भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

संख्या: उ.क्षे.वि.स./ प्रचालन/106/01/2022/ 1463-1504 दिनांक: 08.02.2022

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 191वीं बैठक का कार्यवृत |

Subject: Minutes of 191st OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 191वीं बैठक दिनांक 18.01.2022 को आयोजित की गयी थी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है। यदि कार्यवृत पर कोई टिप्पणी हो तो कार्यवृत जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें |

191st meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 18.01.2022. The Minutes of this meeting has been uploaded on the NRPC website http://164.100.60.165. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक: यथोपरि

08/02/2022.

(सौमित्र मजूमदार)

अधीक्षण अभियंता (प्रचालन)

सेवा में,

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

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की **191**वीं बैठक का कार्यवृत्त

191th meeting of OCC of NRPC was held on 18.01.2022 through video conferencing.

खण्ड-क: उ.क्षे.वि.स. **PART-A:NRPC**

1. Confirmation of Minutes

Minutes of 190th OCC meeting was issued on 05.01.2022. OCC confirmed the minutes.

2. Review of Grid operations of December 2021

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

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

- **Delhi**

Projection for Dec-2021 was made considering the demand and energy consumption of pre-covid time i.e., Dec-2019 keeping in view that situation may improve in coming days leading to increase in power demand. However, the mean minimum temperature of Delhi in month of Dec-21 was recorded as 8.1° Celsius, the highest in past three years. So, demand of Delhi did not pick up in Dec-21.

- **Rajasthan**

The Energy consumption decreased by 1.6% w.r.t. Anticipated Energy requirement which is within permissible limit and Peak Demand increased by 7.1% w.r.t. Anticipated Peak demand due to two block supply in day hours to agriculture consumers in phasing manner.

- **Himachal Pradesh**

The Anticipation in Energy requirement in respect of Himachal Pradesh for the month of Dec-21 came on the higher side due to persistent dry weather and heavy rush of tourists to celebrate Christmas and New Year.

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

No significant deviation in any of the states was observed.

3. Maintenance Programme of Generating Units and Transmission Lines

3.1. The maintenance programme of generating units and transmission lines for the month of February 2022 was deliberated in the meeting on 17.01.2022.

3.2. Following shutdown request was also approved in the OCC meeting:

Element Name	Reason	Requested From	Requested To	Decision of OCC
400kV Samba Amargarh Ckt-1&2	Continuous s/d of 13 days for De-stringing and restringing works need to be carried out at locations 285, 286 and 287 to bypass tower #286 along with dismantling of tower #286. Force Majeure condition because of unannounced and uninformed hill excavation done leading to landslide conditions.	19-Jan-2022 08:00 Hrs.	31-Jan-2022 18:00 Hrs.	NRLDC shall issue guideline/ precaution to be followed during the s/d. The same shall be adhered by all concerned.

4. Planning of Grid Operation

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

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	100	250	Revision not submitted
	Requirement	120	240	
	Surplus / Shortfall	-20	10	
	% Surplus / Shortfall	-16.7%	4.2%	
DELHI	Availability	3148	5062	10-Jan-22
	Requirement	1950	4600	
	Surplus / Shortfall	1198	462	
	% Surplus / Shortfall	61.5%	10.0%	
HARYANA	Availability	4470	10920	10-Jan-22
	Requirement	3730	7900	
	Surplus / Shortfall	740	3020	
	% Surplus / Shortfall	19.8%	38.2%	
HIMACHAL PRADESH	Availability	873	1825	04-Jan-22
	Requirement	888	1810	
	Surplus / Shortfall	-15	15	
	% Surplus / Shortfall	-1.6%	0.8%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
J&K and LADAKH	Availability	950	3810	Revision not submitted
	Requirement	1720	2890	
	Surplus / Shortfall	-770	920	
	% Surplus / Shortfall	-44.8%	31.8%	
PUNJAB	Availability	4322	7500	10-Jan-22
	Requirement	4136	7290	
	Surplus / Shortfall	186	210	
	% Surplus / Shortfall	4.5%	2.9%	
RAJASTHAN	Availability	9352	18950	10-Jan-22
	Requirement	7700	15300	
	Surplus / Shortfall	1652	3650	
	% Surplus / Shortfall	21.5%	23.9%	
UTTAR PRADESH	Availability	8680	18500	10-Jan-22
	Requirement	8260	18500	
	Surplus / Shortfall	420	0	
	% Surplus / Shortfall	5.1%	0.0%	
UTTARAKHAND	Availability	1084	2270	05-Jan-22
	Requirement	1092	2340	
	Surplus / Shortfall	-8	-70	
	% Surplus / Shortfall	-0.8%	-3.0%	
NORTHERN REGION	Availability	32979	64400	
	Requirement	29596	56800	
	Surplus / Shortfall	3383	7600	
	% Surplus / Shortfall	11.4%	13.4%	

5. Submission of breakup of Energy Consumption by the states

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

State / UT	From	To
Delhi	Apr-2018	Sep-2021
Haryana	Apr-2018	Oct-2021
Himachal Pradesh	Apr-2018	Nov-2021
Punjab	Apr-2018	Jul-2021

State / UT	From	To
Rajasthan	Apr-2018	Nov-2021
Uttar Pradesh	Apr-2018	Oct-2021
Uttarakhand	Apr-2018	Sep-2021

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

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

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

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

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

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

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

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

6.7. In 183rd OCC meeting, NRPC representative requested for any other comments on the CPRI report, if remaining, from any of the members. Sub-group committee member from Rajasthan stated that since the CPRI report is for the year 2019-

20, old data needs to be collected and then values in the CPRI report would be checked. It was further intimated that around 2-3 days' time would be required for this task. Forum decided that after receiving observations/comments from Rajasthan, the compiled observations / comments may be sent to CPRI so that necessary corrections may be done in the draft report.

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

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

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

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

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

- First Report submitted by CPRI in September, 2020 shall be considered as the reference report. CPRI confirmed that the base-case of 11.07.2018 at 00:45 hrs. received from NRPC Sectt has been used for preparing September, 2020 report.

- Comments from all utilities and NRLDC on September 2020 report must be submitted to NRPC Sectt, latest by 24.08.2021.

- NRPC Sectt, after examination, shall share with CPRI the compiled comments of the utilities and NRLDC, latest by 31.08.2021.

- Thereafter, CPRI shall submit its reply on the compiled comments sent by NRPC Sectt, latest by 15.09.2021.

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

6.14. In the meeting (187th OCC), forum was apprised that although last date for submission of comments was 24.08.2021, NRPC Sectt. received comments from

Himachal Pradesh, Punjab, Rajasthan, Delhi, and NRLDC vide mails dtd. 24.08.2021, 25.08.2021, 26.08.2021, 31.08.2021, and 03.09.2021 respectively. As the received comments were also on the base-case data, a meeting was held on 06.09.2021 among officers of NRPC Sectt, NRLDC and above four states for discussing comments before sending to CPRI. After detailed discussions, following were decided:

A. Himachal Pradesh:

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

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

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

ii. Capacitors at 132 kV level.

iii. Nodes of major voltage profile mismatch

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

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

B. Punjab:

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

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

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

C. Rajasthan:

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

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

c) Rajasthan was requested to submit

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

ii. Voltage profile of generator buses.

D. Delhi:

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

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

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

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

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

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

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

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

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

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

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

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

avoid over compensation in system due to recommended capacitors. CPRI has intimated 20th Jan'22 as target date for the activity.

7. Automatic Demand Management System

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

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

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

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

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

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

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

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

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

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

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

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

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

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

9. NR Islanding scheme

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

9.17. Rajasthan SLDC representative informed that they have given the details in the hard copy of the load and generation to be considered for islanding scheme, and

based on that have requested NRLDC to simulate it in PSSE software for validation. NRLDC representative agreed to the request of the Rajasthan SLDC.

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

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

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

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

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

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

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

10. Coal Supply Position of Thermal Plants in Northern Region

10.1. In the meeting, NRPC representative apprised the forum about the coal stock position of generating stations in northern region during current month (till 09th January 2021).

11. Tanda-Basti line (220KV) tripping on unbalanced loading (Agenda by NTPC)

11.1. NTPC has intimated vide mail dated 04.01.2022 that Instances of 220KV Tanda-Basti line tripping on Broken Conductor Protection occurred in recent past. Each time it is observed that there is no actual open conductor fault,

instead there is a large, unbalanced loading pattern among 3 phases, hence relay sensed open conductor protection operating condition (Negative phase sequence component of current above the limit w.r.t. Positive sequence component) and giving trip command, causing 3 pole tripping of breaker at Tanda end. This protection has operated four times in recent past, details of line tripping are given.

11.2. Tripping details of 220KV Basti line on Broken Conductor Protection are as follows:

S. No.	Date	Time	Current	Setting
1.	01Oct.2020	15:23:00		I2/I1>0.2,20sec Time delay
2.	17Oct.2020	15:09:00		I2/I1>0.2,20sec Time delay
3.	25June2021	07:58:44	Ir=258.01,Iy=246.18,Ib=198.85	I2/I1>0.2,20sec Time delay
4.	01Aug.2021	16:51:20	Ir=197.65,Iy=152.78,Ib=116.61	I2/I1>0.2,20sec Time delay
5.	22Sep.2021	06:44:00	Ir=277,Iy=234,Ib=188	I2/I1>0.2,20sec Time delay
6.	31Dec.2021	09:02:00	Ir=218,Iy=190,Ib=132	I2/I1>0.2,20sec Time delay

11.3. NRPC representative apprised the forum that issue has been discussed in previous OCC (186 & 188) meetings also.

11.4. In 186th OCC, UP stated that there is a Railway TSS in Govindgarh and there are 3 lines feeding it. When, other two lines are in open situation, and any train passes, then due to unbalanced load, Tanda-Basti line trips. He also added that 400 kV Sultanpur-Basti is operational. Gonda line LILO will be done from Basti. 500 MVA transformer is under commissioning at Basti and load will come latest by Oct, 2021. Then, this issue of tripping will automatically get resolved.

11.5. In 188th OCC, UP representative informed that commissioning of the system as discussed in 186th OCC will come latest by 30.11.2021.

11.6. NRPC representative highlighted that duration of tripping varies from 9 to 15 hours and therefore the issue may be taken seriously by UP.

11.7. UP representative informed that the matter regarding the commissioning of the system as discussed in 186th OCC is being pursued and the said system will come latest by 10.02.2022.

12. Primary Frequency response test of NTPC NR NCR Generators (Agenda by NTPC)

12.1. NTPC has intimated vide mail dated 04.01.2022 that PFR test is being carried out by external agency in NTPC Stations under NRLDC Guidance as per

IEGC. The procedure as defined in Regulation have been followed. The test has been carried out at different levels as per test procedure & unit load has been maintained accordingly.

12.2. During the actual test, schedule as required by test conditions, have not been provided by NRLDC, hence Generators have to reduce DC to meet test conditions even though station have full generation capacity. Reduction of DC in real time results in under recovery of fix cost. Post facto DC correction may be done.

12.3. NRLDC representative stated that in 174th OCC meeting it was informed that constituents would try to give the schedule; however, it is not mandated. Further, he informed that NTPC was asked to coordinate with the constituents and get their schedule revised if needed.

12.4. NRLDC representative stated that NLDC vide its letter dated 10th Aug'21 has laid out the procedure for carrying out the PFR test as per IEGC and in the letter it has been mentioned that generator themselves arrange for the schedule as being done for all other test such as PG tests etc.

12.5. MS, NRPC stated that post facto correction of DC is not possible. However, he asked NRLDC to coordinate beforehand in future with both constituents and generators at the time of performing such tests.

