC formalities have been developed for streamlined and uniform procedure across all regions. Documents over e-mail or any other medium may not be accepted as there is already a well-established system.

17.5. POWERGRID requested that documents uploaded by them shall have time tagging for reference. NRLDC consented for the same.

18. Abnormal humming in GTs at APRL, Kawai and nearby stations

18.1. NRPC representative apprised that this has reference to the previous agenda placed by APRL Kawai in the OCC meetings for the abnormal humming sound at Power transformers at APRL, Kawai, Chhabra, Kalisindh and ICTs at Anta from 1600 hrs of 21st April'21.

18.2. It was apprised that humming noise of generator transformer-1 has found subdued between 24.08.2021 19.00 Hrs to 25.08.2021 11.00 Hrs. In this regard, Adani Power Ltd have received the list of approved outages from NRLDC for the date 24.08.2021, where two elements were common with earlier event:

S. N.	Voltage level	Element name
1.	220 kV	Charki-Dadri – Khetri -I
2.	400 kV	Akal – Ramgarh -I

18.3. Adani Power Ltd has requested for analysis and to share the actual line tripping and restoration details for the period 24.08.2021 18.00 Hrs to 25.08.2021 11.00 Hrs in NR region as well as in Rajasthan control area. The requested details may give an indication of the root cause of the observed behavior.

18.4. In this context, Adani Power Ltd had a meeting with Director Technical, RVPN on 23.07.2021, wherein the officials from RVPN, SLDC and APRL Kawai were present.

18.5. The issue is still unresolved, Adani Power Ltd has requested for kind intervention of the OCC forum and early resolution of the issue.

18.6. Adani representative stated the they have been able to mitigate the effects of abnormal humming in GTs at APRL, Kawai and nearby stations, but the root cause of the observed behaviour is not being able to be identified. OEM has been called for inspection at transformer end and they have found no issue.

18.7. NRLDC stated that lines mentioned by ADANI is still in service, therefore there seems no connection of the issue with these lines.

19. NR Islanding Schemes (Additional Agenda)

19.1. NRPC representative apprised that Hon'ble Minister of State (IC) for Power and New & Renewable Energy chaired a meeting on 28.12.2020 to review Islanding Schemes in the country. During the meeting following action points, inter-alia, emerged:

i. Islanding Schemes shall be designed for all major cities of the country. If there is a need to establish a power plant in / around such a city for the purpose, the proposal for the same may be submitted for consideration of the Ministry. Possibility of installation of storage system at such location may also be explored.

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

iii. Generating stations, which are spatially nearby the strategic and essential loads, shall be given priority in designing the Islanding Schemes.

iv. All concerned entities to ensure functionality of AUFLS and df/dt relays at all point of time.

19.2. Thereafter, series of meetings were held amongst NR constituents during Apr-Jul'21 to review the existing Islanding Schemes and expedite the implementation of newly proposed Schemes. Special TCC meeting was also held on 15.06.2021 to discuss the bottlenecks in implementation of Islanding Scheme. A meeting was taken by Member (GO&D), CEA on 29.07.2021, for reviewing the Islanding Schemes.

19.3. Categorization of Islanding Schemes in NR has been done as below:

Islanding Scheme	SLDC	Status	Category	Remarks
Delhi IS	Delhi	Implemented	Category-I	Major City
NAPS IS	UP	Implemented	Category-I	Sensitive Generation
RAPS IS	Rajasthan	Implemented	Category-I	Sensitive Generation
Agra IS	UP	Newly Proposed	Category-I	Strategic Load
Jodhpur-Barmer-Rajwest IS	Rajasthan	Newly Proposed	Category-I	Strategic Load
Patiala-Nabha Power Rajpura IS	Punjab	Newly Proposed	Category-I	Strategic Load
Pathankot-RSD IS	Punjab	Newly Proposed	Category-I	Strategic Load
Talwandi Sabo IS	Punjab	Newly Proposed	Category-II	Others
Dehradun IS	Uttarakhand	Newly Proposed	Category-I	Strategic Load
Jammu-Salal IS	J &K	Under Discussion	Category-II	Others
Suratgarh IS	Rajasthan	Under Discussion	Category-I	Strategic Load
Chamba-Chamera IS	HP	Under Discussion	Category-II	Others
Kangra-Chamba-Bairasuil IS	HP	Under Discussion	Category-II	Others
Kullu-Dehar IS	HP	Under Discussion	Category-II	Others

Butari-Jamsher-Verpal IS	Punjab	Under Discussion	Category-II	Others
Kargil-Ladakh IS	Ladakh	Under Discussion	Category-I	Strategic Load
Lucknow-Unchahar IS	UP	Under Implementation	Category-I	Major City

19.4. SE(O), NRPC stated that format of MIS has been attached with agenda. States were requested to submit MIS report before OCC meeting, every month so that same may be discussed in each OCC. MIS data received from states would be forwarded to CEA/MoP every month.

19.5. MS, NRPC stated that MoP has agreed for PSDF funding for implementation of islanding schemes and states are required to prepare and submit DFR for the same.

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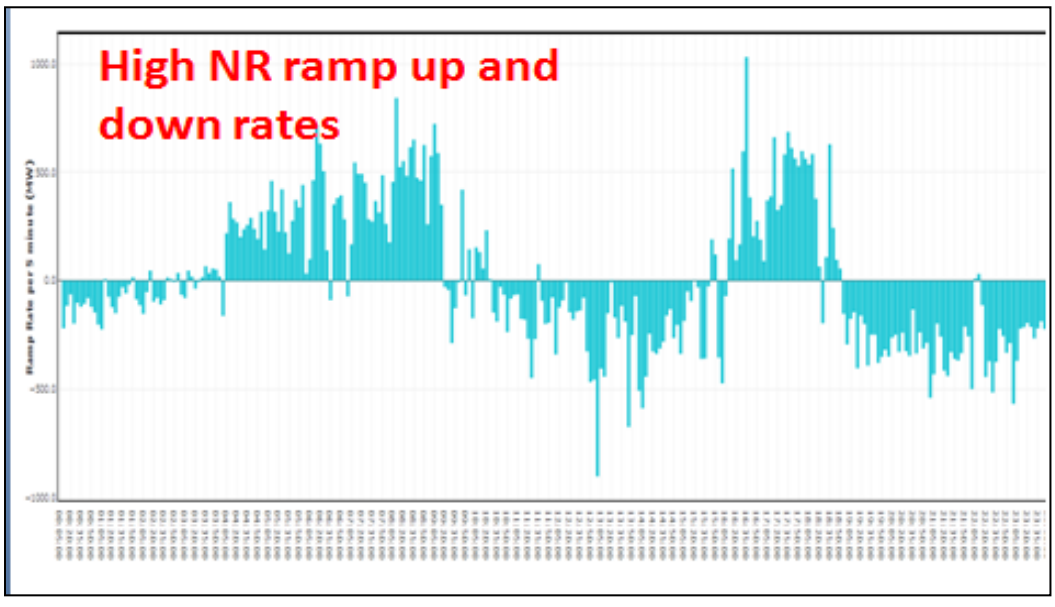
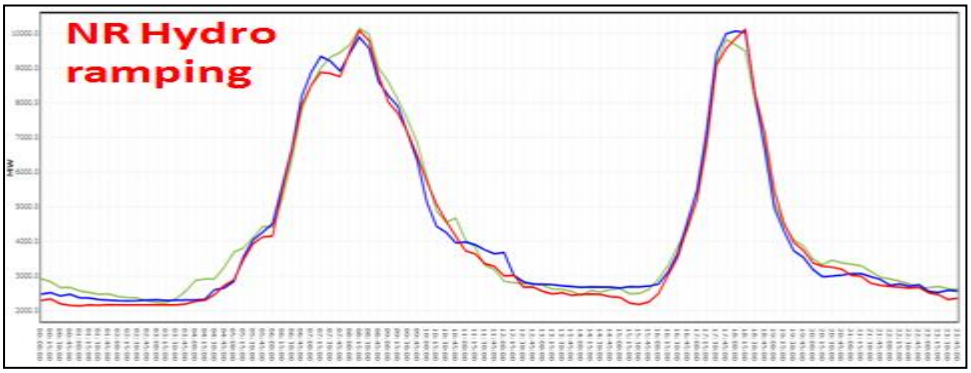
20. Revision Winter preparedness

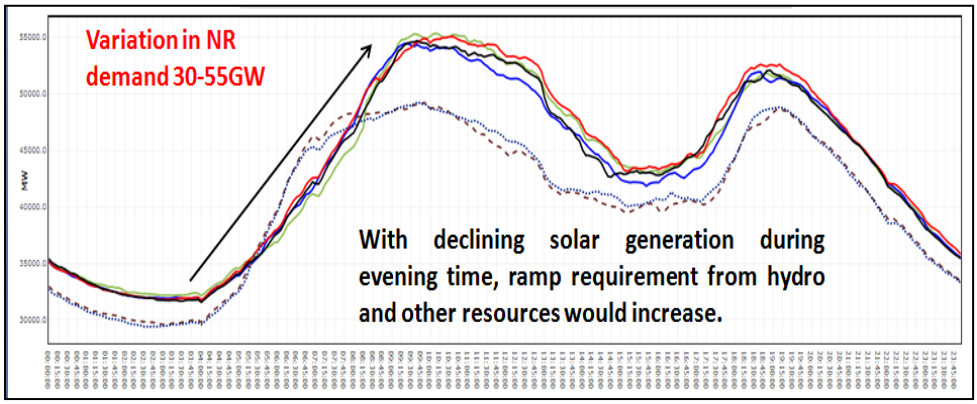
NRLDC representative stated that winter in Northern region is likely to start from mid of October till February end, and the challenges faced during these months are well known to all the utilities. During winter, demand of NR states except Rajasthan and hilly states starts reducing. With decreasing temperatures and festivals, winter also brings some severe challenges to NR grid operators. Some of the challenges expected were discussed in the meeting:

(i) Load-generation balance

- Hydro generation resource which becomes all the more important due to ramping requirement; it starts depleting due to limited inflow of water (most of the hydro stations of NR are snow fed).







- Off-peak to peak demand ratio of NR fall to around 0.5 to 0.6 during winter, morning and evening load ramp is quite steep together with limited hydro resources etc. This increases the importance of accurate load forecast, including forecasting of demand ramp together with meticulous portfolio management especially during high ramp up and ramp down periods.
- Committing conventional generating units becomes very important especially with the in-surge of renewable integration with the grid. Generation resources should be optimally planned, taking care to maintain adequate reserves.
- With declining solar generation during evening time, ramp up requirement from hydro and other peaking resources would increase and accordingly they need to be utilized judiciously considering evening peaking requirement.

Following measures were discussed to manage load generation balance during winter months:

- In line with section 5.3 of the IEGC, all constituents should develop in house or use third party Software tools for precision of load forecasting & generation planning on daily, weekly and monthly basis with hourly granularity for daily forecast, which may be subsequently improved to block-wise forecasting.
- Forecast of demand ramp has also become important and so SLDCs are advised to forecast ramp rate of demand for morning and evening peaks so that commensurate ramping of generation can also be planned.
- ISGS hydro stations are already 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.

- Minimize generation to technical minimum as per IEGC guidelines /CERC directions during low demand.
- Optimum utilization of Hydro resources for meeting peak hour demand.

(ii) High voltages in grid

To overcome the challenge of high voltages in the grid, number of measures were discussed and practiced earlier and were once again reiterated for information of OCC members:

- Ensuring disconnection of capacitors & switch on of reactors.
- Ensuring healthiness of all commissioned reactors in the system
- Monitoring of reactive power 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. In the meeting, it was discussed that most of the state generating units are not absorbing MVAR upto their capability curve limit.
- CGM (I/C) NRLDC advised SLDCs to ensure with all DISCOMs that all capacitors banks are switched off during night hours. Switching of capacitor banks to be done as per grid requirement and daily report needs to be submitted to SLDCs. It was also discussed that from next OCC, MVAR performance of generators would be discussed in OCC meeting. SLDCs were also asked to monitor and ensure reactive power performance as per grid requirement and capability curve.
- 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.
- BBMB representative stated that presently only two units of Pong can be simultaneously utilized as synchronous condenser and works are under process for ensuring availability of all three units simultaneously.
- States/SLDCs/ ISGS stations were once again advised to explore synchronous condenser operation of Hydro & Gas units in their respective control area.
- 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.
- 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 centers. 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-2021/?wpdmdl=8772.

- ***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. It was also discussed that additional manpower if required, may be placed at critical substations.***
- Exploring reactive support possible from grid connected invertor based devices, especially during no generation period.

(iii) **EHV line trip during fog/Smog**

One more challenge during winter months is tripping of EHV lines due to fog. With low temperature across Northern region and high humidity in the air at times, fog settles in Northern region. This problem is generally most severe from 15Dec- 15Feb period and is further aggravated by the presence of pollutants in the air. During this time additional care needs to be taken by system operator as many events of multiple element tripping were experienced in the past especially in Punjab and Eastern UP. The impact of such tripping are more severe if the lines are tripping from major generation complex such as Singrauli-Anpara-Rihand complex.

NRLDC representative stated that they would be sharing login credentials for ISRO developed fog monitoring portal with SLDCs which would help in fog monitoring at SLDC level also. However, SLDCs need to make sure that these logins are used cautiously, in a restricted manner.

Utilities were requested to ensure:

- Priority wise cleaning & replacement of damaged insulators.
- Monitor progress of cleaning and replacement of porcelain insulator with polymer insulator and furnish updated status to NRPC/NRLDC.

(iv) Load crash due to inclement weather

During winter months, the demand of Northern region is much lower compared to summer months for which the transmission system is designed. When operating at reduced demand, the internal generation of most of the states is low based on merit order. Several EHV lines are also required to be opened to ensure voltages within IEGC limits. In such a scenario, in case of rainfall/snowfall, it is seen that demand of Northern region falls sharply. With several lines switched out due to high voltage and more lines tripping due to bad weather, the regional network gets highly depleted. Ensuring safe and secure grid operation becomes a big challenge for system operators. To overcome this challenge, it is important that:

- All system operators and transmission utilities regularly monitor weather forecast site (Weather portal for power sector)
- ERS is available in case of emergency.
- Ensure additional trained manpower is available especially during night hours at all major control centers/ substations

(v) Ensuring protection settings as approved by NRPC

Apart from above, it needs to be made sure that defense mechanism is healthy i.e. ensuring healthiness of all SPS, healthy, and conventional protection system,

monitoring of df/dt& UFR etc; and telemetry especially of MVAr of Generator, temperature & humidity etc. is available and reliable.

During winter months, it has been observed that there is frequent tripping of ICTs on overflux and lines on overvoltage especially in Punjab and Haryana areas. On number of occasions, it is seen that utilities correct their protection settings after undue tripping events occur.

It is important to ensure that all the protection settings are as approved by NRPC. Utilities were requested to confirm the same from field and ensure that protection settings are only as approved by NRPC.

Utilities were requested to prepare 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 next OCC meeting.

21. Computation of TTC/ATC of respective control areas

Most of the NR states except Uttarakhand, J&K U/T and Ladakh U/T and Chandigarh are sharing basecase and ATC/TTC assessment with NRLDC. ATC/TTC assessed by SLDCs in coordination with NRLDC and reliability issues expected for the upcoming months are mentioned below. SLDCs were requested to go through the tentative ATC/TTC limits for October 2021 (Annexure-B.II of agenda) and provide comments. However, no comments have been received so far.

Reliability issues faced/ expected for next few months are highlighted below:

Punjab:

- ATC/TTC limit of 7300/7900 MW (daytime) and 7700/8300MW (night time) have been declared till 30th Sep due to forced outage of Talwandi Saboo Unit-1.
- 400kV Bus-split work at 765/400/220kV Moga has been completed and it is likely to increase ATC/TTC of Punjab state control area by 300MW. Punjab SLDC has shared that after bus-split they would be shifting some load from Ludhiana and Nakodar to Moga to utilize the margins created at 400/220kV Moga after bus-split.
- Plots showing ATC and N-1 violations at 400/220kV Rajpura, Nakodar, Moga and Ludhiana ICTs during the month of August were presented in the meeting.
- Punjab SLDC was requested to ensure maintenance of high generation at 220kV level during high demand, which would help in meeting high demand & also improve voltage profile. Loading of 400/220kV ICTs may also be ensured within their N-1 contingency limit.
- Since demand of Punjab reduces from October, it was requested that if 220kV generating units are expected to remain out for more number of days, same shall be duly intimated to NRLDC along with revised ATC/TTC limits for October 2021**.**

UP:

- ATC/TTC assessed by UP SLDC in coordination with NRLDC is:

State Gen	TTC	ATC
11000	13800	13200
11500	13500	12900
12000	13300	12700

- Loading above N-1 contingency limits were observed at 400/220kV Azamgarh, Allahabad(PG), Sarnath, Gorakhpur(UP), Sohawal(PG), Lucknow(PG) ICTs and presented in the meeting.
- UP SLDC was requested to ensure high intra-state generation during high demand, which would help in meeting high demand & also improve voltage profile. It is also requested to ensure loading at 400/220kV ICTs within their N-1 contingency limit.
- Since from October, demand of UP starts reducing, it was requested that the revised ATC/TTC limits for October 2021 along with anticipated generation scenario may be timely shared with NRLDC***.***

Haryana:

- Haryana SLDC had shared revised ATC/TTC calculation with NRLDC on 01.09.2021 after carrying out load management at 220kV Nissing, 220kV Durala and 132kV. NRLDC has shared their observations on the study shared on 08.09.2021. It was communicated that with proposed load management, loading at Kurukshetra has reduced, but it is still high at Deepalpur and SPS may be planned and expedited immediately at Deepalpur.
- N-1 violations at 400/220kV Deepalpur, Kurukshetra, Sonepat and Panipat ICTs are still being observed and presented in the meeting
- Haryana SLDC was once again requested to expedite implementation of SPS at 400/220kV Deepalpur and Kurukshetra (PG) and carry out load management at Sonepat and Panipat to enhance their ATC/TTC limits at the earliest.

Delhi:

- In the meeting, it was deliberated that Delhi SLDC have assessed ATC/TTC limits as 6500/6800 MW and had shared results with NRPC as well as NRLDC. Constraints observed in assessment by Delhi SLDC are at, 400/220kV Bamnauli and Mundka ICTs.
- Due to radial feeding of load from most of the stations, reliability is reduced and requirement of SPS may be explored by Delhi SLDC to avoid complete load loss as was seen in few events in July 2021. With SPS, loss of power supply to super critical loads such as DMRC may be avoided. Delhi SLDC representative stated that they have taken up the matter with DTL.
- Delhi SLDC was advised to display ATC/TTC limits on their website. As of now only violations of ATC/TTC are being displayed on Delhi SLDC website.

Rajasthan:

- Revised ATC/TTC figures have been shared with NRLDC for Jul-Sep 2021 and are as:

State Gen	TTC	ATC
8200	6200	5900
4100	8100	7800

Rajasthan SLDC was requested to take up the matter for implementation of SPS at 400/220kV Ajmer, Merta, Jodhpur and Chittorgarh with STU and ensure loading below N-1 security limit at constrained ICTs, till requisite SPS is not in place. Rajasthan SLDC was asked to take necessary actions to minimize the low voltages at Hindaun, Alwar.

Moreover, ATC/TTC assessed for states such as HP, Uttarakhand, J&K and Ladakh U/T is shown below:

State	State Generation	TTC (MW)	RM (MW)	ATC (MW)	Limting constraint
J&K and Ladakh	Low Hydro	1700	150	1550	N-1 contingency of 400/220kV Amargarh ICTs
HP	Low Hydro	1200	100	1100	N-1 contingency of 400/220kV Nallagarh ICTs and 220kV Nallagarh-Uperanangal D/C
Uttarakh and	Low Hydro	1600	100	1500	N-1 contingency of 400/220kV Dehradun and Kashipur ICTs

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

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

Since from October, demand of most NR states starts reducing, it was requested that if intra-state generating units are expected to remain out for more number of days, same needs to be duly intimated to NRLDC with revised ATC/TTC limits for October 2021.

J&K, Ladakh and Chandigarh U/Ts and Uttarakhand were 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 and also upload on website.

All SLDCs were requested to share base case as well as ATC/TTC assessment with NRLDC/NRPC on monthly basis as well as upload on their websites. All SLDCs were also advised to ensure that the net scheduled power is within their ATC limits. Meanwhile, NRLDC would continue issuing warning messages in case drawl is beyond the ATC limit and ask SLDCs to control their drawl.

22. Grid operation related issues

The SPS logic decided in the 45th TCC meeting and approved in the 48th NRPC meeting was The SPS logic decided in the 45th TCC meeting and approved in the 48th NRPC meeting was explained to OCC members in 181 OCC meeting.

POWERGRID representative had intimated that QR for the SPS tender has already been finalized and NIT may be floated within next two weeks

In 183 OCC meeting, POWERGRID representative stated that presently QR has been approved and tender documents are being prepared by C&M department. It is expected that the work is likely to awarded by June end. OCC expressed concern on the slow progress and asked POWERGRID to expedite the work in view of increasing solar generation and importance of SPS in the complex. NRLDC representative also highlighted the importance of SPS in the complex and asked POWERGRID to expedite the work as it is pending since long.

In 186 OCC meeting, POWERGRID representative stated that work is in tendering stage and is expected to be awarded in September 2021. NRLDC representative more generation is being commissioned at Bhadla and nearby Fatehgarh and Bikaner stations. The importance of SPS in the complex was once again highlighted and OCC expressed concern on the slow progress of work. POWERGRID was asked to expedite the work as same status is being furnished in last several OCC meetings.

In 187th OCC meeting, POWERGRID representative stated that work is still in tendering stage and the Bid opening is scheduled on 23.09.2021. In the meeting, it was also discussed that since new solar plants are being commissioned at Bhadla, there may be need to slightly modify the SPS.

(i) Long outage of transmission elements/ generating units

Reasons and revival date for elements under long outage are being discussed regularly in OCC meetings. Update on the status of these elements as received in OCC meeting are attached as **Annexure-B.I**.

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.

(ii) 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, PSSe basecase, Protection analysis etc.

Following information has been received from UP SLDC:

1. LILO of 765 kv Mainpuri- Greater noida Line at Jawaharpur TPS.
2. LILO of 220 kv Sohawal (pg) - New tanda line at 220 kv Ayodhaya.
3. LILO of 220 kv Gorakhpur (pg)- Bansi line at 220 kv Dulhipar.
4. 765 kv Anpara D- Unnao line

5. 400 kv Badaun(OCBTL)- Sambhal line.

6. 765 kv s/c Ghatampur TPS - Hapur line (including 330 MVAr line reactor at Hapur end)

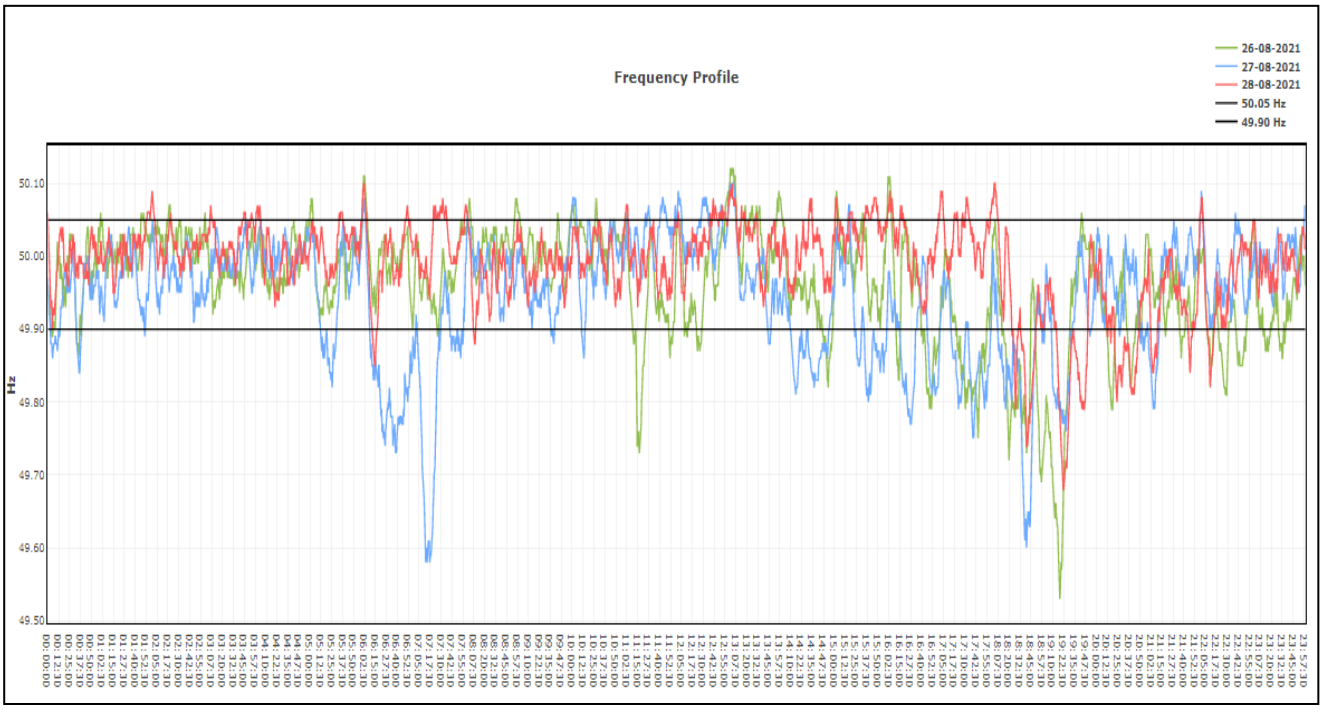
7. 125 MVAR bus reactor at 400 kv mau.

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.

(iii) Maintaining frequency profile of the grid

NRLDC representative stated that in last several OCC meetings, SLDCs were asked to take necessary actions to minimize large fluctuations during real-time. Discussion in 181, 182 OCC meeting were attached in agenda of 187 OCC meeting.

In spite of such persuasion, it is observed that there are frequency excursions especially at hourly boundaries. Moreover, on several occasions continuous low frequency operation was observed. To minimize this, as has been requested many times, all utilities shall try and ensure maximum possible intrastate generation.



Frequency profile for 26-28 Aug 2021 showing continuous low frequency operation

Due to unfavorable weather conditions during last week of August, All India demand was on the higher side. On several days, it was observed that frequency was below the IEGC band for most of the time. All India demand being on the higher side, touched 191567MW at 10:55hrs on 27.08.2021, and frequency remained below IEGC band in morning hours, and even touched 49.58 Hz at 07:14 hrs. As all available RRAS (UP) margin was already dispatched and no further margin was available.

During this time some of the NR states had overdrawal as shown in **Annexure-B.V** of agenda. It was discussed that states such as Rajasthan, HP, Uttarakhand and J&K had overdrawl for most of the time on 26.08.2021-28.08.2021.

Rajasthan representative informed that there was major fuel shortage issues in August 2021. The state was purchasing power from real-time market at high prices to ensure

load generation balance. However, to minimize shortage, Rajasthan had to overdraw for some duration.

In order to maintain the Grid security all SLDCs were requested to take proactive steps as follows:

- Ensure that ADMS is in service and expedite its implementation, wherever pending.
- Ensure healthiness and availability of AUFLS and df/dt load shedding.
- Ensure revival of intra-state generators under economic shutdown/RSD
- Ensure portfolio balancing through STOA/RTM market segments
- Ensure no under injection by the generators from schedule
- In case of inadequate margins in intrastate generators emergency load regulation measures may be taken in interest of grid security.
- Pursue generators to expedite revival of thermal units under forced outage wherever feasible.
- Concurrence of beneficiaries to be taken in real-time before allowing planned outage of ISGS thermal units.

For imposition of physical regulatory measures in the event of persistent overdrawal from the grid, the availability of radial feeders become very important. Utilities have been requested number of times to update list of radial feeders which can be opened on the directions of NRLDC to regulate the demand. List of such radial feeders were earlier provided by respective utilities and is part of 'Operating Procedure of Northern Region'. Last updated document is available at https://nrldc.in/download/operating-procedure-of-northern-region-for-2017-18-2/?wpdmdl=8251.

List of radial feeders have been received from Rajasthan, UP and Punjab SLDC, they are requested to provide information of feeder wise expected load relief also. Even after repeated requests, the desired information is pending from many utilities.

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

CGM (I/C) NRLDC once again highlighted the importance of having radial feeders list available with control room and stated that in case of low frequency operation of grid at 49.7 Hz and over drawl more than 150 MW for state not rich in RE sources/250 MW for renewable rich state by respective state control area, SLDC/Transmission Licensee may be directed (As per Clause 5.4.2 of IEGC) to open these radial feeders on the direction of NRLDC/SLDCs. All SLDCs/ISTS licensees/STUs need to adhere to instructions of NRLDC/ SLDC as the case maybe. The lines would be opened on rotational basis. He also stressed that implementation of ADMS can avoid the need to resort to such measures and needs to be taken up on priority by states.