12.6. UP representative stated that co-ordination at DISCOM level is also required.

12.7. NRLDC representative further apprised the forum about the updated PFR test status of NR region as on 10.01.2021.

13. Operation and Maintenance of 400 kV D/C Twin Moose Sambha – Amargarh Transmission Line of NRSS XXIX Transmission Limited ('NTL') - BRO road construction affecting tower and possible damage to line (Agenda by NRSS-XXIX Transmission Limited)

13.1. NRSS XXIX Transmission Limited has informed vide mail dtd 09.01.2022 that NTL letter dated 22.10.2021 and letter dated 20.12.2021 raised the issue of impact of road expansion work (Bufliaz to Rajouri) being carried out by Border Road Organization (BRO) alongside the Tower Locations of 400 kV D/C Sambha – Amargarh Transmission Line. As was informed due to large quantum of hill cutting carried out by BRO at one of the locations of the aforementioned transmission line (Loc.#286), the complete hill slope in that region / hill section had become unstable, leading to damage to tower location as well as the adjoining buildings. NTL had followed up with BRO to take remedial measures alongwith stopping of work at the location. However, BRO did not take any remedial steps to safeguard the hill slope. This had resulted in damage to the Tower#286 with a threat to entire operation of transmission line and even collapse of instant tower location.

13.2. Subsequently NTL with the intervention of CEA had carried out multiple meetings and site visits with BRO at the affected locations. Various steps were taken by NTL to safeguard the entire hill slope as well as the tower

location. NTL had permanently mobilized manpower at the instant location with continuous monitoring of all the parameters. NTL have provided permanent backstay arrangement, additional strengthening of tower, additional revetment along the upper and lower ridges of the hill, bolder pitching to prevent further soil erosion etc. This resulted in safeguarding the location temporarily and no variation in parameters was observed. However, it is pertinent to mention that the above situation is an outcome of uninformed and unauthorized construction of BRO, which is beyond the purview and control of NTL. This is a kind of Force Majeure event to the NTL as the situation has arisen out of no fault of NTL.

13.3. Based on the instruction of CEA, NTL has also carried out geo-technical investigation of the affected area as well as the other locations getting impacted due to aforementioned expansion work carried out by BRO. However, recently on 08.01.2022 sudden inclement snowfall has been observed at location #286 of the subject transmission line. This has resulted in additional stress on the tower body and has also considerably increased the threat to the hill slope as a whole, which may lead to probable tower collapse, including threat to human life and property due to hill slide / land slide. As you may please be aware, the subject transmission line is crucial from the perspective of power to the UT of Jammu and Kashmir your kind consideration and guidance is required to adequately resolve the situation.

13.4. NTL has submitted the latest status report on the above sequence of events capturing the latest developments at (08.01.2022) location#286. The same was attached as Annexure-A.III. of agenda.

13.5. In the meeting, NTL representative made a presentation highlighting uninformed work by BRO and underpinnings of the issue as below:

i. 4th Aug'21 – NTL identified that BRO is expanding the road between Bufliaz to Rajouri. There was no prior intimation to NTL by BRO on the said expansion of road near to Tower locations.

ii. 9th Aug'21 – NTL convened a meeting with BRO informing the presence of 400 kV Samba – Amargarh line along the proposed expansion.

iii. 10th Aug'21 – Commander, BRO was requested to submit detailed proposal and also conduct a joint survey.

iv. 24th Aug'21 – BRO informed and clarified that all necessary action being taken to safeguard the tower locations and there was no response on joint survey.

v. 15th Sept'2021 – No activity observed during the periodic patrolling of transmission line.

vi. 7th Oct'21 – EPC contractor of BRO intimated NTL about major cracks around one of the towers. NTL informed BRO's EPC contractor to immediately stop the work and take precautionary action to retain hill slope. Copy of E-mail was marked to BRO as well.

vii. 8th Oct'21 – BRO informed that work was stopped and necessary steps to construct a retaining wall at hill slope has been initiated.

viii. 9th Oct'21 – NTL carried out thorough investigation, a substantial damage to revetment of foundation of tower observed with cracks expanding to tower location, nearby houses and downhill ridges along the winding road.

ix. 2nd Nov'21 – A meeting was convened by Chief Engineer, PSE&TD, CEA to discuss the matter regarding operation and maintenance of 400kV D/C Twin Moose Samba-Amargarh Transmission Line.

x. 17th Nov'21 – A Joint inspection of the impacted locations of the transmission line was done by CEA, BRO and NTL.

xi. 1st Dec'21 – A meeting was convened by Chief Engineer, PSE&TD, CEA to discuss the matter regarding operation and maintenance of 400kV D/C Twin Moose Samba-Amargarh Transmission Line. Members from CSIR-SERC were also present to provide any possible solution to the situation.

xii. 16th & 17th Dec'21 – ERS feasibility study was convened by NTL with help of ERS experts at location 286.

xiii. 23rd Dec'21 – A Geo Technical survey was convened by NTL with help of scientist from CSIR-CBRI, Roorkee. The team visited the location 286.

13.6. NTL representative highlighted that the tower at location 286/0 is deteriorating progressively due to water percolation, because of snow melting. The soil strata around the tower is unstable and as a result of this, main leg and connecting members and joints are getting deformed. A new tower cannot be constructed in the surrounding area due to soil instability. The only solution to this problem is to bypass tower no 286/0; by connecting the conductors between the towers at location 285/0 and 287/0.

13.7. NTL requested following:

i. To provide the shutdown required to carry forward the proposed work from 19.01.2022 to 31.01.2022.

ii. To treat the outage duration for the work performed under this outage as deemed available to transmission licensee as the work is carried out to safeguard the transmission line from landslide conditions after uninformed excessive hill cutting done by BRO. This is a kind of Force Majeure event to the NTL as the situation has arisen out of no fault of the transmission licensee.

13.8. MS, NRPC stated that decision on deemed availability would be dealt separately. He opined that safeguarding its assets is responsibility of concerned transmission licensee. However, in the meeting, urgent requirement of shutdown was deliberated. MS, NRPC sought views of the representatives of NRLDC, J&K on the shutdown requested by NTL.

13.9. NRLDC representative stated that under outage of said line, load on 400 kV New Wanpoh-Wagoora D/c will increase. Voltage at 400kV & 200kV nodes would reduce by 4-6 kV. J&K may be required to do load rostering in Wagoora, Pampore and Ziankote. Generators of Uri and Kishenganga would be require on bar for active and reactive power support.

13.10. J&K representative informed that load cannot be managed at Wagoora side. He requested to defer the shutdown request till April'22. He also expressed that shutdown on ERS is recommended to avoid interruption in power supply in valley.

13.11. MS, NRPC asked representatives of PSETD Division, CEA to submit their views on proposal of NTL for bypassing of tower no 286 and stringing tower no 285 and 287.

13.12. Representative of PSETD Division, CEA stated that the tower no 286 may collapse at any time. Soil is not stable there. So, ERS may be possible only for short duration. He further added that PSETD Division, CEA has no role in designing of towers but the data regarding bypassing of tower no. 286 and stringing tower no 285 and 287 submitted by NTL is acceptable from their side. Tower no. 286 may be bypassed. However, NTL has to manage all necessary clearances for the line.

13.13. NTL again stressed over non-feasibility of ERS due to instability of soil at tower location 286. He stated that soil in the hill is moving down and cracks are widening.

13.14. In views of the comments of NRLDC, J&K, and PSETD Division, CEA, and precarious condition of tower no. 286, the forum approved the shutdown of 400 kV D/C Sambha – Amargarh Ckt-1&2 from 19.01.2022 to 31.01.2022.

13.15. MS, NRPC requested NRLDC to make a contingency plan that can be followed during this shutdown and to circulate the same among all stakeholders.

14. Refurbishment & Commissioning of HVDC Rihand-Dadri Bipole system under Add-Cap: Regularization of Outage period (Agenda by POWERGRID)

14.1. In the meeting, POWERGRID representative informed that refurbishment work of HVDC Rihand-Dadri Bipole system has been successfully completed in time with few modifications in testing and commissioning schedule, as approved in outage meeting of 187th OCC due to site and system constraints including the statutory clearances under new construction activities. POWERGRID requested that the outage period for the refurbishment work may be consented accordingly. The details are:

Sl. No.	OCC No.	Name of Elements	Approved Outage Period	Actual Outage Period	Remarks
1	187	500kV Rihand-Dadri HVDC P-2	04/10/21 to 10/11/21	04/10/21 10:14 to 13/11/21 03:11	Refurbishment, testing & commissioning.

2	187	500kV Rihand-Dadri HVDC P-1	25/10/21 to 03/12/21	25/10/21 10:05 to 04/12/21 21:56	Refurbishment, testing & commissioning.
3	187	500kV Rihand-Dadri HVDC Bipole System	24/11/21 to 03/12/21	24/11/21 to 04/12/21	Bipole system testing and final commissioning.

14.2. Forum agreed to the regularization request of outage period.

15. Augmentation of 1x315 MVA ICT with 500 MVA at PGCIL 400 KV S/S Ludhiana (Agenda by PSTCL)

15.1. PSTCL has intimated vide letter dated 29.12.2021 that in order to meet power requirement of Punjab during next paddy season (2022), enhancement in ATC/TTC is urgently required to import power through ISTS points. (copy of the letter was attached as Annexure-A.IV of agenda).

15.2. PSTCL in the above-mentioned letter has highlighted following two issues:

- Work of Augmentation at Ludhiana is required to be carried out before May 2022. As consented by PSTCL, spare 500 MVA ICT lying at PGCIL 400kV Malerkotla is to be shifted to Ludhiana, for which BOD of PGCIL is to give approval for expenditure to be incurred as per NRPC decision.

- PSTCL is bringing up new 400kV S/S Dhanansu, near Ludhiana. The ICT for the project was to be spared from PSTCL's substation Nakoder, which has been delayed. Given the high loading conditions/demand of the state, energisation of 400kV S/S Dhanansu is required before Paddy season 2022 for increasing the ATC/TTC limit of Punjab. The work of construction of substation yard is going on & is likely to be completed by May 2022. It is requested that 315 MVA ICT being spared from Ludhiana in Punjab control area be provided to PSTCL on the residual book value for installation at Dhanansu.

15.3. POWERGRID representative apprised forum that with regard to the matter about the BOD approval of POWERGRID for shifting the 500 MVA ICT lying at POWERGRID's 400kV Malerkotla, the case pertaining to dismantling, transportation and erection of transformer is in progress and work will be completed before the paddy season 2022.

15.4. CTUIL representative stated that with regard to 315 MVA ICT being spared from Ludhiana in Punjab, it may be diverted to Bhinmal or other ISTS locations and same is under discussion yet. POSOCO and CTU would take up the issue soon.

16. Status of Generating Units in Northern region under Outage for more than 3 months

16.1. NRPC representative apprised the forum that CEA has highlighted the issue of long outages of the generating units and their status of availability during the ensuing year 2022-23.

16.2. In this regard, NRPC vide its mail dated 11.01.2022 on the above cited matter had requested respective SLDC's (Haryana, Punjab, Rajasthan, U.P) to submit the status for these generating units and also their expected revival date.

16.3. In the meeting (191st OCC), states were requested to furnish the information by 18.01.2022 itself.

16.4. Further, SLDCs were requested that in case any of these generating units have been scrapped/retired or, proposed to be scrapped/retired, the concerned generating utility may be advised to report the same to PDM Division of CEA as well for amendment of the All India Generating Installed Capacity.

17. Transmission constraints in Northern Region

17.1 NRPC representative apprised the forum that a meeting was chaired by JS (OM & RR), MoP on 12.01.2022, wherein transmission constraints were discussed. Concerned utilities were requested to submit action plan to mitigate the constraint.

17.2 NRLDC representative mentioned that a format would be circulated amongst the concerned utilities of NR for whom the transmission constraint was discussed in the meeting and they were requested to update the same and submit on 18.01.2022 itself.

18. Abnormal humming in GTs at APL, Kawai and nearby stations (Agenda by APRL)

18.1 The agenda has been discussed in 183rd and 187th OCC meetings for the abnormal humming sound at Power transformers at APL, Kawai, Chhabra, Kalisindh and ICTs at Anta from 1600 hrs of 21st April'21.