SLDCs were once again requested to review and share the list of the following:

- Intrastate 132kV feeders and 220/132 kV and 132kV / 33 kV transformers which supply load radially within the state and can be disconnected at the instruction of SLDC

- Tie lines which supply load radially within the state, which can be switched off from the substation belonging to a different entity, at the instruction of RLDC
- 400/220kV and 220/132kV ICTs at state boundary, which cater load radially and can be switched off from the substation belonging to ISTS or other entity

SLDCs were once again requested to verify that

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

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

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

NR Constituents were once again requested to take initiatives to minimise sudden load changeovers at hourly boundaries and also monitor performance of generators under their jurisdiction when the frequency is having large excursions. Following necessary actions may be taken to minimize frequency excursions during real-time:

- Improving accuracy of load forecasting
- Backing down intra-state generation
- Buying/ Selling power in real-time market
- Surrendering/ Requesting ISGS power timely
- Avoiding manual opening of feeders in coordination with DISCOMs
- RGMO/FGMO shall be ensured in service by advising all state owned and intra-state generators (SLDCs) as well as inter-state generators (NRLDC)
- Compliance needs to be monitored and taken up with SERC if required in addition to staggering of loads.

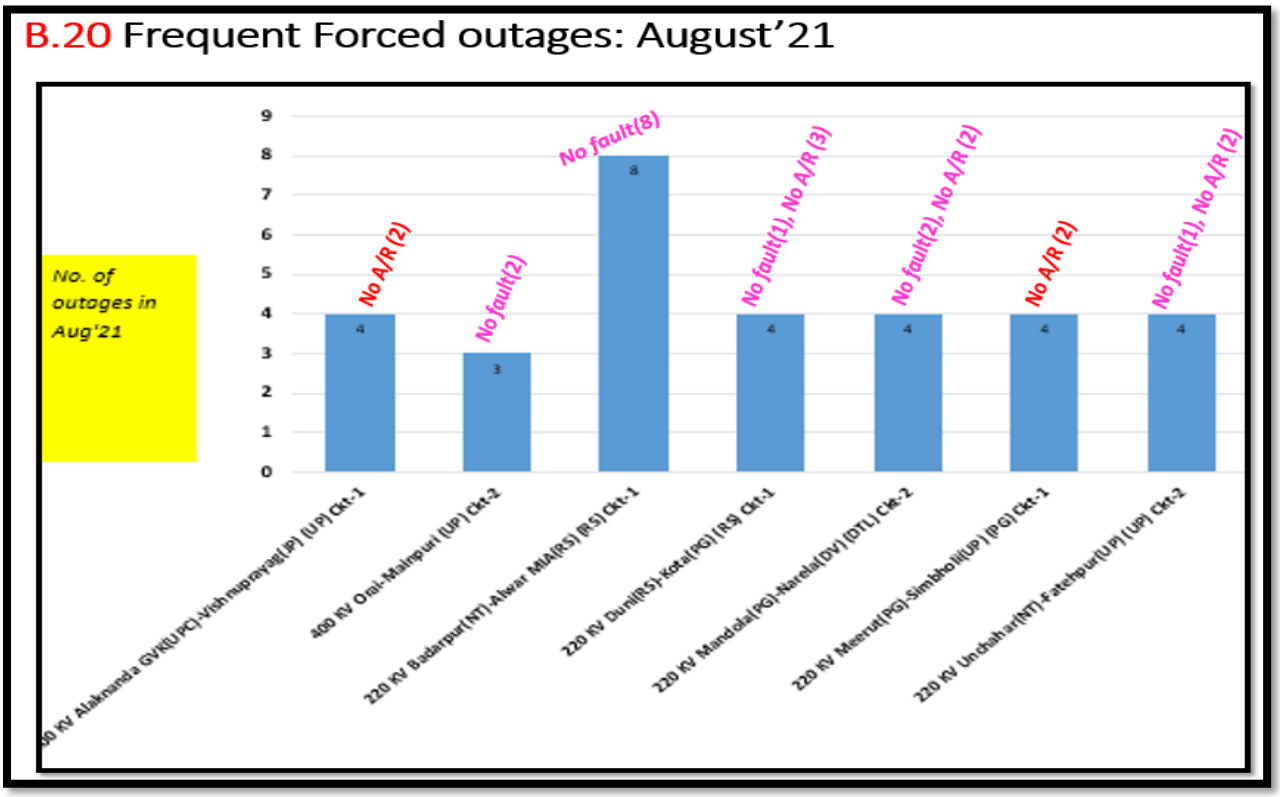
Members agreed for the same.

23. Frequent forced outages of transmission elements in the month of Aug'21:

The following transmission elements were frequently under forced outages during the month of **Aug''21**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1	4	UP
2	400 KV Orai-Mainpuri (UP) Ckt-2	3	UP
3	220 KV Badarpur(NT)-Alwar MIA(RS) (RS) Ckt-1	8	NTPC/Rajasthan

S. NO.	Element Name	No. of forced outages	Utility/SLDC
4	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	4	POWERGRID/Rajasthan
5	220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2	4	DTL/POWERGRID
6	220 KV Meerut(PG)-Simbholi(UP) (PG) Ckt-1	4	UP/POWERGRID
7	220 KV Unchahar(NT)-Fatehpur(UP) (UP) Ckt-2	4	NTPC/UP



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

Discussion during the meeting:

- **400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1:** *UPPTCL representative informed that multiple times tripping occurred in this line on 5thAugust, 2021 and tripping on 7th August and 10th August occurred while taking charging attempt in the circuit. He further informed that patrolling was done and line was cleared for charging on 13th August but due to DT issue at Alaknanda end charging further delayed and line finally charged on 16th August, 2021.*
- **400 KV Orai-Mainpuri (UP) Ckt-2:***UPPTCL representative informed that two tripping on 01st& 08th August observed due to overvoltage at Mainpuri end and one tripping on 01stAugust observed due to transient fault and unsuccessful operation of autorecloser.*

- **220 KV Meerut (PG)-Simbholi (UP) (PG) Ckt-1:** *UPPTCL representative informed that tripping on 1st and 08thAugust occurred due to flashover on polymer insulator and tripping on 21st August occurred due to broken earth wire. He further informed that there is some problem in HF cable at Simbholi (UP) end due to which A/R was not operated during tripping of this line and cable needs replacement which is expected to be completed by 25th September, 2021.*
- **220 KV Unchahar (NT)-Fatehpur (UP) (UP) Ckt-2:***UPPTCL representative informed that tripping on this line occurred due to disc puncture at different location. He further informed thatA/R is not operating in this line as A/R provision is not available at Fatehpur (UP) end.*
- **220 KV Duni (RS)-Kota (PG) (RS) Ckt-1:***Rajasthan representative informed that patrolling has been done in this line and it seems that tripping occurred due to transient fault. He further informed that timer of pole discrepancy was damaged due to which A/R is not working in this circuit and they are working on the issue and same is expected to be resolved soon.*
- **220 KV Badarpur (NT)-Alwar MIA (RS) (RS) Ckt-1:** *Rajasthan representative informed that line is passing through densely populated area resulting in low clearance along the line and tripping of the circuit is occurring due to frequent transient fault.*

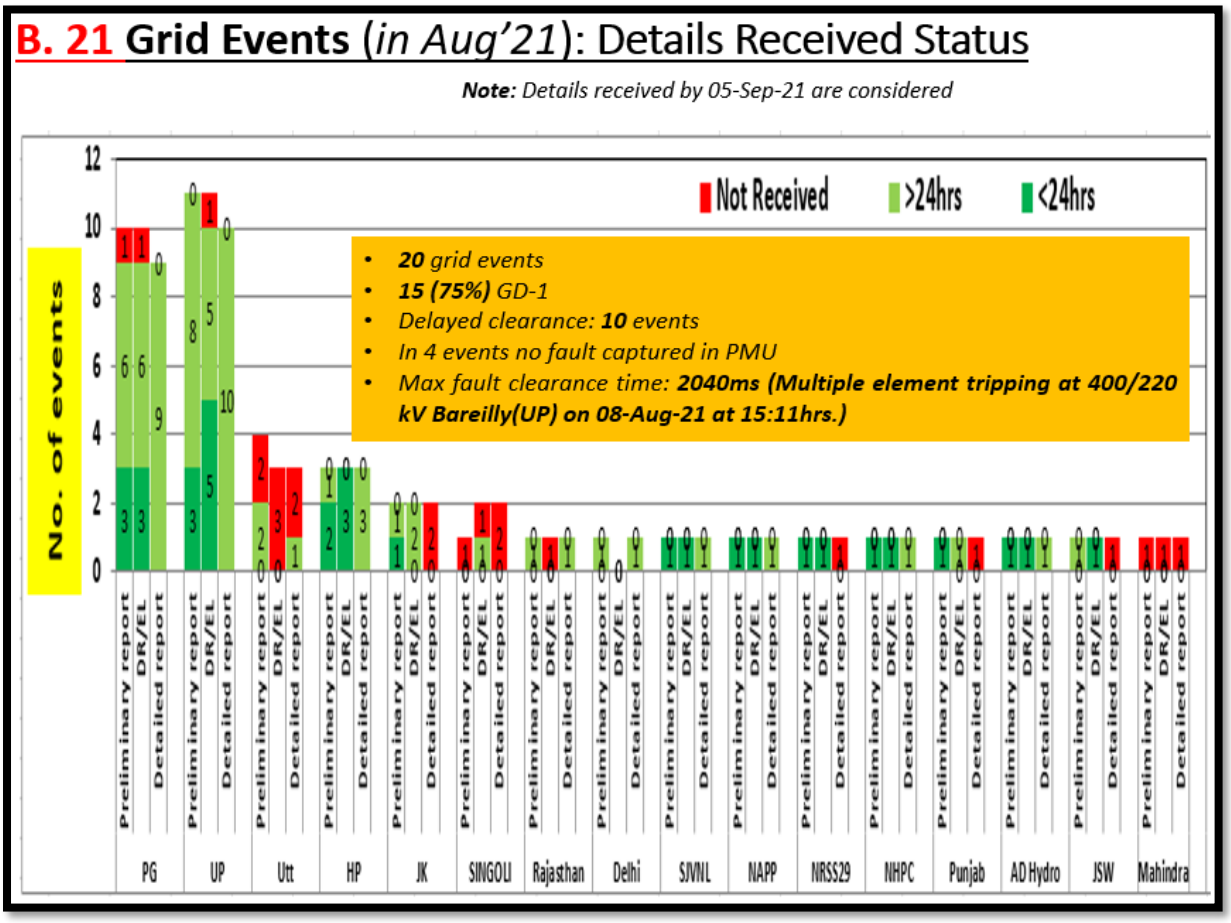
NRLDC representative emphasized that A/R (auto reclosure) issue was found in many of these tripping. He further sensitized all the utilities to ensure healthiness/ in service of A/R in 220 kV and above transmission lines in compliance to CEA Grid Standard. He further informed that most of the tripping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

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

24. Multiple elements tripping events in Northern region in the month of Aug'21

A total of 20 grid events occurred in the month of Aug'21 of which15 are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of details received by 05-September-2021 is attached at Annexure-B.III of the Agenda.

Monthly compiled information is presented in graphical form as below:



Further, despite persistent discussions/follow-up in various OCC/PCC meetings, the compliance of the regulations is still much below the desired level.

Maximum Fault Duration is 2040ms in the event of multiple element tripping at 400/220 kV Bareilly (UP)on 08-Aug-21 at 15:11hrs.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 10 events out of 20 grid events occurred in the month. In 4number of events, fault signature couldn't be captured from PMU data.

NRLDC representative stated that in the event of tripping at 400/220 kV Bareilly (UP) on 08-Aug-21 at 15:11hrs delayed clearance of around 2040ms is observed in the system. He further sensitized that delayed clearance of such large duration may hamper the system stability and further lead to cascade tripping. UP representative informed that distance protection relay was defective in Pantnagar line due to damage of processing unit and line & transformer tripped on back up protection. She further informed that Bus bar protection was not there and alternate arrangement of reverse zone of breaker operation was done.

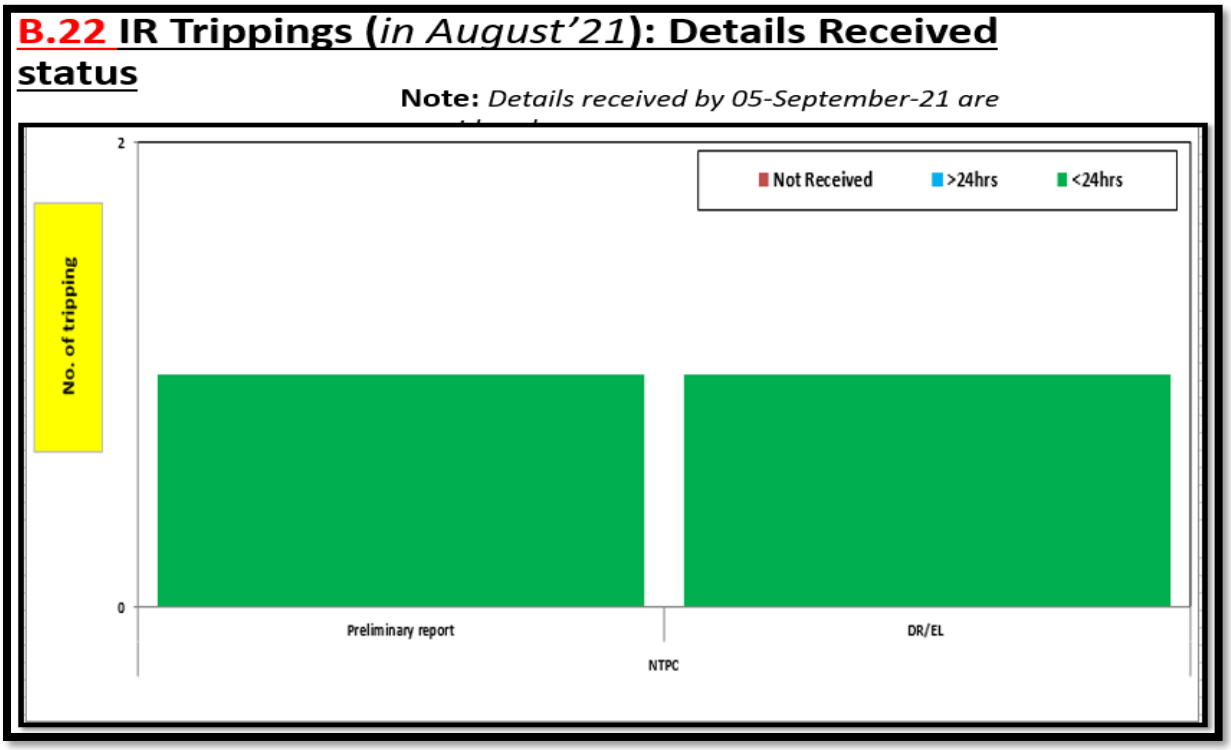
NRLDC representative expressed serious concern about poor status of report updation by Uttarakhand and J&K on the tripping portal. He further stated that timely report submission is an important activity and all constituents are advised to take this on priority and upload the reports.

OCC advised 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 and preventive measures to minimize the tripping.

Members were asked to take expeditious actions to avoid such tripping in future and discuss the same. 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.

25. Details of tripping of Inter-Regional lines from Northern Region for Aug'21:

One inter-regional line tripping occurred in the month of Aug'21. The details of which is attached at **Annexure-B. IV of the Agenda.**



Out of 1 number of tripping's, no tripping incident was related to HVDC system. 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.

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

26. Status of submission of DR/EL and tripping report of utilities for the month of Aug'21.

NRLDC representative informed the current status (as on 05th September 2021) of DR/EL and tripping report of utilities for the month of August 2021. Consolidated information is tabulated below:

B.23 DR/EL Status: Aug'21

S. No.	Utility	1st Aug 2021 - 31st Aug 2021											
		Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
1	AD HYDRO	3	0	0	0	2	0	0	0	0	0	0	0
2	ANTA-NT	1	1	100	1	0	100	1	0	100	1	0	100
3	APL	2	2	100	2	0	100	2	0	100	2	0	100
4	AURAIYA-NT	1	0	0	0	0	0	0	0	0	0	0	0
5	BBMB	22	2	9	2	8	14	8	10	67	2	3	11
6	CPCC1	59	5	8	6	5	11	6	9	12	5	3	9
7	CPCC2	20	0	0	1	2	6	0	2	0	2	0	10
8	CPCC3	42	3	7	3	2	8	3	2	8	3	2	8
9	DHAULIGANGA-NH	4	0	0	0	0	0	0	0	0	0	0	0
10	DULHASTI-NH	1	0	0	0	1	0	0	0	0	0	0	0
11	INDIGRID	1	0	0	0	0	0	0	0	0	1	0	100
12	JHAJJAR	2	2	100	2	0	100	2	0	100	2	0	100
13	KARCHAM	10	4	40	4	0	40	4	0	40	10	0	100
14	KOTESHWAR	1	1	100	1	0	100	1	0	100	1	0	100
15	MAHINDRA	6	6	100	6	0	100	6	0	100	6	0	100
16	NAPP	14	2	14	3	6	38	3	6	38	2	2	17
17	NJPC	2	0	0	0	0	0	0	0	0	0	0	0
18	NLDC	11	10	91	10	0	91	10	0	91	10	0	91
19	RAILWAYS	1	1	100	1	0	100	1	0	100	1	0	100
20	RAPPA	6	3	50	6	0	100	6	0	100	6	0	100
21	RAPPB	2	1	50	2	0	100	2	0	100	2	0	100
22	RAPPC	1	0	0	1	0	100	1	0	100	1	0	100
23	RIHAND-NT	2	2	100	2	0	100	2	0	100	2	0	100
24	SINGOLI	10	10	100	8	0	80	10	0	100	10	0	100
25	SLDC-CHD	1	1	100	1	0	100	1	0	100	1	0	100
26	SLDC-DV	30	2	7	11	6	46	11	7	48	11	0	37
27	SLDC-HP	16	0	0	0	10	0	0	8	0	0	0	0
28	SLDC-HR	9	0	0	0	3	0	0	3	0	1	1	13
29	SLDC-JK	10	1	10	1	8	50	1	9	100	2	2	25
30	SLDC-PS	12	2	17	9	1	82	9	1	82	11	1	100
31	SLDC-RS	67	1	1	20	0	30	20	0	30	16	1	24
32	SLDC-UK	22	16	73	20	2	100	20	2	100	20	0	91
33	SLDC-UP	166	16	10	20	39	16	25	73	27	34	4	21
34	STERLITE	5	0	0	0	0	0	0	0	0	3	0	60
35	TANAKPUR-NH	4	0	0	0	1	0	0	0	0	0	0	0
36	TANDA-NT	2	0	0	0	1	0	0	1	0	0	0	0
37	UNCHAHAR-NT	9	0	0	0	0	0	0	0	0	0	0	0

It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event.However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has been improved from CPCC1, CPCC2, CPCC3, Delhi, HP and Haryana in August, 2021 compared to the previous month.

All the members were once again requested to provide timely details of the grid events, detailed report in desired format along with remedial measure report. DR/EL of all the tripping needs to be uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx" within 24 hours of the events as per IEGC clause 5.2.r and clause 15.3 of CEA grid standard.

Members agreed for the same.

27. Frequency response characteristic

Four FRC based event has occurred in the month of **Aug-2021**. Description of the events is as given below:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	06-Aug-21	10:42hrs	At SEIL P2 (2x660 MW), 400kV SEIL P2 - NPS -1 was under planned outage	50.02	49.99	-0.03

			(concurrence taken from SRPC Forum & SEIL P2) for OPGW repair works by POWERGID from 10:27 Hrs and at 10:41 Hrs 400kV SEIL P2 - NPS -2 tripped due to B-N Fault (Conductor Snapping). Generation Loss of 1230 MW due to tripping of evacuation lines.			
2	15-Aug-21	10:06hrs	As reported, on 15th August 2021 at 10:05 hrs, 400/220kV 500MVA ICT-2 tripped due to differential protection operation and 400/220kV 500MVA ICT-1 and ICT-3 at Bhadla (RS) tripped at 10:06 hrs on overcurrent protection operation. Due to tripping of all three 400/220kV ICTs at Bhadla (RS), approx. 1100MW solar generation loss has occurred as per SCADA.	49.97	49.92	-0.05
3	22-Aug-21	19:44hrs	On 22nd of August 2020 at 19:44 hrs, As reported bus bar protection operated at 400kV Karcham Wangtoo (JSW) resulted into 1400MW generation loss (1080MW at Karcham HEP & 330MW at Baspa HEP).	50.03	49.99	-0.04
4	26-Aug-21	11:13hrs	On 26th of August 2021 at 11:13 hrs, As reported, Solar generation loss of around 1700 MW(scada figure) has been occurred in solar generation complex of Northern region at 765kV Bhadla(PG) & 400kV Fatehgarh2(PG) S/s.	49.89	49.75	-0.14

The Hon’ble CERC approved procedure has already been shared with all concerned during previous OCC meetings. FRC observed for each state control area for the events is tabulated below:

States	06-Aug-21 event	Remarks
PUNJAB	98%	
HARYANA	-142%	
RAJASTHAN	67%	
DELHI	231%	
UTTAR PRADESH	-47%	Demand was in increasing trend
UTTARAKHAND	24%	
CHANDIGARH	38%	
HIMACHAL PRADESH	35%	
JAMMU & KASHMIR	-132%	
NR	31%	

States	15-Aug-21 event	Remarks
PUNJAB	19%	
HARYANA	24%	
RAJASTHAN	415%	Affected Control Area
DELHI	50%	
UTTAR PRADESH	13%	
UTTARAKHAND	70%	
CHANDIGARH	-253%	
HIMACHAL PRADESH	26%	
JAMMU & KASHMIR	-26%	
NR	29%	

States	22-Aug-21 event	Remarks
PUNJAB	89%	
HARYANA	-424%	
RAJASTHAN	26%	
DELHI	256%	
UTTAR PRADESH	16%	
UTTARAKHAND	9%	
CHANDIGARH	-169%	
HIMACHAL PRADESH	309%	
JAMMU & KASHMIR	-8%	
NR	41%	

States	26-Aug-21 event	Remarks
PUNJAB	15%	
HARYANA	-4%	
RAJASTHAN	27%	
DELHI	-1%	
UTTAR PRADESH	13%	
UTTARAKHAND	39%	
CHANDIGARH	59%	
HIMACHAL PRADESH	15%	
JAMMU & KASHMIR	0%	
NR	10%	

FRC calculation of ISGS stations based on NRLDC SCADA data is tabulated below:

Generator	06-Aug-21 event	Generator	06-Aug-21 event
Singrauli TPS	76%	Salal HEP	0%
Rihand-1 TPS	52%	Tanakpur HEP	33%
Rihand-2 TPS	181%	Uri-1 HEP	14%
Rihand-3 TPS	0%	Uri-2 HEP	-36%
Dadri-1 TPS	No generation	Dhauliganga HEP	64%
Dadri -2 TPS	No generation	Dulhasti HEP	12%
Unchahar TPS	675%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	162%	Parbati-3 HEP	0%
Jhajjar TPS	392%	Jhakri HEP	10%
Dadri GPS	No generation	Rampur HEP	0%
Anta GPS	No generation	Tehri HEP	94%
Auraiya GPS	No generation	Koteswar HEP	146%
Narora APS	130%	Karcham HEP	69%
RAPS-B	-2%	Malana-2 HEP	Suspected SCADA Data
RAPS-C	23%	Budhil HEP	6%
Chamera-1 HEP	2%	Bhakra HEP	3%
Chamera-2 HEP	-1%	Dehar HEP	10%
Chamera-3 HEP	27%	Pong HEP	22%
Bairasiul HEP	-22%	Koldam HEP	-10%
		AD Hydro HEP	162%

Generator	15-Aug-21 event	Generator	15-Aug-21 event
Singrauli TPS	-7%	Salal HEP	1%
Rihand-1 TPS	87%	Tanakpur HEP	-14%
Rihand-2 TPS	81%	Uri-1 HEP	25%
Rihand-3 TPS	0%	Uri-2 HEP	0%
Dadri-1 TPS	106%	Dhauliganga HEP	72%
Dadri -2 TPS	151%	Dulhasti HEP	19%
Unchahar TPS	-3%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	92%	Parbati-3 HEP	Suspected SCADA Data
Jhajjar TPS	176%	Jhakri HEP	-2%
Dadri GPS	No generation	Rampur HEP	-23%
Anta GPS	No generation	Tehri HEP	187%
Auraiya GPS	No generation	Koteswar HEP	0%
Narora APS	No generation	Karcham HEP	58%
RAPS-B	1%	Malana-2 HEP	0%
RAPS-C	-16%	Budhil HEP	0%
Chamera-1 HEP	59%	Bhakra HEP	-2%
Chamera-2 HEP	107%	Dehar HEP	-1%
Chamera-3 HEP	9%	Pong HEP	8%
Bairasiul HEP	5%	Koldam HEP	6%
		AD Hydro HEP	-43%

Generator	22-Aug-21 event	Generator	22-Aug-21 event
Singrauli TPS	-3%	Salal HEP	18%
Rihand-1 TPS	No generation	Tanakpur HEP	-22%
Rihand-2 TPS	13%	Uri-1 HEP	33%
Rihand-3 TPS	0%	Uri-2 HEP	0%
Dadri-1 TPS	No generation	Dhauliganga HEP	138%
Dadri -2 TPS	31%	Dulhasti HEP	13%
Unchahar TPS	-9%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	177%	Parbati-3 HEP	0%
Jhajjar TPS	88%	Jhakri HEP	770%
Dadri GPS	176%	Rampur HEP	267%
Anta GPS	No generation	Tehri HEP	48%
Auraiya GPS	No generation	Koteswar HEP	21%
Narora APS	120%	Karcham HEP	-6272%
RAPS-B	-4%	Malana-2 HEP	Suspected SCADA Data
RAPS-C	22%	Budhil HEP	4%
Chamera-1 HEP	-5%	Bhakra HEP	16%
Chamera-2 HEP	7%	Dehar HEP	-6%
Chamera-3 HEP	21%	Pong HEP	-7%
Bairasiul HEP	-4%	Koldam HEP	367%
		AD Hydro HEP	127%

Generator	26-Aug-21 event	Generator	26-Aug-21 event
Singrauli TPS	0%	Salal HEP	1%
Rihand-1 TPS	-1%	Tanakpur HEP	13%
Rihand-2 TPS	11%	Uri-1 HEP	51%
Rihand-3 TPS	13%	Uri-2 HEP	-10%
Dadri-1 TPS	8%	Dhauliganga HEP	No generation
Dadri -2 TPS	1%	Dulhasti HEP	1%
Unchahar TPS	1%	Sewa-II HEP	No generation
Unchahar stg-4 TPS	27%	Parbati-3 HEP	Suspected SCADA Data
Jhajjar TPS	94%	Jhakri HEP	0%
Dadri GPS	No generation	Rampur HEP	Suspected SCADA Data
Anta GPS	No generation	Tehri HEP	No generation
Auraiya GPS	No generation	Koteswar HEP	0%
Narora APS	40%	Karcham HEP	0%
RAPS-B	13%	Malana-2 HEP	Suspected SCADA Data
RAPS-C	3%	Budhil HEP	2%
Chamera-1 HEP	3%	Bhakra HEP	0%
Chamera-2 HEP	11%	Dehar HEP	1%
Chamera-3 HEP	25%	Pong HEP	3%
Bairasiul HEP	No generation	Koldam HEP	2%
		AD Hydro HEP	0%

FRC calculation of major state generators based on NRLDC SCADA data is tabulated below:

Generator	06-Aug-21 event	Generator	06-Aug-21 event
PUNJAB		UP	
Ropar TPS	288%	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	No generation	Harduaganj TPS	342%
Rajpura TPS	35%	Paricha TPS	0%
T.Sabo TPS	98%	Rosa TPS	-9%
Goindwal Sahib TPS	719%	Anpara TPS	-7%
Ranjit Sagar HEP	-14%	Anpara C TPS	Suspected SCADA Data
Anandpur Sahib HEP	21%	Anpara D TPS	51%
HARYANA		Bara TPS	7%
Panipat TPS	No generation	Lalitpur TPS	1%
Khedar TPS	No generation	Meja TPS	-20%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	-16%	Alaknanda HEP	72%
Faridabad GPS	No generation	Rihand HEP	18%
RAJASTHAN		Obra HEP	2%
Kota TPS	103%	UTTARAKHAND	
Suratgarh TPS	No generation	Gamma Infra GPS	No generation
Kalisindh TPS	80%	Shravanti GPS	128%
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	8%	Chibra HEP	Suspected SCADA Data
Kawai TPS	259%	Khodri HEP	13%
Dholpur GPS	No generation	Chilla HEP	-14%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	14%
RPS HEP	No generation	Malana HEP	Suspected SCADA Data
JS HEP	15%	Sainj HEP	0%
DELHI		Larji HEP	12%
Badarpur TPS	No generation	Bhabha HEP	-19%
Bawana GPS	-29%	Giri HEP	9%
Pragati GPS	-30%	J&K	
		Baglihar-1&2 HEP	9%
		Lower Jhelum HEP	No generation