18.2 APL, Kawai has intimated vide mail dated 03.01.2022 that on 14th May around 16:30 hrs, sound had subdued and it had again started on 15th May at 17:25 Hrs. The humming noise of generator transformer again subdued on 25.08.2021 at 11.00 Hrs.

18.3 In this context, APL had a meeting held with Director Technical RVPN on 23.07.2021 on the above subject, wherein the officials from RVPN, SLDC and APRL Kawai were present during the meeting.

18.4 Humming sound has again appeared on 14.12.2021 from 7 pm onwards to 80 dB. Chabbra and Kalisindh units had also found the sound on higher side APL have downloaded the tripping and restoration list of grid elements from NRDLC website, but no conclusion is derived.

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 In the meeting, RVPN representative informed that based on the information gathered by them at Chhabra and Kalisindh, it was observed that humming sound is in range of 65-70 dB and is within the permissible range.

18.7 NRLDC representative asked APRL to get the issue locally examined by any expert agency.

19. Forced Shifting of Tower no. 169 of 400kV D/C Roorki-Kashipur I & II line on new Pile Foundation due to Change in Natural River course: Deemed availability of the Outage (Agenda by POWERGRID)

19.1 POWERGRID apprised that the soil under two legs of Tower No. 169 (DC+9 with 3mtr raised Chimney) of 400kV D/c Roorki-Kashipur line washed away due to erosion and natural change of the course of KHO river, therefore it has become critically endangered and requires to be shifted on new Pile foundation urgently to avoid it's falling and line break down.

19.2 A detailed letter has been sent by CGM(AM), NR-1, POWERGRID to MS, NRPC in this regard (Annexure-A-VII of agenda). POWERGRID has taken emergency steps for shifting of line by erection of new D/C tower on pile foundation at a distance of approx. 60mtr in same alignment of the line.

19.3 To minimize the outage of this D/C line, it is proposed to shift both the lines on ERS first so that to facilitate the erection of new tower and final shifting of lines accordingly. The requirement of shutdown for above work is planned as below:

1. Shifting of lines on ERS: 27-01-22 to 10-02-22 (continuous basis)
2. Restoration on new tower: 01-03-22 to 15-03-22 (-DO-)

19.4 POWERGRID requested to consider above outage as deemed available, being Forced Majeure due to natural change of river course which is beyond control of the transmission licensee.

19.5 NRPC representative informed that shutdown on ERS is already approved in 191st OCC outage meeting held on 17.01.2022.

19.6 MS, NRPC stated that as no representative from the beneficiary state is present, so their comments would be sought vide email and decision on the deemed availability matter may be conveyed in the next OCC meeting. MS, NRPC further opined that POWERGRID's claim of sudden change of river course is not pliable because river always change its path gradually and POWERGRID could have noticed this aspect timely and taken corrective action.

20. Deemed availability for s/d of 400 kV Mohindergarh-Dhanoda line (AC line) - (Additional Agenda by NHAI)

20.1 Sh. K.M.Sharma, Project Director, Bhiwani, NHAI requested the shutdown (for 120 hours) between 5th Feb, 2022 to 15th Feb, 2022 for the cited project work and further requested that deemed availability may be consented in view of

MoRTH OM dt. 16.08.2021. He also stressed over dire need of this shutdown in order to facilitate the inauguration of NH152D. Letter received from NHAI is attached as **Annexure-A.II**.

20.2 NRLDC representative informed that there would be TTC/ATC curtailment of 300 MW due to outage of this line.

20.3 NLDC representative stated that there is no possibility to facilitate this shutdown in Feb'22 as there is already approved shutdowns of some inter regional lines and other major intraregional links in same month. Moreover, shutdown of this line along with other approved shutdowns will reduce ATC/TTC by 1000-1200 MW.

20.4 MS, NRPC stated that MoRTH OM mentions that deemed availability may be given if transmission customers are not affected by shutdown. As NLDC/NRLDC has confirmed that there will be reduction of TTC/ATC, therefore beneficiaries may be affected. If so, then deemed availability may not be certified under given situation. In view of inability of NLDC to accommodate NHAI S/D in Feb., 22, MS, NRPC requested NHAI to coordinate with ATIL and bring the shutdown request with revised dates in the next OCC.

21. Follow up of decisions of 10th NPC meeting. (Additional Agenda)

21.1 NRPC representative highlighted following points in view of decisions of 10th NPC meeting: -

- Review of AUFLS Settings
- Mapping of feeders

21.2 MS, NRPC enquired NRLDC whether they monitor the frequency settings. NRLDC representative replied that they have status of feeder mapping percentage but status is not available whether states have increased the setting by 0.2 Hz.

21.3 NRPC representative highlighted that feeder-mapping status is not available from Uttarakhand, J&K, and Chandigarh.

21.4 Forum decided that states shall communicate to NRPC Sectt. regarding implementation of decision of 47th TCC/49th NRPC to increase the AUFLS setting by 0.2Hz.

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

22. Grid Highlights for December 2021

NRLDC representative gave detailed presentation for grid highlights of December 2021. Detailed presentation is attached as **Annexure-B.I**.

Following points were highlighted in the meeting:

- Maximum energy consumption of Northern Region was 1088 MUs on 22th Dec'21 and it was 3.1 % higher than Dec' 2020 (1055 MUs 30th Dec'20)
- Average energy consumption per day of Northern Region was 1020 MUs and it was 3.81 % higher than Dec'20 (983 MUs per day)
- Maximum Demand met of Northern Region was 55546 MW met on 20th Dec'21@ 11:00 hours (Based on data submitted by Constituents) as compared to 55604 MW met on 25th Dec'20 @ 10:00 hours

Northern Region all time high value recorded in December'21:

Max Demand Met	All Time High Record		Previous Record (upto Nov-21)	
	Value (MW)	Achieved on	Value (MW)	Achieved on
राजस्थान	15696	24-12-2021 10:00 hrs	14578	18-08-2021 10:00 hrs
हिमाचल प्रदेश	1969	31.12.2021 09:00 hrs	1931	23.01.2021 10:00 hrs
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2743	31.12.2021 19:00 hrs	2680	20.01.2021 19:00 hrs
Energy Consumption	All Time High Record		Previous Record (upto Nov-21)	
	Value (MU)	Achieved on	Value (MU)	Achieved on
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	57.52	31.12.21	55.30	16.01.21

Comparison of Average Energy Consumption (MUs/Day) of NR States for the Dec'20 vs Dec '21 was presented in the meeting.

क्षेत्र/राज्य	दिसंबर**- 2020**	दिसंबर**-2021**	**%** अंतर
पंजाब	122.98	132.04	7.36
हरियाणा	130.37	128.43	-1.48
राजस्थान	251.94	265.07	5.21
दिल्ली	65.99	66.63	0.96

क्षेत्र/राज्य	दिसंबर- **2020**	दिसंबर-**2021**	% अंतर
उत्तर प्रदेश	285.89	297.49	4.06
उत्तराखंड	38.77	39.37	1.54
चंडीगढ़	3.62	3.54	-2.13
हिमाचल प्रदेश	31.60	33.97	7.51
जम्मू और कश्मीर	51.87	53.99	4.09
उत्तरीक्षेत्र	983.03	1020.52	3.81

Frequency Data Comparison

Month	Avg.Freq. (Hz)	Max.Freq. (Hz)	Min. Freq. (Hz)	<49.90 (%time)	49.90–50.05 (%time)	>50.05 (%time)
Dec'21	50.00	50.34	49.62	6.9	73.1	19.9
Dec'20	50.00	50.26	49.66	5.6	75.8	18.6

Total average per day energy generation by Northern region was 807.88 Mus in the month of Dec'21 in comparison of 747.25 Mus in Dec'20.

NRLDC representative stated that in Dec'21, frequency remained within IEGC band for only 73% of the time. Emergent contingency events such as large generation outage during times of low frequency, could result in further drop in frequency and therefore, overdrawals below 49.90 Hz must be controlled quickly in order to keep system secure.

During this month some of the NR states such as HP & Haryana had overdrawal contributing to low frequency operation. NRLDC has been continuously requesting all states to maintain its drawl within schedule during low frequency instances and also take necessary measures for revival of intrastate generating units. NRLDC communication in this regard is attached as Annexure-B.I of agenda.

In 191st OCC meeting, NR Constituents were once again asked to take initiatives to minimize sudden load changeovers at hourly boundaries and also monitor performance of generators under their jurisdiction when the frequency is having large excursions. All utilities were asked to ensure that RGMO/FGMO of generators under their control areas are in service and are responding as per frequency changes.

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

NRLDC representative that as discussed in 189th & 190th OCC meetings, Secretary, Ministry of Power, had emphasized on the importance of ensuring accuracy of the hourly load shedding (MW) and energy not met (MU) figures received from various SLDCs on daily basis in respect of their own states, and classifying them under different heads like low availability, transmission constraints, financial constraints, planned maintenance of transmission / distribution system within state, etc.

Although SLDCs are uploading the hourly load shedding figures of the previous day on the web-based reporting software of NRLDC the next day, but reason for the shedding or unserved demand at any hour is not segregated into the possible different categories. UP, Haryana, Uttarakhand and HP are providing reasons whereas some other states such as Rajasthan, Punjab, Delhi, J&K and Chandigarh are not furnishing the reasons for load shedding.

Following was discussed in 191 OCC meeting:

- Rajasthan SLDC has started sharing the data in format from 17Jan 2022 onwards
- Punjab SLDC assured that they will ensure sharing of data from the next 2-3 days. NRLDC representative expressed concern and asked Punjab SLDC representative to immediately take necessary actions as the same is pending since long.
- Delhi SLDC stated mail/communication has not been received in this regard. NRLDC representative presented the mail details wherein mails were shared with all utilities in Dec 2021 as well as Jan 2022. NRLDC representative expressed concern and asked Delhi SLDC representative to immediately take necessary actions as the same is pending since long. As discussed in last OCC meeting, Delhi SLDC should communicate with DISCOMs to timely furnish the data as the same further needs to be shared with MoP. Delhi SLDC was also asked to share their communication to DISCOMs with POSOCO and MoP for taking further actions if DISCOMs are not ready to timely share the details as per the format.
- All SLDCs were asked to advise the concerned to furnish the reasons for load shedding as per NRLDC's communication and discussions in last two OCC meetings.

24. Action Plan for pre-winter maintenance of transmission lines

In 187thand 188th OCC meeting, it was discussed that winter in Northern region is likely to start from mid of October till February end, and the challenges faced during these months were also discussed in the meeting. The challenges expected and actions to be taken by utilities such as SLDCs, ISGS, intrastate generators, ISTS licenses, STUs were discussed in the meeting along with actions to be taken by

respective utilities. However, details regarding actions taken by them are yet to be received from most of the utilities.

In 190th OCC meeting, Punjab SLDC had stated that work of magnetic float level indicator is still pending and utilization of RSD as synchronous condenser is expected by end of January' 2022. Punjab SLDC was asked to expedite the work as same has not been completed as per the timelines promised in 47th TCC and 49th NRPC meeting.

In 191st OCC meeting, Punjab SLDC representative stated that response is awaited from BHEL to attend the magnetic float level indicator signals. Punjab was asked to take up the matter with BHEL on priority and expedite the works.

Frequent tripping of lines due to fog

NRLDC representative stated that as discussed in 190th OCC meeting, it can be seen that out of 66 lines tripping between 13.12.2021 to 20.12.2021, 43 have occurred between 09pm-09am. There have also been many fog suspected tripping in Punjab state control area. The importance for carrying out pre-winter maintenance cleaning and insulator replacement was once again highlighted. Transmission licensees were asked to share details about the pre-winter maintenance activities including insulator replacement carried out/planned by them for this winter.

In 190th OCC meeting, Punjab SLDC representative stated that tripping were observed when severe fog was observed during night for last 2-3 days. However, the system is operating normal afterwards and no tripping have been reported. Punjab and Haryana SLDC representative stated that they shall submit latest status of pre-winter maintenance activities carried out by them.