Generator	15-Aug-21 event	Generator	15-Aug-21 event
PUNJAB		UP	
Ropar TPS	-2%	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	60%	Harduaganj TPS	17%
Rajpura TPS	13%	Paricha TPS	-96%
T.Sabo TPS	33%	Rosa TPS	3%
Goindwal Sahib TPS	189%	Anpara TPS	10%
Ranjit Sagar HEP	0%	Anpara C TPS	0%
Anandpur Sahib HEP	-8%	Anpara D TPS	12%
HARYANA		Bara TPS	2%
Panipat TPS	Suspected SCADA Data	Lalitpur TPS	-3%
Khedar TPS	29%	Meja TPS	0%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	94%	Alaknanda HEP	2%
Faridabad GPS	No generation	Rihand HEP	-2%
RAJASTHAN		Obra HEP	12%
Kota TPS	10%	UTTARAKHAND	
Suratgarh TPS	23%	Gamma Infra GPS	No generation
Kalisindh TPS	19%	Shravanti GPS	0%
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	36%	Chibra HEP	Suspected SCADA Data
Kawai TPS	10%	Khodri HEP	-19%
Dholpur GPS	No generation	Chilla HEP	-8%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	7%
RPS HEP	No generation	Malana HEP	-5%
JS HEP	No generation	Sainj HEP	0%
DELHI		Larji HEP	0%
Badarpur TPS	No generation	Bhabha HEP	-6%
Bawana GPS	-39%	Giri HEP	-3%
Pragati GPS	19%	J&K	
		Baglihar-1&2 HEP	-4%
		Lower Jhelum HEP	No generation

Generator	22-Aug-21 event	Generator	22-Aug-21 event
PUNJAB		UP	
Ropar TPS	No generation	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	No generation	Harduaganj TPS	172%
Rajpura TPS	49%	Paricha TPS	-11%
T.Sabo TPS	120%	Rosa TPS	19%
Goindwal Sahib TPS	No generation	Anpara TPS	-8%
Ranjit Sagar HEP	393%	Anpara C TPS	Suspected SCADA Data
Anandpur Sahib HEP	-13%	Anpara D TPS	2%
HARYANA		Bara TPS	4%
Panipat TPS	Suspected SCADA Data	Lalitpur TPS	59%
Khedar TPS	71%	Meja TPS	-21%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	-21%	Alaknanda HEP	3%
Faridabad GPS	No generation	Rihand HEP	22%
RAJASTHAN		Obra HEP	0%
Kota TPS	32%	UTTARAKHAND	
Suratgarh TPS	2%	Gamma Infra GPS	-13%
Kalisindh TPS	No generation	Shravanti GPS	0%
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	49%	Chibra HEP	Suspected SCADA Data
Kawai TPS	136%	Khodri HEP	7%
Dholpur GPS	No generation	Chilla HEP	-61%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	-6281%
RPS HEP	No generation	Malana HEP	2%
JS HEP	No generation	Sainj HEP	Suspected SCADA Data
DELHI		Larji HEP	0%
Badarpur TPS	No generation	Bhabha HEP	-8%
Bawana GPS	-45%	Giri HEP	-18%
Pragati GPS	-1%	J&K	
		Baglihar-1&2 HEP	7%
		Lower Jhelum HEP	No generation

Generator	26-Aug-21 event	Generator	26-Aug-21 event
PUNJAB		UP	
Ropar TPS	-1%	Obra TPS	Suspected SCADA Data
L.Mohabbat TPS	10%	Harduaganj TPS	39%
Rajpura TPS	9%	Paricha TPS	5%
T.Sabo TPS	3%	Rosa TPS	-12%
Goindwal Sahib TPS	76%	Anpara TPS	3%
Ranjit Sagar HEP	0%	Anpara C TPS	26%
Anandpur Sahib HEP	4%	Anpara D TPS	0%
HARYANA		Bara TPS	-10%
Panipat TPS	0%	Lalitpur TPS	11%
Khedar TPS	22%	Meja TPS	0%
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA Data
CLP Jhajjar TPS	20%	Alaknanda HEP	2%
Faridabad GPS	No generation	Rihand HEP	3%
RAJASTHAN		Obra HEP	-2%
Kota TPS	-3%	UTTARAKHAND	
Suratgarh TPS	No generation	Gamma Infra GPS	Suspected SCADA Data
Kalisindh TPS	No generation	Shravanti GPS	Suspected SCADA Data
Chhabra TPS	No generation	Ramganga HEP	No generation
Chhabra stg-2 TPS	14%	Chibra HEP	-1%
Kawai TPS	27%	Khodri HEP	7%
Dholpur GPS	No generation	Chilla HEP	0%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	3%
RPS HEP	No generation	Malana HEP	3%
JS HEP	No generation	Sainj HEP	-1%
DELHI		Larji HEP	1%
Badarpur TPS	No generation	Bhabha HEP	-2%
Bawana GPS	63%	Giri HEP	-68%
Pragati GPS	-9%	J&K	
		Baglihar-1&2 HEP	-1%
		Lower Jhelum HEP	No generation

Primary Frequency Response by Generators during Grid Event at SEIL on 06th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**AD Hydro Unit 1**	0.16	Poor response (Unit was running on full load)
2	**AD Hydro Unit 2**	350.92	Satisfactory response
3	**APCPL Jhajjar Unit 1**	270.76	Satisfactory response
4	**APCPL Jhajjar Unit 2**	179.21	Satisfactory response
5	**Koldam HEP**	0.00	Units were running on full capacity, no margin was available.
6	**Chamera I**	123.92	Satisfactory response
7	**N. Jhakri Unit 1**	0.00	Units were running on almost 110% load.
8	**N. Jhakri Unit 2**	27.91	
9	**N. Jhakri Unit 3**	3.10	
10	**N. Jhakri Unit 4**	12.36	

Primary Frequency Response by Generators during Grid Event at SEIL on 06th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
11	**N. Jhakri Unit 5**	-19.14	Units were running on almost 110% load.
12	**N. Jhakri Unit 6**	24.67	
13	**KTPS**	50.40	Unsatisfactory response
14	**STPS+SSCTPS**	-9.18	Poor response
15	**CTPP**	12.34	Unsatisfactory response
16	**KALISINDH**	61.62	Unsatisfactory response
17	**ADANI**	187.95	Satisfactory response
18	**Singrauli Unit 6**	26.80	Unsatisfactory response
19	**Tehri HEP**	94.57	Satisfactory response
20	**TSPL**	199.11	Satisfactory response

Primary Frequency Response by Generators during Grid Event at Bhadla on 15th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**Chamera I**	86.23	Satisfactory response
2	**Rosa TPS Unit 1**	-32.19	Poor response
3	**Rosa TPS Unit 2**	75.07	Satisfactory response
4	**Rosa TPS Unit 3**	6.76	Unsatisfactory response
5	**Rosa TPS Unit 4**	-18.14	Poor response
6	**N. Jhakri Unit 1**	0.00	Units were running on almost 110% load.
7	**N. Jhakri Unit 2**	3.71	
8	**N. Jhakri Unit 3**	0.00	
9	**N. Jhakri Unit 4**	-5.56	
10	**N. Jhakri Unit 5**	-13.40	

Primary Frequency Response by Generators during Grid Event at Bhadla on 15th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
11	**N. Jhakri Unit 6**	13.00	Units were running on almost 110% load.
12	**KTPS**	34.05	Unsatisfactory response
13	**STPS+SSCTPS**	6.39	Unsatisfactory response
14	**CTPP**	0.00	Poor response
15	**KALISINDH**	18.83	Unsatisfactory response
16	**ADANI(Kawai)**	27.98	Unsatisfactory response
17	**CSCTPP**	0.00	Poor response
18	**Singrauli Unit 6**	108.02	Satisfactory response (Time mismatch with PMU data)
19	**Tehri HEP**	215.47	Satisfactory response
20	**TSPL**	22.80	Unsatisfactory response

Primary Frequency Response by Generators during Grid Event at Karcham on 22nd Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**AD Hydro Unit 1**	213.34	Satisfactory response
2	**AD Hydro Unit 2**	3.98	Unsatisfactory response
3	**Chamera I**	86.92	Satisfactory response
4	**Singrauli Unit 6**	35.67	Unsatisfactory response
5	**Singrauli Unit 7**	8.34	Unsatisfactory response

Primary Frequency Response by Generators during Grid Event at Bhadla on 26th Aug 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	Response category/Remark
1	**Rosa unit 1**	-21.68	Poor response
2	**Rosa unit 2**	-19.03	Poor response
3	**Rosa unit 3**	-13.34	Poor response
4	**Rosa unit 4**	-23.72	Poor response
5	**Chamera I**	26.79	Unsatisfactory response
6	**Singrauli Unit 6**	66.43	Unsatisfactory response
7	**Singrauli Unit 7**	1.19	Unsatisfactory response

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

For event on 06th Aug, 2021, FRC information has been received from AD Hydro, NHPC, NJPC, Koldam, TSPL, Tehri, Singrauli, Delhi, UP, Haryana & Rajasthancontrol area.

For event on 15th Aug, 2021, FRC information has been received from AD Hydro, NHPC, NJPC, Koldam, TSPL, Tehri, Singrauli, UP, Haryana & Rajasthan control area.

For event on 22nd Aug, 2021, FRC information has been received from AD Hydro, NHPC, Singrauli & UP control area.

For event on 26th Aug, 2021, FRC information has been received from Rosa, NHPC, Singrauli & UP control area.

NRLDC representative informed that units under Rajasthan control area line KTPS, STPS, Chhabra & Kalisindh units are showing poor/unsatisfactory response.

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

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

Maintaining properly tuned Power System Stabilizers in service is essential for damping of inter area and local mode of oscillations in the grid. As we all know, Indian electricity grid is continuously expanding and lots of Power Electronics devices were also commissioned in recent years changing the dynamics of grid. As possibility of development of power oscillations under certain operating conditions cannot be ruled out, PSS tuning /re-tuning is required for damping of oscillations.

In this regard one committee at NRPC level was formed in year 2014 and it was agreed that If results of Step Response Test on concerned grid connected generators indicate sufficient damping, generating company would perform next Step Test after three year or at the time of major overhauling of the machine, whichever will be earlier and Generating Companies would arrange for re-tuning of PSS, if Step Response Test indicates insufficient damping of oscillations.

In 180th, 181st, 182nd, 183rd, 184th, 185th& 186thOCC meeting, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

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

Status report in above format updated till 08thSeptember 2021is attached as **Annexure-B.VI of the Agenda.**

It may be noted that except Anpara-A U-3, Parichha-C U-5, Baspa U-2, Unchahar-II U-1, Jhakri U-1&3, all units of Tehri and Koteshwar, and all units of Rampur HPS, PSS of other major units were last tuned several years ago. Therefore, once again all utilities were requested to arrange exciter step-response test or tuning of their respective units and submit the report of PSS tuning/ re-tuning/ Step Response Test through email to NRPC and NRLDC at seo-nrpc@nic.in and nrldcso2@gmail.com respectively.

NRLDC representative informed that all the units who have done Step response test before 2018 are requested to plan the exciter step-response test in Quarter 3 of 2021-22 and submit the tentative schedule of step-response test on the units with NRPC/ NRLDC.

Members agreed for the same.

29. Frequent Multiple element tripping at 400/220 kV Gr.Noida(UP):

A major grid event of multiple element tripping at 400/220 kV Gr.Noida (UP) occurred on 06th September, 2021 which led to load loss of approximately 650MW in UP Control area.

As reported, R-N phase to earth fault occurred on 220kV Gr. Noida-Noida sec 20 ckt-2. While closing of CB during A/R operation, R-phase LA of 220kV Gr. Noida-Noida sec 20 ckt-2 at Gr. Noida end blasted, line isolator of same line & Bus isolator at Gr.Noida (UP) also got damaged due to persisted fault which resulted into bus bar protection operation. Due to bus bar protection operation, 400/220 kV 315 MVA ICT 1 & ICT 5, 220kV Gr.Noida-Noida sec 20 ckt-1 & Ckt-2, 220kV Gr.Noida-RC Green ckt-3 and 220kV Gr.Noida-Noida sec 129 (UP) ckt-1 all tripped. At the same time, 400/220 kV 500 MVA ICT 6 at Gr.Noida (UP) also tripped on PRV protection operation. As per PMU, R-N phase to earth fault with delayed clearance in 640ms is observed. As per SCADA, load loss of approx. 650MW is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 2 and 400/220 kV 500 MVA ICT 5 & ICT 6 at Gr.Noida(UPC) were carrying 132MW, 143MW, 218MW & 221MW respectively.

As per the information received, equipment damage occurred during charging of line on persistent fault. Therefore, utilities are requested to avoid taking charging attempt after tripping of line on fault, and proper patrolling may be carried to ensure healthiness of line before taking the charging code.

Such delayed clearance of fault, non-operation of auto-reclosure during line to ground fault and sensitive protection setting may lead to multiple elements tripping which affect the reliability and security of the grid.

NRLDC representative emphasized the importance of patrolling after tripping of line on fault as charging of line on persistent fault may lead to equipment damage which is more detrimental for system security.

Members agreed for the same.

30. Cyber security in Power system operation (Additional Agenda):

Cyber security has been a very important aspect of power system operation. Cybercriminals are trying to exploit the vulnerabilities present in IT and OT systems of important organizations. In view of above, Ministry of Power (MOP) is continuously

taking measures to ensure cyber security of the power sector and following up with all the organizations under its umbrella. All the RLDCs and NLDC are critical assets of the power system operation and to take up the issues relating to cyber security, CERT-GO (grid operation) was formed by MOP and responsibility was entrusted upon POSOCO. CERT-GO ensure the uniformity in confidentiality, integrity and availability of information and resources to tackle the cyber threats before they can do any harm to the system.

In the same line on boarding with agencies like CSK, NCIIPC, CERT-IN has played a vital role in getting information about the threat actors and remediation of threats. All the RLDCs and states under respective RLDCs were directed to onboard with these agencies.

NRLDC has been rigorously following with Northern Regional SLDCs to ensure cyber security best practices. In this regard preparation of CCMP, CII and ISO 27001 documents have been the basis to ensure the cyber security of the system. Ministry is continuously monitoring each SLDCs progress. In the latest meeting held on Sep 14 2021, the ministry has advised each SLDC to complete CCMP and CII documents by 30th September strictly so that , each SLDC can adhere to cyber security best practices.

The latest status of CCMP, CII and ISO 27001 implementation is given below:

SLDCs	**CCMP**	**CII**	**ISO 27001**	**Latest status of First VAPT of IT system (2021-2022)**	**Latest status of First VAPT of OT system (2021-2022)**
BBMB	Approved	Proposal was sent to NCIIPC vide Email dated 05.08.2021 on which it has been asked to resubmit the proposal as per a template specific to SLDCs. Revised proposal will be sent shortly.	Under Process	Conducted on 14th July 2021	Conducted on 14th July 2021
Delhi	Received a reply to restructure CCMP as per new format , and the same will be resubmitted in the next week as per new format.(As reported on 20th August by CISO).	submitted to NCIIPC	Under Process	VAPT is in process	

SLDCs	CCMP	CII	ISO 27001	Latest status of First VAPT of IT system (2021-2022)	Latest status of First VAPT of OT system (2021-2022)
Haryana	Draft CCMP plan prepared and submitted to CERT-GO for their comments. Now, CERT-IN share the revised template of CCMP plan. Accordingly, changes are being done in draft CCMP plan and will be submitted in one week. (As reported on 20th August by CISO). Under Process	All prerequisite documentation are being done. Under Process	Under Process	Tentatively will be done in December	The tentative schedule of VAPT of OT System is Sep-Oct 2021
UP	Comment/Feedback Sent to UP on 2nd Sept 2021	UPSLDC's first draft CII Report was submitted to NCIIPC on 03.05.2021 and thereafter the revised reports were also submitted to NCIIPC on 07.05.2021, 19.05.2021, 04.06.2021, 15.07.2021 (revised with POSOCO's comments) and 18.08.2021 after incorporating the suggestions of NCIIPC.	As proposal has been taken from CDAC for appointing them as consultant for obtaining ISO certification which is under process.	Conducted on 18th August 2021	
Rajasthan	Under Process	Under Process	Under Process	Tendering bid will open on 24th Sept for VAPT	
J&K	Draft Stage	Draft Stage	The ISO27001 process has not started	Planning for IT Infra Setup and necessary approval from upper management	
HP	HPSLDC is in progress of preparing CCMP on revised format as received from NRLDC on dated 09 Aug,2021.	HPSLDC has prepared CII on revised format received from NCIIPC and re-submitted to	Pre-assessment exercise for implementation of ISO-27001 is in progress.	Will be conducted by end of october	

SLDCs	CCMP	CII	ISO 27001	Latest status of First VAPT of IT system (2021-2022)	Latest status of First VAPT of OT system (2021-2022)
		NCIIPC on 16 Aug,2021 for approval.			
Uttarakhand	Comment/Feedback Sent to Uttarakhand on 7th Sept 2021	In process	N/A as system is very old	Pending for financial approval from MD	
Punjab	Comment/Feedback Sent to Punjab on 2nd Sept 2021	Matter taken up with C-DAC	Matter taken up with C-DAC	Conducted on 16th July 2021	

Utilities were requested to provide the updated status of VAPT of IT & OT systems by email.

31. Radial feeders list for physical regulation (Additional Agenda):
Covered under point No. 22 above.

32. Expediting commissioning of 765kV Anpara D – Unnao (Additional Agenda):
Covered under point No. 22 above.

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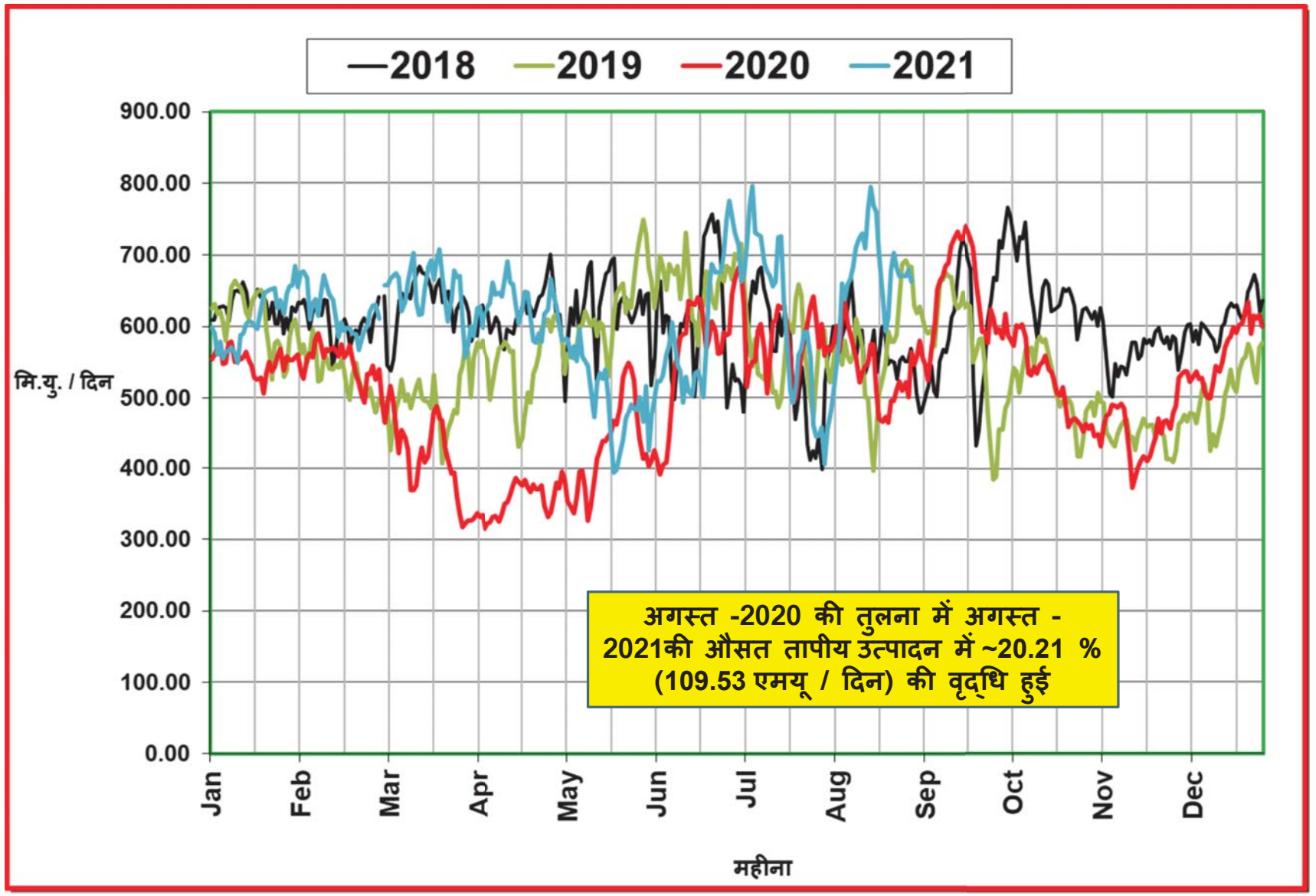
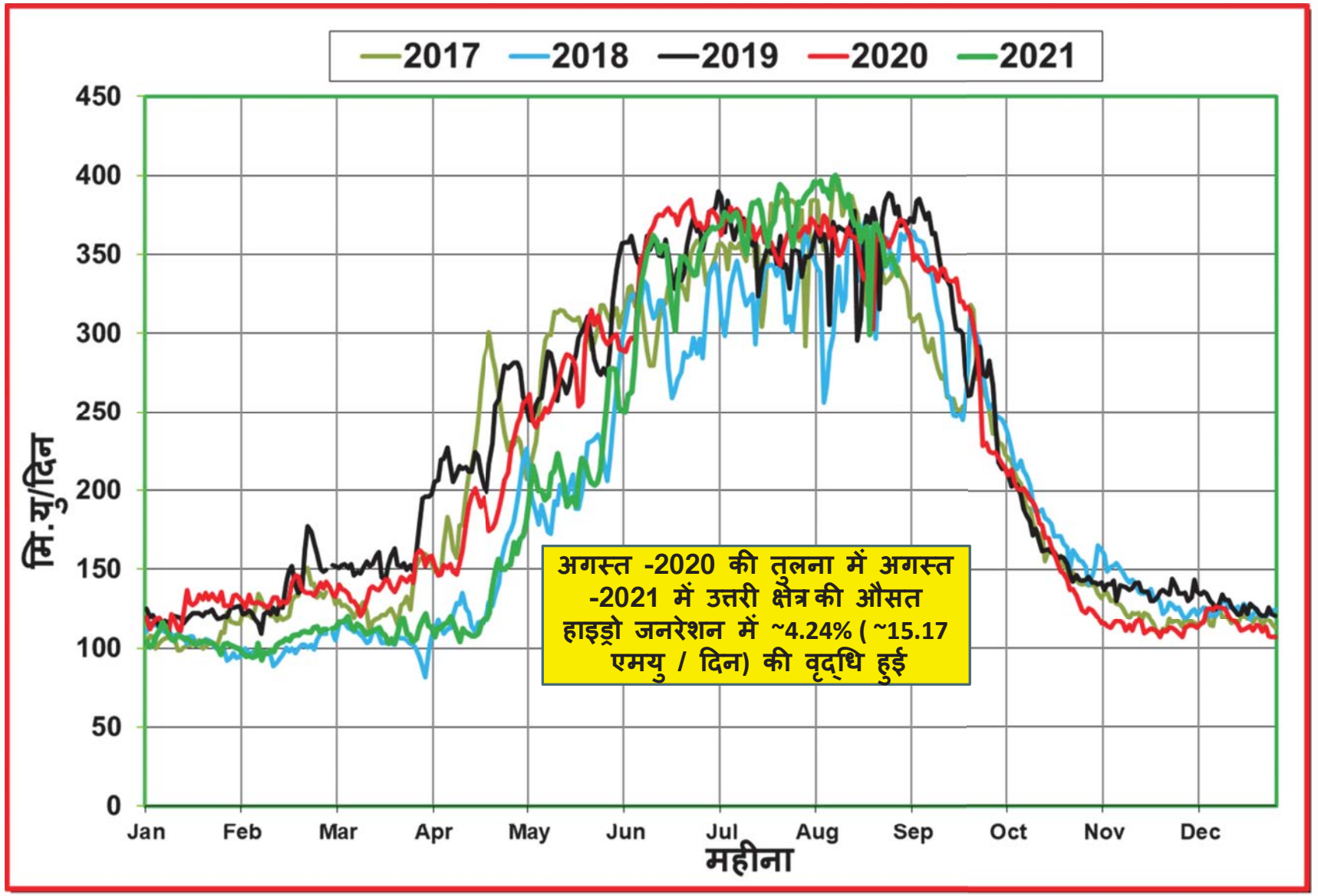
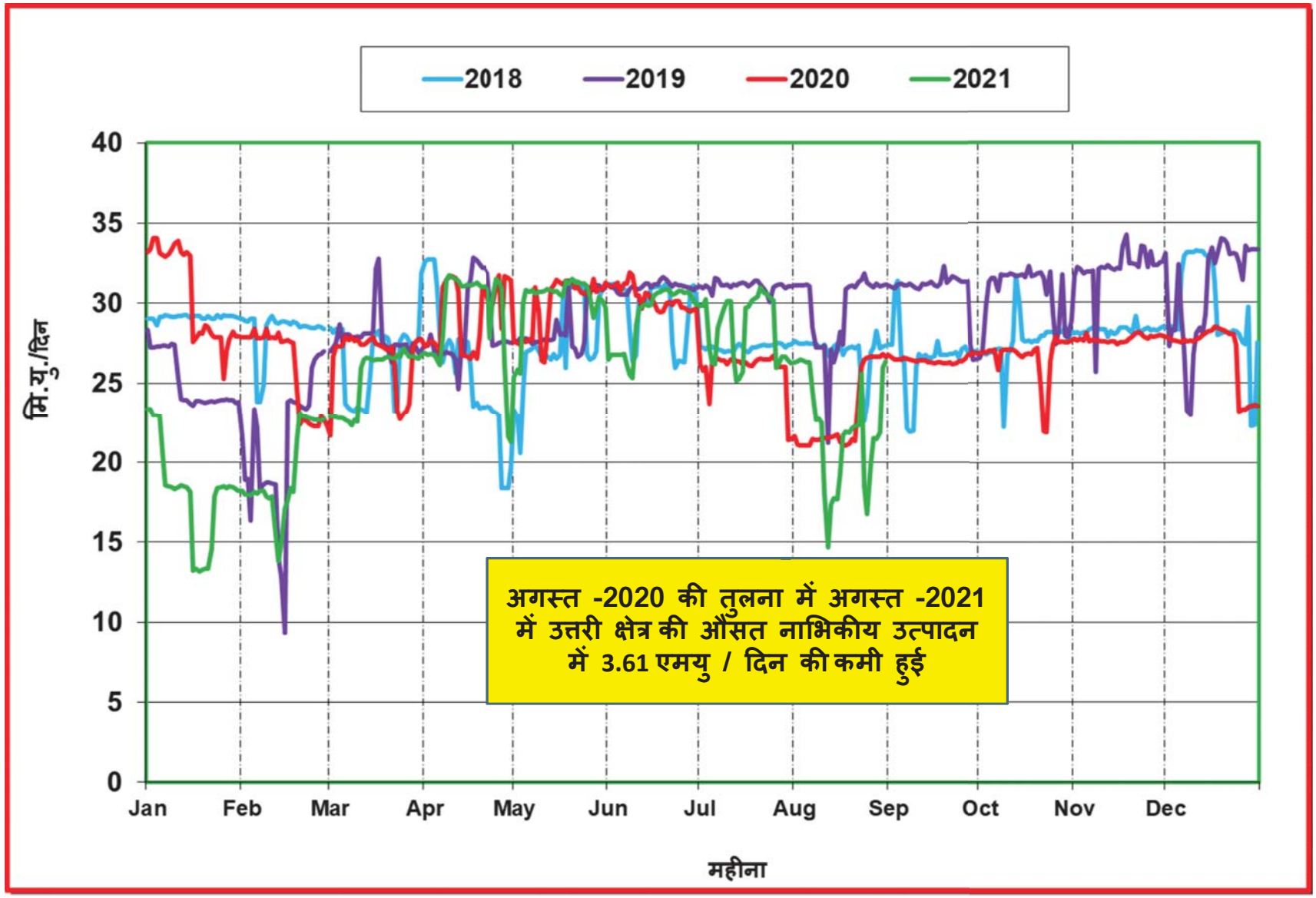
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति(Mus/Day)