Following elements have tripped during 12.12.2021 to 12.01.2021 day-wise from 21:00hrs to 09:00hrs:

Name of Line	**Tripping Instances**	**Owner**
220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1	5	POWERGRID
220 KV Duni(RS)-Jaipur South(PG) (RS) Ckt-1	4	RVPNL
220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	4	RVPNL
400 KV Bareilly-Unnao (UP) Ckt-1	4	UPPTCL
400 KV Hindaun(RS)-Chhabra(RVUN) (RS) Ckt-1	4	RVPNL
220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	3	RVPNL
400 KV Talwandi Saboo(PSG)-Muktsar(PS) (PS) Ckt-1	3	PSTCL
765 KV Anpara_D-Unnao (UP) Ckt-1	3	UPPTCL
765 KV Bara-Mainpuri (UP) Ckt-2	3	UPPTCL

Name of Line	Tripping Instances	Owner
765 KV Orai-Aligarh (PG) Ckt-1	3	UPPTCL
400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1	2	PTCUL
400 KV Amargarh(NRSS XXIX)-Samba(PG) (NRSS XXIX) Ckt-2	2	NRSSXIX
400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-1	2	PSTCL
400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-2	2	PSTCL
400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	2	UPPTCL
400 KV Badaune(UP)-Rosa(UPC) (OCBTL) Ckt-1	2	UPPTCL
400 KV Banda-Orai (UP) Ckt-2	2	UPPTCL
400 KV Bareilly-Unnao (UP) Ckt-2	2	UPPTCL
400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1	2	HBPCL
400 KV Bhilwara(RS)-Chhabra(RVUN) (RS) Ckt-1	2	RVPNL
400 KV Dadri(NT)-Muradnagar_2(UP) (PG) Ckt-1	2	POWERGRID
400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1	2	HPPTCL
400 KV Muktsar-Makhu (PS) Ckt-2	2	PSTCL
400 KV Muradnagar_2-Mathura (UP) Ckt-1	2	UPPTCL
400 KV Roorkee(PG)-Muzaffarnagar(UP) (PTCUL) Ckt-1	2	PTCUL
400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-1	2	RVPNL

In 190th and 191st OCC meetings, utilities were asked to share action plan for measures to be taken by them for carrying out pre-winter maintenance activities and other actions agreed in 187th, 188th and 189th OCC meeting. Details received only from HVPN, NR-1 and NR-3 even after reminder emails (Annexure-B.II of agenda). ***Other transmission utilities were also requested to share the action plan and activities carried out for pre-winter maintenance. It was also highlighted that on numerous occasions there have been single-phase earth fault tripping and auto-reclosure has not operated. All utilities need to check these instances and resolve any shortcomings.***

25. MVAR support from generators

Following has been discussed and agreed in TCC/ NRPC meetings and OCC meetings of the Northern region:

- All generators (including intrastate) shall absorb MVAr as per capability curve
- Reactive power support performance and MVAR telemetry issues will be reviewed in monthly OCC meetings.
- Reactive power capability testing will be carried out after discussion in OCC meeting.

Reactive power response of generating stations is being regularly discussed in OCC meetings.

Reactive power response in respect of MVAr vs Voltage for 21.12.2021 - 10.01.2022 as per NRLDC SCADA data is enclosed as Annexure-B.III in agenda. Based on available data, it is observed that there are margins available as per capability curves for some of the generating stations. In addition, as discussed in 190th OCC meeting, telemetry (sign and magnitude of MVAR) of various state generating stations is yet to be corrected. Unit-wise reactive power performance of generating stations as deliberated in OCC meeting is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity as per capability curve	MVAR performance (-) Absorption (+) Generation	Voltage absorption above (in KV)
1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-150 to 50	410
		2	490		-147 to 294	-150 to 50	410
2	Singrauli NTPC	1	200	UP	-60 to 120	-20 to 5	402
		2	200		-60 to 120	-10 to 15	405
		3	200		-60 to 120	-10 to 15	406
		4	200		-60 to 120	-15 to 15	405
		5	200		-60 to 120	-15 to 0	400
		6	500		-150 to 300	-60 to 0	400
		7	500		-150 to 300	-60 to 0	400
3	Rihand NTPC	1	500	UP	-150 to 300	-60 to 0	400
		2	500		-150 to 300	-70 to 0	400
		3	500		-150 to 300	-110 to -50	400

		4	500		-150 to 300	-110 to -50	400
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	data error	
		2	600		-180 to 360		
5	Anpara C UP	1	600	UP	-180 to 360	-100 to 40	765
		2	600		-180 to 360	-80 to 40	765
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	data error (sign reversal)	
		2	660		-198 to 396		
		3	660		-198 to 396		
7	Kawai RS	1	660	Rajasthan	-198 to 396	-100 to 20	402
		2	660		-198 to 396	-100 to 20	402
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300	-	-
		2	500		-150 to 300	-100to 50	410
		3	500		-150 to 300	-	-
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	data error (sign reversal)	
		2	700		-210 to 420		
10	MGTPS	1	660	Haryana	-198 to 396	-150 to 40	406
		2	660		-198 to 396	-160 to 40	405
11	Bawana	1	216	Delhi-NCR	-64.8 to 129.6	-	-
		2	216		-64.8 to 129.6	-	-
		3	216		-64.8 to 129.6	-	-
		4	216		-64.8 to 129.6	-40 to 40	420
		5	253		-75.9 to 151.8	-	-
		6	253		-75.9 to 151.8	0 to 40	420
12	Bara PPGCL	1	660	UP	-198 to 396	-40 to 40	778, 765
		2	660		-198 to 396	-40 to 40	778, 765
		3	660		-198 to 396	-40 to 60	778, 765
13	Lalitpur TPS	1	660	UP	-198 to 396	20 to 120	775, 785

		2	660		-198 to 396	0 to 80	775, 785
		3	660		-198 to 396	-40 to 100	775, 785
14	Anpara D UP	1	500	UP	-150 to 300	-80 to 60	775, 765
		2	500		-150 to 300	-80 to 60	775, 765
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-50 to 10	404
		2	250		-75 to 150	-50 to 10	404
		3	250		-75 to 150	-	-
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-100 to 100	410
		6	660		-198 to 396	-70 to 100	407

It was agreed in previous OCC meetings that states shall also develop MVAr vs voltage plots for generators under their jurisdiction. This would also help to improve telemetry of MVAr data and eventually, more reliable MVAr vs voltage plots will be available and the generators can be instructed accordingly. NRLDC has sent communication to IGSTPP Jhajjar, Delhi SLDC (Bawana), UP SLDC (Bara and Lalitpur) to improve their reactive power performance.

In 191st OCC meeting:

- Rajasthan SLDC representative was asked to look into the telemetry issues of Kalisindh TPS. Rajasthan SLDC representative informed that the issue has been attended.
- Delhi SLDC representative stated that they are regularly sending messages and asking CCGT-Bawana to absorb MVAr as per its capability curve, however they are not absorbing sufficient MVAr. SLDC representative stated that they shall take up the issue again with Bawana and share the actions taken by plant with NRLDC/NRPC. NRLDC asked Delhi SLDC to take up the matter on priority with CCGT-Bawana.
- Lalitpur representative stated that new bus reactor is expected to be commissioned shortly which would reduce the MVAr requirement from machine. MVAr absorption by plant has to be limited due to the limitation of increased voltage at 11kV side. It was informed that bus reactor is expected to be charged in first week of Feb 2022.
- Bara TPS was also requested to share reasons for limited MVAr absorption and not as per their capability curve and grid requirements. UP SLDC and Bara agreed to share the reasons and ensure MVAR performance as per grid requirement and capability curve of machines.

- Other generating stations such as Kalisindh TPS, Chhabra TPS, Rajpura TPS, Talwandi Saboo were requested to resolve issues related to telemetry and make sure that correct MVAR data from all units are available at RLDC/ SLDC and MVAr is absorbed is as per grid requirement and capability curve of machine.

All generating stations were requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine. Generating stations need to make sure that the AVR settings and GT tap positions are optimized to achieve the reactive power performance as per grid requirements. It was also requested to share these details with NRLDC.

As already discussed in TCC/NRPC meeting, subgroup was formed at NRPC level to look after RE integration to take up the issues at their level. Major areas for discussion include:

- Operation of solar plants in voltage control mode as per grid requirements
- Reactive power performance (absorption/generation) of solar plants during day & night time
- Harmonization of settings among different solar plants including protection settings at lower voltage levels (within plant) to avoid unintended disconnection/ generation reduction
- LVRT/HVRT compliance in real-time grid events
- Installation of adequate reactive compensation before project commissioning stage as per CEA regulations

In 189th OCC meeting, it was discussed that a pilot project has been carried out by SRLDC/SRPC and a report is being prepared in this regard and the same is expected in a week's time. SE (O), NRPC stated that sub group meeting would be called in November 2021 before next OCC meeting to discuss RE related issues and the report prepared by SRPC/SRLDC shall also be referred.

In 190th OCC meeting, it was informed that SRLDC has issued the report which is available @ *https://srldc.in/UploadFiles/NewsAndUpdate/Draft%20Report%20on%20Night%20Mode%20Operation%20(Trial)%20of%20PV%20Inverters.pdf.* The key points from SRLDC report were presented in the meeting. NRLDC and NRPC representatives stated that separate meeting may be called with solar ISGS by sub-group formed at NRPC level so that such capability of NR plants may be discussed and accordingly further course of action may be decided. ***In 191 OCC meeting, it was decided that the meeting may be called by NRLDC in Feb 2022.***

26. TTC/ATC of state control areas for winter 2021-22

In the meeting, it was discussed that 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. SLDCs were once again requested to go through the

tentative ATC/TTC limits for February 2022 (Annexure-B.IV of agenda) and provide comments. However, ATC/TTC assessment has only been received only from HP so far. Rajasthan had shared ATC/TTC calculations with NRLDC on 22.10.2021. On 28.10.2021, NRLDC has shared their observations on basecase as well as simulation studies carried out by Rajasthan. If no comments are received, these limits will be assumed confirmed and uploaded on NLDC website. SLDCs were also requested to upload the limits for winter 2021-22 in their respective websites.

Punjab

Punjab SLDC was requested to ensure sufficient intrastate generation on bar during winter months, which would help in providing the required MVAR absorption to limit high voltages during winter months. Measures to relieve transmission constraints were discussed in detail in agenda 17 of OCC meeting.

UP

SPS for Sohawal and Lucknow to be expedited. UP SLDC representative stated that they are exploring possibility of shifting SPS from Bareilly(UP) to Sohawal. Constraint at 400/220kV Lucknow(PG) is likely to be relieved with full commissioning of 400/220kV Jehta S/s.

Rajasthan

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

Rajasthan was requested to share the revised simulation studies with NRLDC alongwith details of bus-split, other operational changes in system. Rajasthan SLDC was asked to take up the matter for implementation of SPS at Jodhpur and other stations with STU and ensure loading below N-1 contingency limit at constrained 400/220kV ICTs. Measures to relieve transmission constraints were discussed in detail in agenda 17 of OCC meeting.

Delhi

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

In 190th OCC meeting, Delhi SLDC representative stated that the limits would be reassessed for next summer season shortly with commissioning of 400/220kV Dwarka substation and accordingly revised ATC/TTC limits would be uploaded on website. NRLDC representative suggested that present ATC/TTC limits may be uploaded on SLDC website and with commissioning of 400/220kV Dwarkasubstation, revised ATC/TTC may be uploaded.

Delhi SLDC was asked to implement SPS at Mundka and Bamnoli to save supercritical loads under N-1 contingency of one ICT. Delhi representative stated SPS at Mundka would be implemented before next summer season. It was also

informed that works for revival of one ICT at Mundka are in place and for the other ICT new ICT needs to be procured or shifted from other DTL substation.

Haryana

Haryana SLDC was once again asked to expedite implementation of SPS at 400/220kV Deepalpur and Kurukshetra (PG) to enhance their ATC/TTC limits at the earliest.