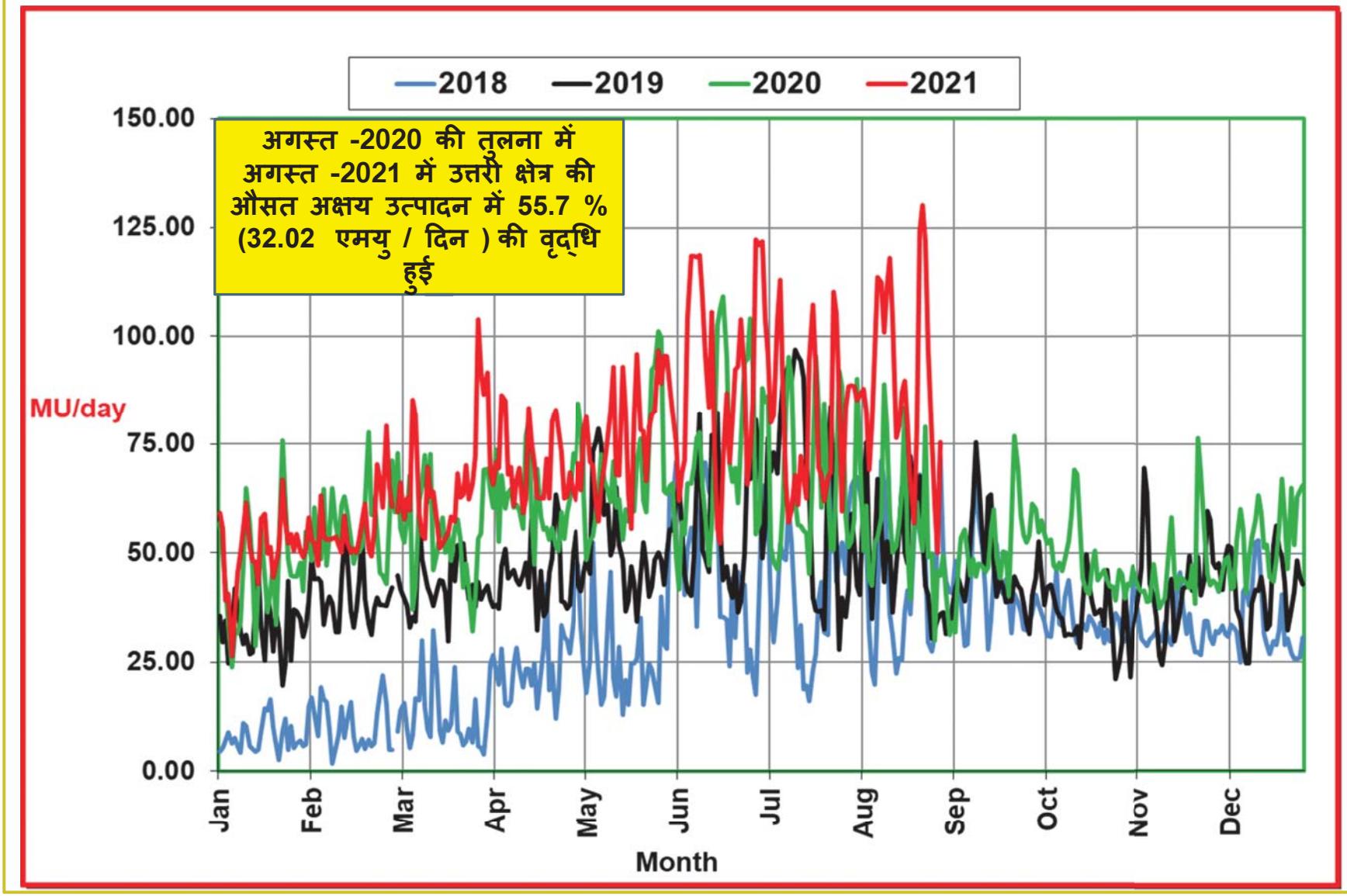
उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति(Mus/Day)



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



(Mus/Day)


2018
2019
2020
2021
अगस्त -2020 की तुलना में अगस्त -2021 में उत्तरी क्षेत्र की औसत अक्षय उत्पादन में 55.7 % (32.02 एमयु / दिन) की वृद्धि हुई
150.00
125.00
100.00
75.00
50.00
25.00
0.00
MU/day
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

New Elements First Time Charged During August 2021

S. No.	Type of transmission element	Total No
1	765kV line	02
2	400kV line	01
3	220kV line	04
4	LILO of lines	09
5	Anti-theft charging of lines	01
6	ICTs	18
7	Unit	01
8	Bus Reactors	04
9	Line Reactors	02
10	765kV, 400kV, 220 kV Bays	111
Total New Elements charged		153

Transmission Lines

(765kV Lines- 372 Ckt. Kms, 400kV Lines- 1.195 Ckt. Kms, 220kV Lines- 110.09 Ckt. Kms)

Sr. No.	Name of element	Voltage Level (in kV)	Line Length (In kM)	Conductor Type	Agency/ Owner	Location	Remarks	Date & time of charging	
								Date	Time
1	220kV D/C Fatehgarh II(PG)-AHEJOl-Line-1	220	35.86	Zebra	AHEJOL	Rajasthan		06.08.2021	04:47
2	220kV D/C Fatehgarh II(PG)-AHEJOl-Line-2	220	35.86	Zebra	AHEJOL	Rajasthan		06.08.2021	21:05
3	220kV Renew Sun Wave-Fatehgarh II	220	7.7	Moose	Renew Sun wave	Rajasthan		11.08.2021	19:19
4	220kV SBSR-Bikaner(PG)-S/C	220	11.17	Moose	SBSR	Rajasthan		13.08.2021	23:59
5	765kV Fatehgarh II-Bhadla II line-1	765	186	Hexa Zebra	PFTL	Rajasthan		29.08.2021	23:48
6	765kV Fatehgarh II-Bhadla II line-2	765	186	Hexa Zebra	PFTL	Rajasthan		29.08.2021	17:25
7	220kV Renew Jhakhand Three-Fatehgarh II	220	19.5	Moose	RSEJ3PL	Rajasthan		30.08.2021	21:06
8	400KV OBRA B- OBRA C (UP) CKT-I	400	1.195	Twin Moose	UPPTCL	UP		26.08.2021	18:50

Anti Theft charging of Transmission Lines

Sr. No.	Name of element	Voltage Level (in kV)	Line Length (In kM)	Conductor Type	Agency/ Owner	Location	Remarks	Date & time of charging	
								Date	Time
1	765kV Bikaner-Khetri line-2 upto gantry of Khetri	765	240.6	Hexa Zebra	BKTL	Rajasthan		31.08.2021	22:09

LILO of Transmission Lines

Sr. No.	Name of element	Voltage Level (in kV)	Line Length (Before LILO)	Line Length (Kms)	LILO Line Length (Kms)	Conductor Type	Agency/ Owner	Location	Remarks	Date & time of charging	
										Date	Time
1	400kV Rasra-Balia { LILO of 400kV Balia-Mau-II at Rasara}	400	9.22	37.3	46.3	twin moose	UPPTCL/PGCIL	UP		01.08.2021	00:21
2	400 kV Fatehgarh (PG) - Bhadla (PG) 1 {Loop in of 400kV Fatehgarh (FBTL)-Bhadla(PG) 1 at Fatehgarh (PG)}	400	145.97	175.08	40.06	Hexa Zebra	FBTL/PGCIL	Rajasthan		02.08.2021	17:41
3	400kV Lucknow(PG)-Jehta-1 {LILO of 400kV Lucknow-Unnao DC at Jenta (UP)}	400	73.8	31.9	16.9	twin moose	UP/PGCIL	UP		27.08.2021	12:32
4	400kV Unnao (UP)-Jehta-1 {LILO of 400kV Lucknow-Unnao DC at Jenta (UP)}	400	73.8	70.41	12.62	twin moose	UP/PGCIL	UP		27.08.2021	12:32
5	400kV Lucknow(PG)-Jehta-2 {LILO of 400kV Lucknow-Unnao DC at Jenta (UP)}	400	73.8	31.9	16.9	twin moose	UP/PGCIL	UP		27.08.2021	13:17
6	400kV Unnao (UP)-Jehta-2 {LILO of 400kV Lucknow-Unnao DC at Jenta (UP)}	400	73.8	70.41	12.62	twin moose	UP/PGCIL	UP		27.08.2021	12:32
7	400kV Mau(UP)-Rasra-1 {LILO of 400kV Balia-Mau 2 at 400kV Rasra}	400	9.215	37.5	37.269	twin moose	UP/PGCIL	UP		01.08.2021	00:21
8	220kV Sec 72 Gurugram-Sohna Road line-1{LILO of D/C 220kV Sec 72 Gurugram-Rangla Rajpur at Sohna Road}	220	73	8.518	2.318	Moose	HVPNL	Haryana		11.08.2021	21:15
9	220kV Sec 72 Gurugram-Sohna Road line-2 {LILO of D/C 220kV Sec 72 Gurugram-Rangla Rajpur at Sohna Road}	220	73	8.518	2.318	Moose	HVPNL	Haryana		11.08.2021	21:51

ICT (MVA Capacity Addition- 6065 MVA)

S.No.	Name of element	Voltage Level	Transformation Capacity (in MVA)	New/replacement /augmentation	Make	Configuration	Agency/ Owner	Remarks	Actual date & time of charging	
									Date	Time
1	500 MVA Power Transformer-1 at Fatehgarh II (PG)	400/220/33	500	New	T&R	3-Ph.	PGCIL		03.08.2021	23:40
2	500 MVA Power Transformer-2 at Fatehgarh II (PG)	400/220/33	500	New	T&R	3-Ph.	PGCIL		04.08.2021	00:30
3	175MVA Power Transformer-1 at Eden	220/33	175	New	Prime Meidan	3-Ph.	EDEN	On no load	07.08.2021	14:30
4	175MVA Power Transformer-2 at Eden	220/33	175	New	Prime Meidan	3-Ph.	EDEN	On no load	07.08.2021	15:17
5	500 MVA ICT-1 at Jehta(Hardoi Road) (UP)	400/220	500	New	GE	3-Ph.	UPPTCL	On no load	24.08.2021	19:31
6	500 MVA ICT-2 at Jehta (Hardoi Road) (UP)	400/220	500	New	GE	3-Ph.	UPPTCL	On no load	24.08.2021	19:45
7	240 MVA ICT-2 at Orai (UP) (Replacement of damaged 315 MVA ICT-2)	400/220	240	Replacement	BHEL	3-Ph.	UPPTCL		16.08.2021	16:58
8	500 MVA ICT-2 at Bikaner(PG)	400/220/33	500	New	T&R	3-Ph.	PGCIL		13.08.2021	14:55
9	250 MVA Power Transformer-1 at AHEJOL	220/33	250	New	Toshibha	3-Ph.	AHEJOL	On no load	06.08.2021	21:05
10	250 MVA Power Transformer-2 at AHEJOL	220/33	250	New	Toshibha	3-Ph.	AHEJOL	On no load	07.08.2021	16:35
11	150 MVA Power Transformer-2 at Renew Sun Wave	220/33	150	New	Toshibha	3-Ph.	Renew Sun Wavw	On no load	11.08.2021	22:24
12	150 MVA Power Transformer-1 at Renew Sun Wave	220/33	150	New	Toshibha	3-Ph.	Renew Sun Wavw	On no load	11.08.2021	21:59
13	3*500 MVA ICT-3 at Fatehgarh II(PG)	765/400/33	1500	New	ABB Hitachi	1*3Ph	PGCIL		29.08.2021	18:25
14	125MVA Power Transformer-1 at SBSR	220/33	125	New	GE T&D	3Ph	SBSR	On no load	23.08.2021	18:54
15	125MVA Power Transformer-2 at SBSR	220/33	125	New	GE T&D	3Ph	SBSR		14.08.2021	12:17
16	125MVA Power Transformer-3 at SBSR	220/33	125	New	GE T&D	3Ph	SBSR	On no load	14.08.2021	21:41
17	150 MVA Power Transformer-1 at Renew Jharjhand Three	220/33	150	New	Toshibha	3Ph	RSEJ3PL	On no load	30.08.2021	23:05
18	150 MVA Power Transformer-2 at Renew Jharjhand Three	220/33	150	New	Toshibha	3Ph	RSEJ3PL	On no load	30.08.2021	23:49

BUS REACTOR

S.No.	Name of element	Voltage Level	MVAR Rating	New/replacement /augmentation	Make	Configuration	Agency/ Owner	Remarks	Actual date & time of charging	
									Date	Time
1	125 MVAR Bus Reactor-1 at Fatehgarh II(PG)	400	125	New	BHEL	3-Ph.	PGCIL		02.08.2021	19:07
2	63 MVAR Bus Reactor-1 at Jehta(UP)	400	63	New	GE	3 ph	UPPTCL		24.08.2021	20:04
3	80 MVAR Bus Reactor at Harduaganh Extn	400	80	New	BHEL	3 ph	UPPTCL		16.08.2021	12:14
4	125MVA Bus Reactor-2 at Sikar(PG)	400	125	New	T&R	3 ph	PGCIL		25.08.2021	17:36
	125 MVAR Bus Reactor-3 at Allahabad(PG)	400	125	New	T&R	3-Ph.	PGCIL		29.08.2021	12:50

LINE REACTOR

S.No.	Name of element	Voltage Level	MVAR Rating	New/replacement /augmentation	Make	Configuration	Agency/ Owner	Remarks	Actual date & time of charging	
									Date	Time
1	3*80 MVA switchable line reactor of Bhadla II line-1 at Fatehgarh II	765	240	New	GE T&D	3*1-Phase	PFTL		29.08.2021	23:48
2	3*80 MVA switchable line reactor of Bhadla II line-2 at Fatehgarh II	765	240	New	GE T&D	3*1-Phase	PFTL		29.08.2021	17:25

UNITS

S.No.	Name of element	Voltage Level	Installed capacity	Fuel Type	Make	Configuration	MVA Capacity	Agency	Actual date & time of charging	
									Date	Time
1	660 MW Harduaganj Extn Unit#1	23.5	660	Coal	Tosibha	3-Ph	780	UPRVUNL	23.08.2021	08:51

Follow up issues from previous OCC meetings

1	Sub-stations likely to be commissioned by next two years.	All the concerned states had been requested in past OCC meetings to submit the details of the downstream network associated specially with POWERGRID substations along with the action plan of their proposed / approved networks.	Status details of downstream networks mentioned in **Annexure-A.II.I**.
2	Progress of installing new capacitors and repair of defective capacitors	Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.	Data upto following months, received from various states / UTs: ◎ CHANDIGARH — Sep-2019 ◎ DELHI — Aug-2021 ◎ HARYANA — Apr-2021 ◎ HP — Mar-2021 ◎ J&K and LADAKH — Not Available ◎ PUNJAB — Mar-2021 ◎ RAJASTHAN — Aug-2021 ◎ UP — Jul-2021 ◎ UTTARAKHAND — Jun-2021 All States/UTs are requested to furnish updated status on monthly basis.
3	Healthiness of defence mechanism: Self-certification	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”.	Data upto following months, received from various states / UTs: ◎ CHANDIGARH — Not Available ◎ DELHI — Mar-2021 ◎ HARYANA — Jun-2021 ◎ HP — Aug-2021 ◎ J&K and LADAKH — Not Available ◎ PUNJAB — Mar-2021 ◎ RAJASTHAN — Jun-2021 ◎ UP — Jun-2021 ◎ UTTARAKHAND — Mar-2021 ◎ BBMB — Jun-2021 All States/UTs are requested to furnish updated status on monthly basis.
4	Status of FGD installation vis-à-vis installation plan at identified TPS	List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed. Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.	Status of the information submission (month) from states / utilities is as under: ◎ HARYANA — Feb-2021 ◎ PUNJAB — Sep-2021 ◎ RAJASTHAN — Sep-2021 ◎ UP — Sep-2021 ◎ NTPC — Jun-2021 FGD status details are enclosed as **Annexure-A.II.II**. All States/utilities are requested to furnish updated status of FGD installation progress on monthly basis.