HP

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

Uttarakhand

Uttarakhand has also shared its ATC assessment with NRLDC for winter 2021-22 and has also started uploading on website.

J&K

Not assessing its ATC. J&K representatives had intimated during 47th TCC and 49th NRPC meeting that they would be sharing ATC/TTC assessment with NRLDC from October 2021, however the same is still awaited. J&K and Ladakh U/Ts 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 after procurement of PSSe software.

Constraints observed as per real-time:

J&K

- 400/220kV Amargarh ICTs
- High loading of 220kV lines from Wagoora & Sambha**.**

HP

- High loading of 400/220kV Nallagarh ICTs, 220kV Nallagarh-Upernangal D/C and 220kV Hamirpur-Hamirpur D/C

Uttarakhand

- High loading of 400/220kV Kashipur ICTs
- High loading of 220kV Roorkee-Roorkee, CBGanj-Pantanagar

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

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

As discussed during last meeting, since from October/ November, demand of most of the NR states starts changing, it was requested that the revised ATC/TTC limits for winter 2021 along with anticipated generation scenario may be timely shared with NRLDC***.***

As discussed and agreed in 190th OCC meeting, all SLDCs were requested to share basecase as well as ATC/TTC assessment with NRLDC/NRPC on monthly basis as well as upload on their websites. Basecase and ATC assessment shall be shared with NRLDC by the 10th of every month. NRLDC will incorporate these changes in All India basecase and share the updated basecase as well as observations on ATC/TTC by the 20th of every month. Monthly/ quarterly online meetings will also be organized involving reliability coordinators of SLDCs/RLDC to discuss reliability issues and measures required. It was also requested that SLDCs may ensure that net scheduled power requested by states is within their ATC limits.

Plot suggesting loading above n-1 contingency limit and ATC are attached as Annexure-B.V of agenda and also discussed in the meeting. It was again requested that SLDCs may ensure that loading of ICTs and lines are below their N-1 contingency limits. While requisitioning power from various sources, states should take care to limit their scheduled drawl as well as actual drawl in real time within the Available Transfer Capability (ATC) limits assessed by SLDC and NRLDC.

27. Grid operation related issues

(i) Long outage of transmission elements/ generating units

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

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

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

(iii) SPS Implementation at Bhadla (PG)

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.

181 OCC: QR finalised, tender may be floated in next week

183 OCC: QR approved, tender documents being prepared

186 OCC: Tendering stage, likely to be awarded in Sep'2021

In 187 OCC meeting, POWERGRID representative stated that work is still in tendering stage and the bid opening is scheduled on 23.09.2021.

189 OCC meeting, POWERGRID representative stated that one bid has been received for the work. However, it is new party so evaluation is under process. On enquiry from NRLDC representative, it was stated that order is likely to be placed before next OCC meeting. OCC once again expressed concern on the slow progress of the work.

190 OCC meeting, POWERGRID representative stated that two bids have been received and price bid will be opened shortly and the contract is likely to be awarded in January 2021.

191 OCC meeting, POWERGRID representative stated that the works are going on as per schedule and contract is likely to be awarded in January 2021.

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

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

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

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

In 189th OCC meeting, MS NRPC stated that NRLDC may request all SLDCs to confirm the status via email. Based on the feedback received, issue may be discussed in next OCC meeting. Accordingly, an email was circulated to respective SLDCs on 10.12.2021.

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

In 191 OCC meeting, NRLDC representative once again highlighted the importance of both end data and asked all states to take necessary actions as already mentioned by MS NRPC.

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

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

66kV data is not available. SCADA representative from SLDC was not available for detailed comments.

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

(v) Replacement/Rectification of faulty Interface Energy Meter (IEM) & DCD in Northern region

As per metering regulation of CEA, CTU is responsible for installation and replacement of IEM at ISTS level for the purpose of electricity accounting and billing of regional entities. NRLDC vide their letter NRLDC/MO dtd19th July 2021 &dtd 12th Nov 2021 has requested for replacement/rectification of faulty IEM & DCD and list was also provided in the letter. Further detail list is again attached at Annexure-B.VII of agenda for reference. This issue has already been deliberated in 43rd commercial subcommittee meeting held on 13th April, 2021.

Weekly energy account is based on the IEM and due to faulty meter in some of the feeders, NRLDC is using other end IEM data for calculation of net injection/drawl of Utilities. In such scenario there is no redundancy to measure the energy flow and in case of outage of other end IEM, it is not possible to measure the electricity flow on the feeders and net drawl/Injection calculation would be wrong which may turn to huge commercial impacts on utilities.

Further the above issue was also deliberated in 49th meeting of Northern Regional Power Committee and 47th meeting of TCC held on 23rd, 24th & 27th Sept. 2021, wherein it was decided that CTU/POWERGRID shall take action for replacement of defective IEM & DCD and complete the same by 31.12.2021 in all respect.

In 191st OCC meeting, POWERGRID NR-1 representative stated that 14 meters which are to be installed in NR-1 would be installed within next 15 days and all actions have been finalized in this regard. POWERGRID NR-2 representative stated that two faulty DCDs would be replaced after picking the same from Jalandhar. NRLDC representative stated that 8-10 faulty meters are pending in NR-2. NR-2 representative stated that there is delay in response from site in picking up meters and they also need to keep few meters for emergency use therefore some meters are still to be replaced. ***POWERGRID was asked to make all the arrangements for ensuring replacement of defective IEM & DCD meters at the earliest.***

(vi) Utilisation of line reactor at Karcham of 400kV Karcham-Wangtoo(HP) lines

NRLDC representative stated that originally planned 400kV Karcham-Abdullapur D/C line has been LILOed at Wangtoo(HP) and Sorang HEP substations after Kala Amb. Morevoer, FSC has also been installed at Kala Amb after LILO at Kala Amb to utilize full capacity of the Quad Moose line. However, with subsequent LILO of line the line lengths of 400kV Karcham-Wangtoo(HP) has reduced to nearly 1km only because of

which originally commissioned line reactors at Karcham have become redundant and remain out of service.

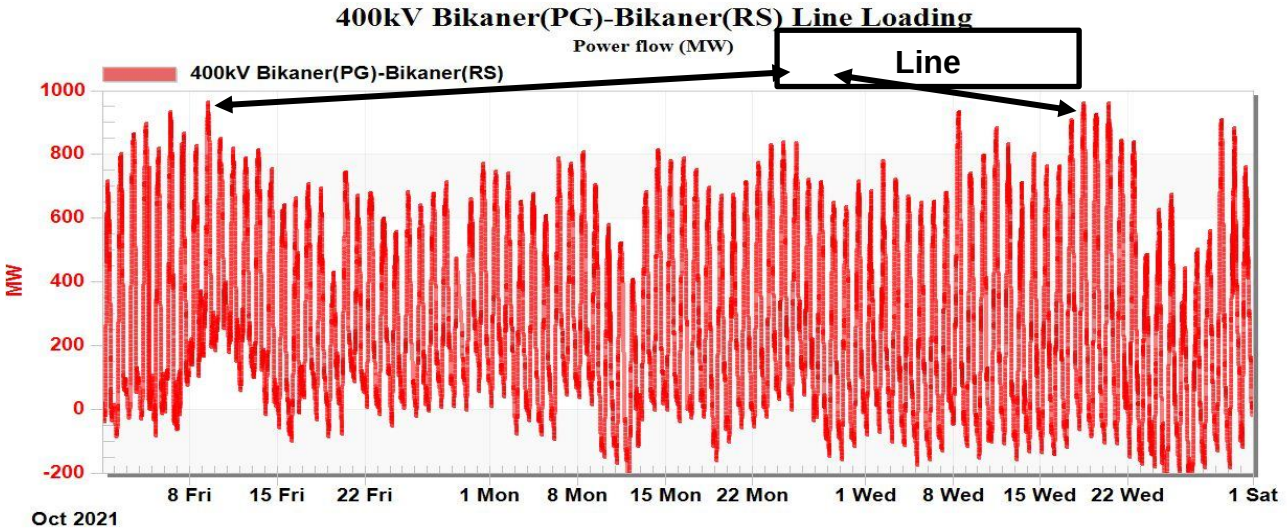
One way could be charging these line reactors of 400kV Karcham-Wangtoo(HP) line which would in controlling the bus voltages in 400kV Karcham-Wangtoo complex. The usage of line reactors at Karcham will definitely help to reduce the voltages in Karcham complex in steady state, however its impact on transient faults can be severe. Over the years, it has been observed that higher percentage compensation leads to L-C resonance and oscillations. L-C oscillations in such overcompensated lines may lead to overvoltages including tripping on overvoltage and possibility of damage to terminal equipments/ line insulators.

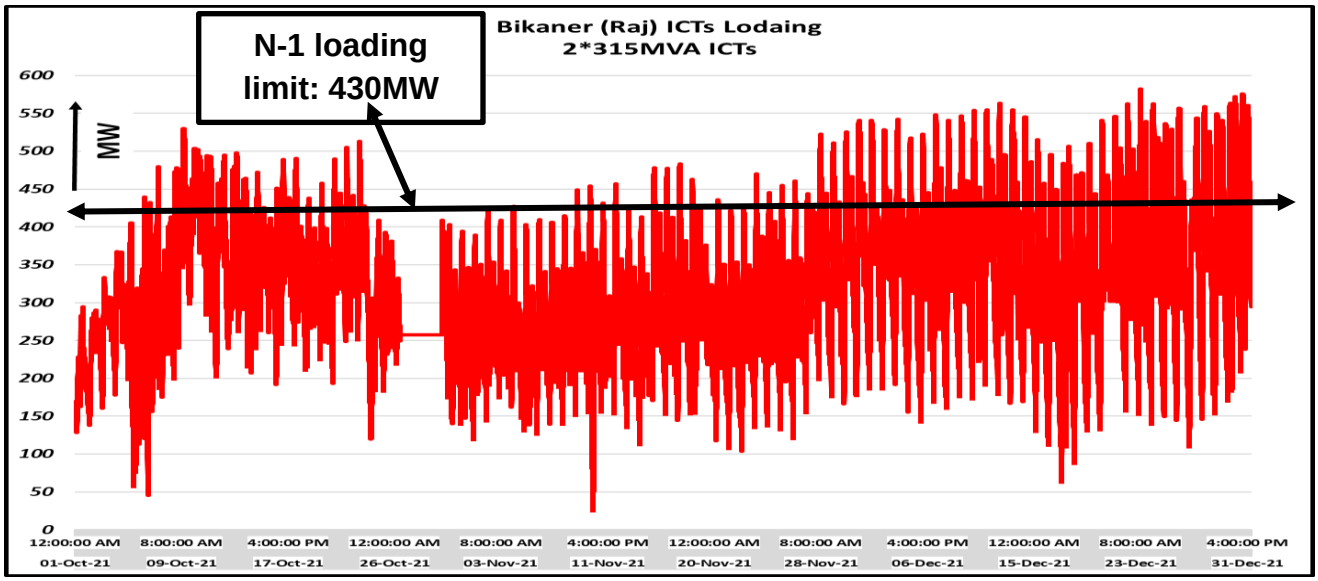
In 191 OCC meeting, it was discussed that there is need to consider above mentioned facts also before utilizing the line reactors at Karcham end of Karcham-Wangtoo line. CTU was requested to provide views in this regard. ***In the meeting, CTU representative stated that it is not advisable to charge the line reactors of these lines given the line length have reduced largely as it may prove detrimental in case of tripping event. However, option of utilizing these line reactors as bus reactors at Karcham may be suitably explored.***

Moreover, with the commissioning of FSC in 400kV KalaAmb-Wangtoo line, the power flow is directed towards Wangtoo/ Abdullapur. Moreover, additional generation will be coming up upstream of Wangtoo i.e. at Kaza Solar park and JhangiThopan HEP, which is likely to make the network connectivity stronger in the area. Therefore, all the generators in the complex were requested to share dynamic data for analysis purpose (data received from Sorang, Baspa and Karcham HEP). NRLDC has also communicated the same vide letters dated 29.12.2021 in this regard (attached as Annexure-B.VIII of agenda).

NRLDC representative stated that high loading of 400kV Bikaner(PG)-Bikaner(Raj) (Quad Moose) is being observed at the time of high solar generation in Rajasthan.

This is also increasing loading of 400/220kV Bikaner ICTs and loading above N-1 contingency limits is being observed given that winter is high demand period in Rajasthan control area. On N-1 contingency of this line, the entire power from Bikaner(PG) will be evacuated through the 2X1500 MVA 765/400kV ICTs towards 765kV system. This would cause the Bikaner (PG) voltage to fall by around 6kV. Rajasthan STU/SLDC and CTU were asked to provide update on the futuristic actions to control loading of this line.





ICTs loading of 400/220kV, 315MVA Bikaner(RS) (01.10.21-31.12.21)

As 400kV Bikaner(PG)-Bikaner(RS) is the least impedance path from Bikaner(PG) to Rajasthan load centre, sensitivity of this line to the power injected from solar plants at Bikaner(PG) will always be much higher than that of the 765/400kV ICTs at Bikaner. With further addition of RE capacity at Bikaner(PG), peak line flow may reach 1200MW or more.

Rajasthan/PGCIL was asked to explore feasibility of the following options to minimize the post contingency impact of this line on the system:

a) Adding one more 400kV Quad Moose circuit parallel to the existing line

b) Shifting the supply of part of Rajasthan load to some S/Stn other than Bikaner(PG)

c) Installing SPS to shed some load whenever power flow through Bikaner(PG)-Bikaner(RS) line sustains above 800MW for 3 minutes

d) Keeping Bikaner(PG)-Bikaner(RS) 400kV line open, till another circuit or a suitable SPS is commissioned.

Rajasthan STU representative stated that new substation has been approved near Bikaner, which would be connected by removing LILO of 400kV Bikaner(PG)-Bikaner(RS) which is likely to reduce loading of 400kV Bikaner(PG)-Bikaner(RS).

(vii) Frequent forced outages of TalwandiSaboo generating units

NRLDC representative stated that the period from June-Sep is associated with very high demand in Punjab state control area and Northern region. The import capability of state is also limited due to major transmission constraints such as 400/220kV ICTs at Rajpura, Nakodar, Ludhiana and several 220kV lines. At the time of this very high demand, it is easy to understand that maximum internal generation should be available to help in meeting demand safely. However, due to forced outage of generating units especially at Talwandi Saboo generating units, there is major issue in meeting demand in safe and secure manner. In 2021, there were numerous forced outages of Talwandi Saboo units (each 660MW capacity) as shown below. Even in the lean season during 2021-22, there have been numerous outage of Talwandi Saboo units including those due to coal shortage issues.

Unit No	Reason	Outage Date & Time		Revival Date & Time	
3	Due to abnormal sound in boiler.	27-02-2021	19:34	30-07-2021	22:34
1	Reserve Shutdown	31-05-2021	22:15	08-06-2021	01:23
1	ABNORMAL SOUND IN BOILER	15-06-2021	13:15	17-06-2021	05:48
2	Abnormal sound in boiler	18-06-2021	01:14	21-06-2021	06:47
2	Air Pre-heater tripped	09-07-2021	15:55	12-07-2021	05:56
2	Boiler Air preheater current hunting problem	07-08-2021	00:15	09-08-2021	03:35
2	Malfunction of HP LP bypass valve	11-09-2021	10:25	11-09-2021	12:33

Punjab SLDC was asked to take up the matter on top priority with TSPL and try and ensure maximum generation capacity availability during peak demand season. Punjab SLDC representative stated that the matter has been taken up on priority however problems are still persisting with TSPL units. NRLDC representative stated

that the communication from Punjab with TSPL should be shared with NRLDC/NRPC also.

NRLDC representative also highlighted that due to frequent outages of Talwandi Saboo units, frequent ATC/TTC revisions need to be carried out, moreover since the revisions only become effective after some time blocks, it leads to a situation when Punjab faces big challenge in safely meeting the demand without over drawing. To overcome these issues, along with ensuring availability of Talwandi Saboo units, other generating units should also be available along with sufficient fuel stock and it is also essential that Punjab takes necessary steps to enhance their ATC/TTC limits before paddy 2022. Some of the well-known and previously discussed actions in this regard are mentioned below:

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

Other SLDCs were also requested to identify and take up the matter with generating stations which are generally out on forced outage or face issues especially during peak demand months from May-Sep.

(viii) Frequent tripping of 400kV Kishenpur-New Wanpohckts and 765kV Anpara D- Unnao

NRLDC representative stated that the 765kV Anpara-D–Unnao line was first time charged at 16:53hrs on 01/11/2021. The said line has tripped four times in the last two months. As per the tripping details, it is suspected that the fault has been occurring at the same location/area. On telephonic enquiry, it has come to knowledge that the complete transmission line is having porcelain disc insulators. The availability of the said transmission line is critical for the safe evacuation of generation from the Anpara complex.

S No	NAME OF ELEMENT	OUTAGE TIME	CHARGING TIME	REASON
1	765 KV ANPARA_D-UNNAO (UP) CKT-1	10-01-2022 13:09	10-01-2022 16:54	For attending hot-spot in R-phase Line Isolator at Unnao (UP).
2	765 KV ANPARA_D-UNNAO (UP) CKT-1	31-12-2021 23:38	01-01-2022 10:12	B-N fault, Zone-1, Dist. 292.5km, Fault current 2.311kA from Anpara end.
3	765 KV ANPARA_D-UNNAO (UP) CKT-1	28-12-2021 05:39	30-12-2021 22:27	R-N fault, Zone-1, Fault current 2.24kA, Dist. 261.5km from Unnao(UP).
4	765 KV ANPARA_D-UNNAO (UP) CKT-1	27-12-2021 05:51	27-12-2021 15:34	R-N fault, Zone-1, Fault current 2.33kA, Dist. 261km from Unnao(UP).
5	765 KV ANPARA_D-UNNAO (UP) CKT-1	11-11-2021 20:35	12-11-2021 18:19	Phase to earth fault B-N , Dist. 117.2km, Fault current 3.77kA from Unnao (UP).

In view of the repeated tripping of the said line and ongoing foggy weather, UP was asked to advise the concerned sites(s) to take the following actions:

(1) To carry out thorough patrolling of lines and identify the pollution-prone areas.

(2) To replace the porcelain insulators with polymer insulators in pollution-prone areas.

(3) To carry out washing of porcelain insulators in the line.

UP SLDC representative stated that in last three tripping events observed at distance of 120km from Unnao, LILO of Fatehpur-Unchahar is being done for Rai Bareilly substation for which diamond crossing of OPGW was done. Same has been attended now and this issue would now not come up. Other issues in the line are also being attended and matter is being taken up with transmission utility. It was also informed that major shutdown of this line is proposed for LILO at Obra-C for more than one month during which all pending issues of line would be attended.

Frequent tripping observed in 400kV Kishenpur- New Wanpohckts- 1 to 4 is listed below. In case of multiple tripping of these lines in winter, it leads to constraint in safely meeting demand of JK valley. Therefore, POWERGRID-NR2 was asked to take necessary actions and share details for maintenance of these lines.

S No	NAME OF ELEMENT	OUTAGE TIME	CHARGING TIME	REASON
1	400 KV KISHENPUR-NEWWANPOH (PG) CKT-3	10-01-2022 03:09		Line tripped on R-B-N fault, Zone-1 from New Wanpoh (Tripped due to heavy snowfall.). Charging attempt taken at 14:57Hrs, but the line did not hold.
2	400 KV KISHENPUR-NEWWANPOH (PG) CKT-2	08-01-2022 14:40	08-01-2022 15:38	Phase to earth fault B-N , Dist. 79.22km, Fault current 4.29kA from Kishenpur& Dist. 35.1km, Fault current 4.6kA from New Wanpoh. Tripped due to bad weather (heavy snowfall, Lightening).
3	400 KV KISHENPUR-NEWWANPOH (PG) CKT-1	08-01-2022 12:00	08-01-2022 12:45	Phase to earth fault R-N , Dist. 89.57km, Fault current 3.31kA from Kishenpur& Dist. 33.1km, Fault current 5kA from New Wanpoh. Line tripped due to bad weather (heavy snowfall & Lightening).
4	400 KV KISHENPUR-NEWWANPOH (PG) CKT-1	08-01-2022 03:46	08-01-2022 05:41	Over voltage. Line tripped on Over voltage at Kishenpur.
5	400 KV KISHENPUR-NEWWANPOH (PG) CKT-2	07-01-2022 23:17	07-01-2022 23:50	Phase to earth fault B-N, Dist. 123km, Fault current 2.745kA from Kishenpur& Dist. 1.7km, Fault current 9.5kA from New Wanpoh.

6	400 KV KISHENPUR-NEWWANPOH (PG) CKT-4	05-01-2022 21:35	06-01-2022 11:26	Phase to earth fault B-N, Fault current 3.7kA, Dist. 107km from Kishenpur. Line tripped during bad weather and snowfall.
7	400 KV KISHENPUR-NEWWANPOH (PG) CKT-4	01-01-2022 12:53	01-01-2022 18:44	Y-N fault, Fault current 1.32kA, Dist. 105km from Kishenpur.

POWERGRID NR-2 representative stated that 400kV Kishenpur New Wanpoh line passes through Pir Panjal range which has severe snowfall during winter months. 400kV Kishenpur-New Wanpoh ckt for which LILO is being done at Baglihar, the works are likely to be completed in Jan 2022.

(ix) Multiple tripping at Mandola PG

NRLDC representative stated that multiple trippings occurred at Mandola PG due to 220kV Bus bar protection operation at 20.42 Hrs on 26.12.2021. During this incident, all 04 ICTs and 220kV lines emanating from Mandola PG tripped resulting in a load loss of approx. 600 MW in Delhi. There was power interruption in Delhi metro network also which was restored immediately through alternate source.

There has been considerable delay in obtaining charging clearance from site for restoration of tripped elements. Further, there has been a significant delay in charging of elements even after issuance of codes by NRLDC. This has led to power supply shortage in Delhi for considerable duration.

A letter dtd. 27.12.2021 (Annexure-B.IX of agenda) was sent by NRLDC to CPCC, NR-1 to investigate and intimate the reasons for the delay attributed to restoration of elements. Powergrid, NR-1 was asked to submit the detailed report regarding the said trippings and also advise the concerned sites to ensure earliest restoration of tripped elements in future for reliable Grid operation.

Delhi SLDC representative expressed concern that delay in charging has been observed on number of occasions at Mandola(PG).