5	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: Dec' 2021 (delay due to pending supplies by GE)
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection. GIS Bay is already available. Work expected to be completed by Dec.21
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection. GIS Bay is already available. Work expected to be completed by Dec.21
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	Retendering to be done for 400kV reactors. LOA placed for 220kV reactors.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	Technical bids opened on 14.01.2021.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Already submitted to PSDF. On hold due to policy decision
xi	RAJASTHAN	Akal	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov' 2021.
xii	RAJASTHAN	Bikaner	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov' 2021.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment would be forwarded to NLDC, POSOCO. The target date is Nov' 2021.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Bidding document is under approval.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Bidding document is under approval.

Annexure-A.II.I

Sl. No.	Substation	Downstream network bays	Commissioning status of ICTs / Bays	Planned 220 kV system	Revised Target	Remarks
1	Shahjahanpur, 2x315 MVA 400/220 kV	4 Nos. of 220 kV bays to be utilized	Commissioning of ICT Commissioning of Bays Jun/Sep'14	Shajahnapur-Azimpur D/C line		Connected to load on 28.07.2021
				LILO of 220kV Shajahanpur - Sitapur at Shajahanpur PG	Oct'21	Updated in 187th OCC
2	Hamirpur 400/220 kV 2x 315 MVA S/s (Augmentation by 3x105 MVA ICT)	2 nos. bays utilized under ISTS. Balance 6 nos to be utilized	Commissioning of ICT 1st -Dec'13 2nd - Mar'14 3rd - Mar'19 Commissioning of Bays 4 bays - Dec'13 2 bays - Mar'14 2 bays - Mar'19	220 kV D/C Hamirpur-Dehan line. Original schedule: Dec' 2020	Oct'21	Updated in 186th OCC
3	Sikar 400/220kV, 1x 315 MVA S/s	2 Nos. of 220 kV bays	Commissioned (date not available)	Not available	Sep'21	Work order was placed on dt. 13.04.2020 to M/s A to Z Ltd. Works start on dt. 4.12.2020. S/S-32/32, T/E-31/32 (T/E at 27 no. location is pending due to Rajasthan High Court stay), T/S-2.09/8.122 km completed. Targeted to be completed by June'2021.
4	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned (date not available)	220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line	Dec'21	Delayed due to RoW issue
5	400/220kV Tughlakabad GIS	10Nos. of 220kV bays	Commissioned (date not available)	RK Puram – Tughlakabad (UG Cable) 220kv D/c line	Jul'22	PO for supply and ETC of D/C UG cable awarded.
				Masjid Mor – Tughlakabad 220kv D/c line	Mar'22	PO for supply and ETC of D/C UG cable awarded.
6	400/220kV Kala Amb GIS (TBCB)	6 Nos. of 220kV bays	Commissioned in Jul'2017	220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Dec'21	Details for utilizing remaining 4 bays is not available

FGD Status

Updated status of FGD related data submission

NTPC (16.06.2021)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (18.09.2021)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (20.09.2021)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (17.09.2021)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (24.07.2021)
Lalitpur TPS
Lanco Anpara Power Ltd. (24.07.2021)
ANPARA-C TPS

Rosa Power Supply Company (24.07.2021)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (24.07.2021)
Prayagraj TPP
APCPL (17.08.2021)
INDIRA GANDHI STPP

Pending submissions

Adani Power Ltd.
KAWAI TPS
GVK Power Ltd.
GOINDWAL SAHIB
HGPCL
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

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: 31-08-2020), KAWAI TPS U#2 (Target: 30-06-2020)
APCPL	INDIRA GANDHI STPP U#1 (Target: 31-12-2021), INDIRA GANDHI STPP U#2 (Target: 31-03-2022), INDIRA GANDHI STPP U#3 (Target: 30-06-2022)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020) – initial target
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) – initial target
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: 30-04-2020), DADRI (NCTPP) U#6 (Target: 29-02-2020), RIHAND STPS U#1 (Target: 28-02-2022), RIHAND STPS U#2 (Target: 31-12-2021), 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: 31-08-2022), SINGRAULI STPS U#2 (Target: 31-08-2022), SINGRAULI STPS U#3 (Target: 31-08-2022), SINGRAULI STPS U#4 (Target: 31-08-2022), SINGRAULI STPS U#5 (Target: 31-08-2022), SINGRAULI STPS U#6 (Target: 31-08-2022), SINGRAULI STPS U#7 (Target: 31-08-2022), UNCHAHAR TPS U#1 (Target: 30-09-2023), UNCHAHAR TPS U#2 (Target: 30-09-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-03-2023), MEJA Stage-I U#1 (Target: 31-03-2022), MEJA Stage-I U#2 (Target: 31-03-2022), TANDA Stage-I U#1 (Target:), TANDA Stage-I U#2 (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) – initial target
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 01-01-2024), LALITPUR TPS U#2 (Target: 01-01-2024), LALITPUR TPS U#3 (Target: 01-01-2024)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-05-2024), PRAYAGRAJ TPP U#2 (Target: 30-09-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)
Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-10-2024), ROSA TPP Ph-I U#4 (Target: 31-10-2024)
RRVUNL	KOTA TPS U#5 (Target: 31-12-2022), KOTA TPS U#6 (Target: 31-12-2022), KOTA TPS U#7 (Target: 31-12-2022), SURATGARH TPS U#1 (Target: 31-12-2024), SURATGARH TPS U#2 (Target: 31-12-2024), SURATGARH TPS U#3 (Target: 31-12-2024), SURATGARH TPS U#4 (Target: 31-12-2024), SURATGARH TPS U#5 (Target: 31-12-2024), SURATGARH TPS U#6 (Target: 31-12-2024), SURATGARH SCTPS U#7 (Target: 31-12-2024), SURATGARH SCTPS U#8 (Target: 31-12-2024), CHHABRA TPP U#1 (Target: 31-12-2024), CHHABRA TPP U#2 (Target: 31-12-2024), CHHABRA TPP U#3 (Target: 31-12-2024), CHHABRA TPP U#4 (Target: 31-12-2024), CHHABRA SCPP U#5 (Target: 31-12-2024), CHHABRA SCPP U#6 (Target: 31-12-2024), KALISINDH TPS U#1 (Target: 31-12-2024), KALISINDH TPS U#2 (Target: 31-12-2024)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020) – initial target
UPRVUNL	ANPARA TPS U#1 (Target: 31-10-2022), ANPARA TPS U#2 (Target: 31-08-2022), ANPARA TPS U#3 (Target: 30-06-2022), ANPARA TPS U#4 (Target: 30-04-2022), ANPARA TPS U#5 (Target: 28-02-2022), ANPARA TPS U#6 (Target: 30-06-2021), ANPARA TPS U#7 (Target: 30-04-2021), HARDUAGANJ TPS U#8 (Target: 31-12-2021), HARDUAGANJ TPS U#9 (Target: 31-12-2021), OBRA TPS U#9 (Target: 31-08-2022), OBRA TPS U#10 (Target: 31-10-2022), OBRA TPS U#11 (Target: 31-12-2022), OBRA TPS U#12 (Target: 30-06-2022), OBRA TPS U#13 (Target: 30-04-2022), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 30-04-2022), PARICHHA TPS U#5 (Target: 28-02-2022), PARICHHA TPS U#6 (Target: 31-12-2021)

S. No`	Element Name	Type	Owner	Outage Date and Time		Outage days	Reason / Remarks	Discussion/Inputs as per 187 OCC
A	LINE							
1	220 KV Kishenpur(PG)-Ramban(PDD) (PDD) Ckt-1	Line	PDD JK	3/31/2020	16:43	533	Due to heavy land slide near village Dalwas at Ramban damages occurred to 220 KV D/C KPTL at Location No :-	
2	220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1	Line	UPPTCL	8/12/2021	9:00	35	Emergency shutdown of line taken, as tower no. 34 is affected by flood.	Mar-22
3	220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1	Line	UPPTCL	8/12/2021	9:12	35	Emergency shutdown of line taken, as tower no. 34 is affected by flood.	Mar-22

z

B	BUS & BAYS							Discussion/Inputs as per 187 OCC
1	714 TIE BAY - 765/400 KV 1500 MVA ICT 3 AT JHATIKARA(PG) AND FUTURE	BUS	POWERGRID	6/4/2021	10:19	104	For Erection of CT Isolator Breaker IPS tube ii) Testing & commissioning of switchyard equipments i.e Isolator CT Breaker (OCC-183)	
2	400 KV Kadarpur (GPTL) - Bus 1	BUS	GPTL	4/17/2021	13:18	151	E/S/D taken due to abnormal humming sound observed from 400KV B-phase BUS-1 CVT at Kadarpur. Replacement of VT pending.	
3	711 TIE BAY - 765/400 KV 1500 MVA ICT 2 AT JHATIKARA(PG) AND FUTURE AT 765 KV JHATIKARA(PG)	BAY	POWERGRID	8/23/2021	9:54	24	TBCB bay construction work at Jhatikra	
4	403 MAIN BAY - 400KV DEHAR(BB)-PANCHKULA(PG) (BB) CKT-1 AT DEHAR(BB)	BAY	BBMB	8/31/2021	9:50	16	Replacement of 6 nos 400 KV Bus-I current Transformers with 3 nos current transformers	
5	410 MAIN BAY - 400 KV KALA AMB(PKTL)-WANGTO_GIS(HP) (HPPTCL) CKT-1 (JPL)	BAY	JPL	8/22/2021	11:10	25	For replacement of 410 CB and following test need to be carried out.1) Contact Resistance Measurement. 2) CB operating time characteristics.	

S.No	5Element Name	Type	Owner	Outage		Outage days	Reason / Remarks	Discussion/Inputs as per 187 OCC
C	ICT							
1	400/220 kV 315 MVA ICT 1 at Bhilwara(rs)	ICT	RRVPNL	5/12/2019	23:42	857	Oil leakage in transformer. Expected revival in Dec-2021.	
2	400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)	ICT	UPPTCL	3/13/2020	2:46	552	Buccholz relay alarm and Local Breaker Backup protection operated. Tripped along with Hapur-Muradnagar line. Flags are not reset because of cable flashover. To be replaced by 500 MVA ICT. Expected revival in Dec-2021.	Transformer is not allotted till now. Expected date of the revival of ICT will be updated later.
3	400/220 kV 315 MVA ICT 2 at Bawana(DV)	ICT	DTL	3/30/2021	17:35	169	400kV side B-phase bushing blasted. Tripped on differential protection, REF protection. ICT catches fire and damaged.	
4	400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)	ICT	UPPTCL	8/19/2020	16:30	393	500 MVA ICT-I also got damaged due to fire in ICT-II, for protection testing. Expected revival in Oct-2021.	Mar-22
5	400/220 kV 315 MVA ICT 2 at Mundka(DV)	ICT	DTL	9/20/2019	0.290972	727	Due to fire in ICT.	
6	220/33 kV 125 MVA ICT 1 at Saurya Urja Solar(SU)	ICT	Saurya Urja	5/27/2021	23:42	112	Operation of transformer protection	

D	BUS REACTORS							Discussion/Inputs as per 187 OCC
1	80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ)	BR	SJVNL	10/17/2019	12:58	699	Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection. Expected revival in Nov-2021.	
E	**SVC**							
1	SVC No 1(-140/+140MVAR) at 400 KV Kanpur(PG)	SVC	POWERGRID	8/24/2020	17:33	387	Hand tripped at 17:33hrs on 24.08.2020 after observation of heavy sparking in TSC Capacitor bank. Due to non support from OEM, the element has been decapitalized by Powergrid.	Element decapitalised. May be removed from the list.
F	**FSC**							
1	FSC of 400 kV Kanpur-I at Ballabgarh	FSC	POWERGRID	3/14/2017	10:58	1610	B-phase Signal column blast. Contract awarded and expected to be revived by Sep'21	

G	GENERATING UNITS						Discussion/Inputs as per 187 OCC
S.No	Station	Owner	Outage Reason	Outage Date	Outage Time	Outage duration(in days)	
1	126 MW Bhakra HPS - Unit 3	BBMB	Renovation and Maintenance work. Expected by Aug-2021.	4/1/2019	9:20	898	
2	126 MW Bhakra HPS - Unit 7	BBMB	Renovation and Maintenance work. Expected by Sep-2021	10/5/2020	8:43	345	
3	40 MW Sewa-II HPS - UNIT 2	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	9/25/2020	0:00	323	
4	40 MW Sewa-II HPS - UNIT 3	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	9/25/2020	0:00	323	
5	40 MW Sewa-II HPS - UNIT 1	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	9/25/2020	0:00	323	
6	600 MW RGTPP (Khedar) - UNIT 2	HVPNL	Capital Overhauling. Expected date to be confirmed from HVPNL.	3/2/2021	0:00	197	
7	210 MW Panipat TPS - UNIT 6	HPGCL	Tariff not approved by HERC	7/23/2020	13:33	418	
8	165 MW Dehar HPS - UNIT 4	BBMB	Penstock Inspection. Expected by Aug 2021.	10/28/2020	11:50	322	
10	660 MW Talwandi Sabo TPS - UNIT 1	PSPCL	Due to abnormal sound in boiler. Expected by Aug end.	7/4/2021	1:16	73	
11	300 MW DCRTPP (Yamuna Nagar) - UNIT 1	HVPNL	Furnace pressure high.	7/8/2021	17:16	68	
12	220 MW RAPS-B - UNIT 1	NPCIL	Biennial maintenance and mandatory surveillance.	7/25/2021	23:44	51	
13	66 MW Pong HPS - UNIT 4	BBMB	Failure of compressed air system of Breaking	7/28/2021	15:00	48	
14	660 MW Chhabra SCTPS - UNIT 6	RRVPNL	Annual Maintenance for 45 days	8/3/2021	8:57	43	
15	110 MW Harduaganj-C TPS - UNIT 7	UPPTCL	ELECTRICAL JERK	8/12/2021	8:27	34	