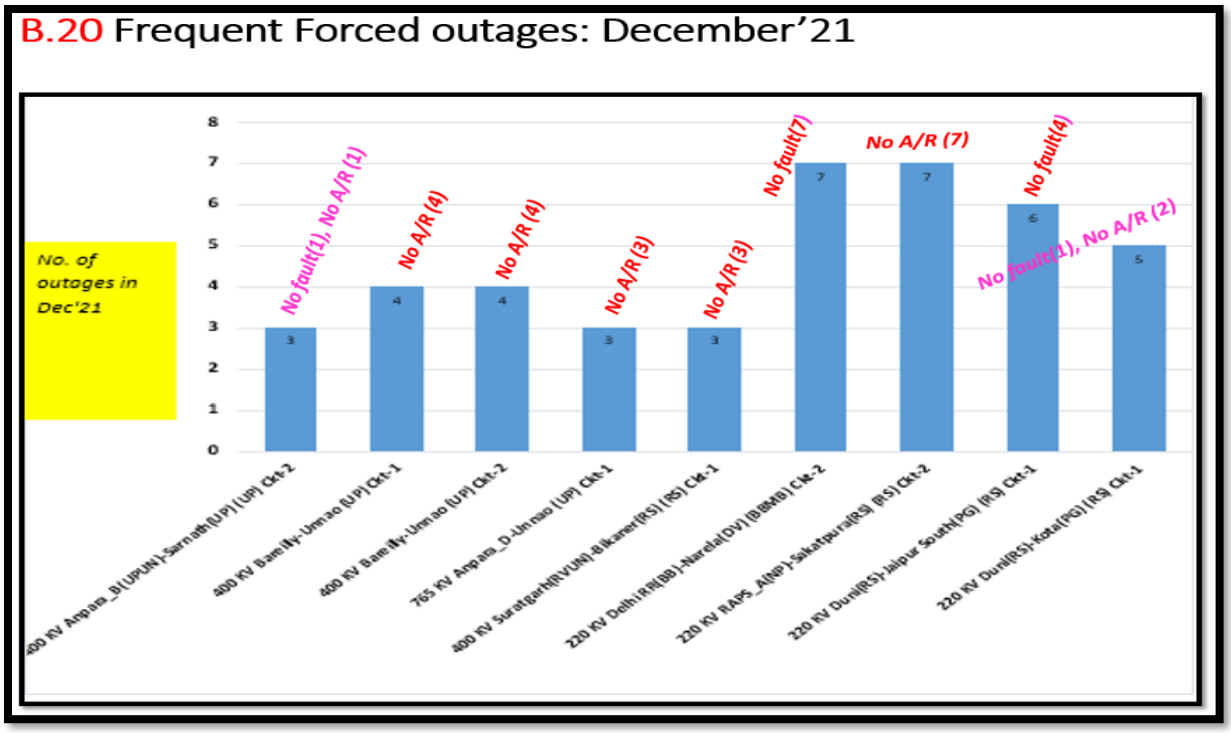
POWERGRID NR-1 representative stated that the reason for tripping has been analysed. CB of 220kV Mandola-Gopalpur ckt 2 Y-phase had blasted which resulted in outage of 220kV Bus-2. However, other buses which was coupled/ connected with Bus-2 through bus-coupler should not have tripped. The reasons for multiple element tripping are being analysed and corrective actions would be taken shortly.

CPCC NR-1 representative stated that only after obtaining clearance from site, switching operations were carried out. Since it was a major event, some time was required before issuing clearance and charging of elements. However, due care would be taken in future to minimize delay in charging.

28. Frequent forced outages of transmission elements in the month of Dec'21:

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	3	UP
2	400 KV Bareilly-Unnao (UP) Ckt-1	4	UP
3	400 KV Bareilly-Unnao (UP) Ckt-2	4	UP
4	765 KV Anpara_D-Unnao (UP) Ckt-1	3	UP
5	400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt-1	3	Rajasthan
6	220 KV Delhi RR(BB)-Narela(DV) (BBMB) Ckt-2	7	BBMB/Delhi
7	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	7	Rajasthan/NPCIL
8	220 KV Duni(RS)-Jaipur South(PG) (RS) Ckt-1	9	Rajasthan/POWERGRID
9	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	5	Rajasthan/POWERGRID



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

Discussion during the meeting:

- **400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2:** *UPPTCL representative informed that tripping on 3rd December, 2021 occurred due to maloperation during DC earthing testing at Sarnath end and DT received at Anpara end.*

On 4th December, 2021, during patrolling a bunch of kite thread observed which was removed after taking shutdown.

On 29th December, 2021, during patrolling bird beat was observed in some sections of the line and line was then clean after taking shutdown.

He further informed that there was a problem of DT receive at Anpara end during A/R operation in this line. To check healthiness of Autorecloser operation, end to end testing is planned on 18th & 25th January, 2022.

- **400 KV Bareilly-Unnao (UP) Ckt-1 & 2:** *UPPTCL representative informed that multiple issues like non-functioning of A/R at Bareilly end, CB pole discrepancy were found in trippings of this line due to which an expert visit carried out to Bareilly Substation from 23rd December to 30th December, 2021 for detailed analysis of the trippings. He further informed that changes has been done in the line as per expert recommendation and report has been shared with NRLDC & NRPC office. He stated that after suggested changes, number of tripping in these line reduced substantially.*

- **765 KV Anpara_D-Unnao (UP) Ckt-1:** *UPPTCL representative informed that there is a problem of DT received at Unnao end during A/R operation in this line due to operation of differential protection of reactor. He further informed that they are already taking up the issue with Anpara and Unnao substation and settings of reactor may needs to be changed. NRLDC representative emphasized that 765 KV Anpara_D-Unnao (UP) Ckt is quite important for reliability of the grid and A/R (auto reclosure) issue needs to be resolved at the earliest to avoid tripping of this line during transient fault.*

- **400 KV Suratgarh (RVUN)-Bikaner (RS) (RS) Ckt-1:** *Rajasthan representative informed that there is problem in SCADA at Bikaner end due to which A/R was not commissioned.*

He informed that A/R will be commissioned soon after resolving the SCADA issue.

- **220 KV RAPS_A (NP)-Sakatpura (RS) (RS) Ckt-1:** *Rajasthan representative informed that there is clearance issue in some section of the line due to which frequent fault is occurring. He further informed that A/R was in off condition in this line due to connection of RAPS generation. He said that RAPS informed that line CVT is not available at their end and due to limitation of Generator it is not possible to enable A/R operation at RAPS end. RAPS representative was not available in the meeting for any comment. NRLDC representative suggested to ensure healthiness/ in service of A/R in all 220 kV and above transmission lines in compliance to CEA Grid Standards. Rajasthan representative agreed for the same.*

- **220 KV Duni(RS)-Jaipur South(PG) (RS) Ckt-1:** *Rajasthan representative informed that there is some problem in relay at Jaipur south end due to which*

frequent tripping without any fault occurring in this line. POWERGRID representative was not available for any comment.

- **220 KV Duni(RS)-Kota(PG) (RS) Ckt-1:** *Rajasthan representative informed that tripping on 10th December, 2021 occurred due to PLCC maloperation at Kota(PG) end.*

Tripping on 22nd December, 2021 occurred due to CT burst at Kota(PG) end.

Tripping on 24th December, 2021 occurred due to transient fault and A/R not operated during this tripping. He further informed that they are checking the issue of non-operation of A/R during transient fault.

Tripping on 28th December, 2021 & 29th December, 2021 occurred due to Jumper snapping.

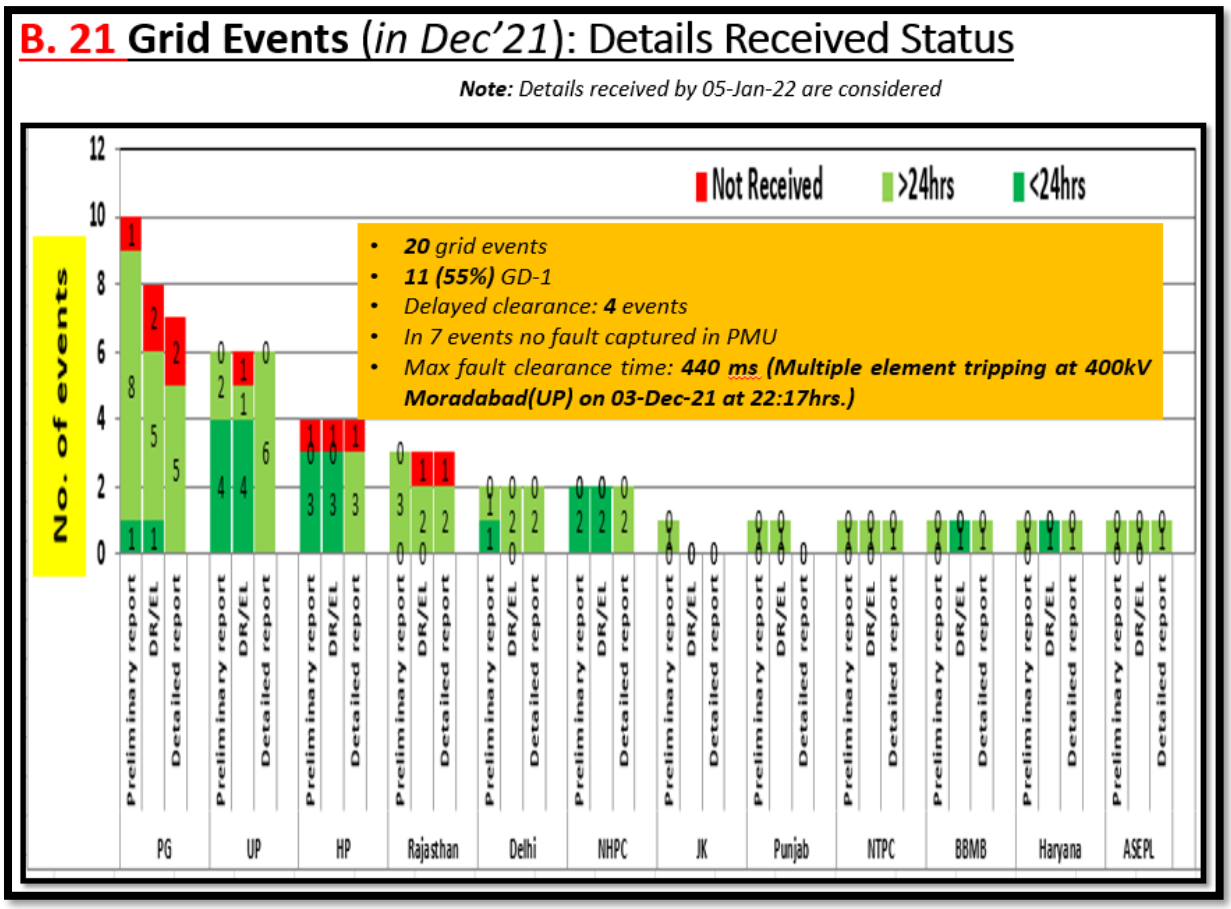
- **220 KV Delhi RR(BB)-Narela(DV) (BBMB) Ckt-2:** *Delhi representative informed that there was DC leakage at 11kV side due to which frequent tripping occurring in this line. He further informed that fault is rectified now and the problem may not occur in future.*

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

29. Multiple element tripping events in Northern region in the month of Dec'21:

A total of **20** grid events occurred in the month of Dec'21 of which **11** are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of detailed report received by NRLDC till 05-January-2022 is attached at Annexure-B.XI of the Agenda.



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

Maximum Fault Duration observed is **440ms** in the event of multiple element tripping at 400kV Moradabad (UP) on 03-Dec-21 at 22:17hrs.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **4** events out of **20** grid events occurred in the month. In 7 number of events, fault signature couldn't be captured from PMU data.

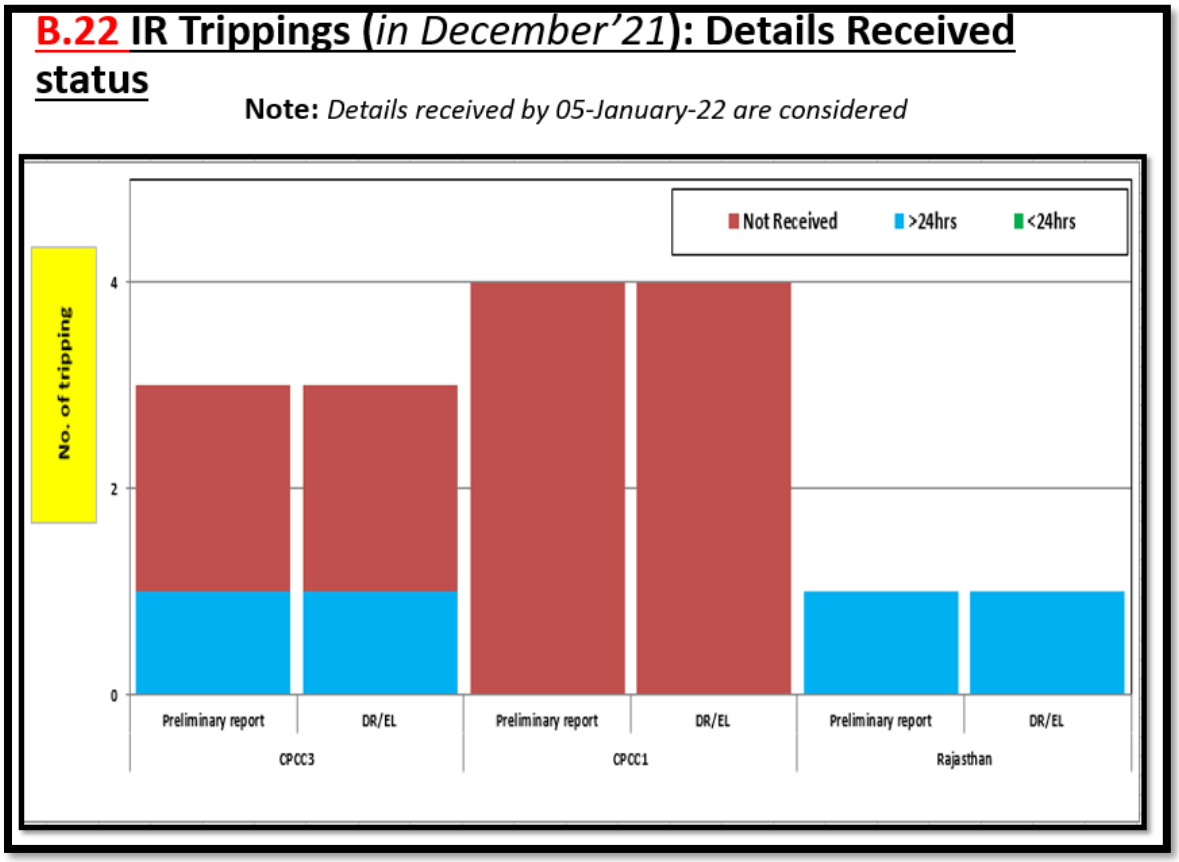
NRLDC representative raised concern about poor status of report updation by POWERGRID, HP and Rajasthan on the tripping portal. He further stated that timely report submission is an important activity and all constituents are advised to take this on priority and upload the reports.

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

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

30. Details of tripping of Inter-Regional lines from Northern Region for Dec'21:

A total of 8 inter-regional lines tripping occurred in the month of Dec'21. The list is attached at **Annexure-B. XII of the Agenda.**



Out of 8 number of tripping's, 4 tripping incident are 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. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 5.2(r) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

NRLDC representative raised concern about poor status of report updation by POWERGRID CPCC1 and CPCC3 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.

POWERGRID representative informed that Champa-Kurukshetra pole tripped frequently due to maloperation and wrong signal. To rectify the issue, software updation is to be carried out by taking shutdown of the poles and the same is already planned in coming month.

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

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

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

S. No.	Utility	1st Dec 2021 - 31st Dec 2021											
		Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
1	ADANI	1	1	100	1	0	100	1	0	100	1	0	100
2	ANTA-NT	1	0	0	0	0	0	0	0	0	0	0	0
3	ASEPL	5	4	80	4	0	80	4	0	80	4	0	80
4	BBMB	26	7	27	7	12	50	8	12	57	9	7	47
5	BUDHIL	1	1	100	1	0	100	1	0	100	1	0	100
6	CHAMERA-II-NH	2	0	0	0	0	0	0	0	0	0	0	0
7	CHAMERA-I-NH	1	0	0	0	0	0	0	0	0	0	0	0
8	CPCC1	71	25	35	28	10	46	29	7	45	26	3	38
9	CPCC2	43	13	30	15	8	43	15	5	39	26	0	60
10	CPCC3	33	13	39	13	2	42	13	2	42	13	2	42
11	DADRI-NT	2	0	0	0	1	0	0	1	0	0	1	0
12	DHAULIGANGA-NH	2	0	0	0	0	0	0	0	0	0	0	0
13	ESUCRL	1	1	100	1	0	100	1	0	100	1	0	100
14	FARIDABAD-NT	3	0	0	1	0	33	1	0	33	0	0	0
15	KARCHAM	6	6	100	6	0	100	6	0	100	6	0	100
16	KOLDAM-NT	3	0	0	0	0	0	0	0	0	0	0	0
17	NAPP	2	0	0	0	0	0	0	0	0	0	0	0
18	NJPC	3	2	67	2	0	67	2	0	67	2	0	67
19	RAPPA	13	2	15	13	0	100	13	0	100	13	0	100
20	RAPPB	1	0	0	1	0	100	1	0	100	1	0	100
21	RIHAND-NT	1	0	0	0	1	0	0	1	0	0	0	0
22	SALAL-NH	5	0	0	0	0	0	0	0	0	0	0	0
23	SAURYA	3	3	100	3	0	100	3	0	100	3	0	100
24	SINGRAULI-NT	1	1	100	1	0	100	1	0	100	1	0	100
25	SLDC-DV	25	0	0	9	8	53	9	0	36	9	0	36
26	SLDC-HP	22	8	36	8	6	50	8	6	50	8	0	36
27	SLDC-HR	14	2	14	5	0	36	5	2	42	2	0	14
28	SLDC-JK	8	1	13	1	7	100	1	7	100	4	1	57
29	SLDC-PS	28	0	0	6	7	29	10	7	48	26	0	93
30	SLDC-RS	72	0	0	28	0	39	28	0	39	21	0	29
31	SLDC-UK	3	3	100	3	0	100	3	0	100	3	0	100
32	SLDC-UP	132	15	11	28	16	24	31	13	26	26	4	20
33	SORANG	1	1	100	1	0	100	1	0	100	1	0	100
34	INDIGRID	4	0	0	0	0	0	0	0	0	3	0	75
35	TANDA-NT	2	1	50	1	0	50	1	0	50	1	0	50

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 Delhi, Punjab, UP and Rajasthan in Dec, 2021 compared to the previous month.

NRLDC representative raised concern about poor status of report updation by POWERGRID & Uttarakhand on the tripping portal.

POWERGRID representative informed that report updation status is poor due to change of manpower at their control centre and delayed in some cases report updation is delayed due to ongoing covid-19 pandemic.

Uttarakhand SLDC representative informed that they have shared login password and other details to PTCUL STU testing & commissioning wing to upload the reports on tripping portal. However, no action has been taken from their end. NRLDC representative stated that they may again take up the matter with them and ensure timely submission of reports.

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.

32. Frequency response characteristic:

One FRC based event occurred in the month of **Nov-2021**. Description of the event is as given below:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	15-Nov-21	13:11hrs	At 13:11Hrs, 220 KV Bhadla (PG)-ESUCRL SL_BHD_PG (ESUCRL) (ESUCRL) Ckt-1 tripped due to snapping of conductor. At the same time, 220 KV Bhadla(PG)-Saurya Urja Solar(SU) (Saurya Urja) Ckt-1&2 and 220 KV Bhadla(PG) - Mahoba Solar(Adani) (Adani) Ckt-1 tripped from remote (solar plant) end. As per SCADA, total solar generation loss of approx. 1787MW is observed at Bhadla (PG) (1430MW), Fatehgarh2 (PG) (240MW) and Bhadla (RS) (117MW).	50.00	49.91	-0.09

The event has already been discussed in 190th OCC meeting.

Status of data received before 190th OCC meeting:

Status of Data received of FRC of Grid event occurred at Bhadla on 15.11.2021			
Data Received from		Data Not Received from	
UP	Singrauli NTPC (Field data)	HP	Rihand NTPC
Delhi	TSPL (Field data)	UK	APCPL Jhajjar
Haryana	NHPC	J&K	Tehri HEP
	Rosa(Reliance) (Field data)	Punjab	ADANI (Kawai)
	Koteshwar HEP (Field data)	BBMB	Others
		Rajasthan	

Status of data received till date:

Status of Data received of FRC of Grid event occurred at Bhadla on 15.11.2021			
Data Received from		Data Not Received from	
UP	Singrauli NTPC (Field data)	UK	APCPL Jhajjar
Delhi	TSPL (Field data)	J&K	Others
Haryana	NHPC	Punjab	
HP	Rosa(Reliance) (Field data)	BBMB	
Rajasthan	Koteshwar HEP (Field data)		
	ADANI (Kawai)		
	Rihand NTPC		

PFR as per generators field data

Primary Frequency Response by Generators during Grid Event at Bhadla(PG) on 15th Nov 2021:

Sr. No	Generating stations	FRC as per generator data (in %)	FRC as per SCADA data at NRLDC (in %)	Response category/Remark
1	Singrauli Unit 6	13.18	3	Unsatisfactory response
2	Singrauli Unit 7	15.29		
3	TSPL	70	3	Satisfactory response
4	Rosa TPS	16.58	-3	Unsatisfactory response
5	Kawai (Adani) Unit 1	65.52	33	Unsatisfactory response
6	Kawai (Adani) Unit 2	-2.39		Poor response
7	Rihand Unit 3	51.42	15	Unsatisfactory response
8	Rihand Unit 5 Rihand Unit 6	11.66 0	0	Poor response
9	Koteshwar HEP	23.35	Suspected SCADA data	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.

It is to be noted that in spite of discussion in 190th OCC meeting for the above mentioned event, only HP, Rajasthan, Rihand and Kawai has share the FRC of their control area. No information has been received from other utility.

NRLDC representative informed that 65% response is obtained from Unit#1 of Kawai (Adani).

Adani representative informed that response form Unit#2 was not there due to activity of valve maintenance.

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.

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

In last 11 OCC meetings, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

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

It may be noted that Tehri HEP conducted PSS tuning/ Step response test of their units and submitted report. However, no further updates have been received from other utilities till date.

It is to be noted that as per regulation 5.2(k) of IEGC, Power System Stabilizers (PSS) in AVRs of generating units (wherever provided), shall be got properly tuned by the respective generating unit owner as per a plan prepared for the purpose by the CTU/RPC from time to time.

In 190th OCC meeting, Members were requested to accord due priority in this regard and update about their future plan for PSS tuning by 30th December, 2021 and it was decided to call a separate meeting for detail discussion on this matter.

NRLDC representative informed that all the units who have done Step response test before 2018 were requested to plan the exciter step-response test in Quarter 4 of 2021-22 and submit the tentative schedule of step-response test on the units with NRPC/ NRLDC. He further informed that till date Schedule has been received from Rajasthan and UP Control area. He further requested that members may kindly Accord due priority in this regard and update about their future plan for PSS tuning as there is no progress despite including this agenda in every OCC meeting and a separate meeting may be call for detail discussion on this matter.

Members agreed for the same

34. Mock black start exercises in NR:

As per Indian Electricity Grid Code (IEGC) clause 5.8(b) “Mock trial runs of the procedure for different sub-systems shall be carried out by the Users/ CTU/ STU at least once every six months under intimation to the RLDC”.

Mock Black-start exercise of power stations therefore needs to be carried out in-order to ensure healthiness of black start facility. The winter months are lean hydro period and therefore appropriate time to carry out such exercises.

Therefore, the schedule of mock exercise dates for different hydro & Gas power station is proposed. The power stations may confirm and inform to all the concerned persons of control center/ substations to facilitate the exercise.

The proposed schedule for the Mock Black-start exercise is as follows:

Hydro Power Stations:

Date	Revised Schedule date	Name of stations	Comment and Remarks
26-Nov-21		* Uri-I, II HEP, Lower Jhelum HEP, Pampore GT's, Upper Sindh and Kishanganga.	Yet to be carried out. No information has been received from J&K about URI-I, Uri-II. Integration of Mock black start exercise in SCADA system at Kishanganga power station yet to be done by BHEL (OEM). BHEL is being pursued for its expedition. Hence the Mock exercise at Kishanganga shall be possible only after completion of above by OEM.
01-Dec-21	28-Dec-21	* Dhauliganga	Conducted successfully except a heavy jerk at Dhauliganga HEP is observed during synchronization at Bareilly end.
04-Dec-21	23-Dec-21	Bairasiul	To be carried out. As requested by HP SLDC.
08-Dec-21		*Sewa-2	Mock Black start exercise is not possible as Power Station is under complete shutdown due to HRT repair works..
10-Dec-21	During March 2022	* N. Jhakri and Rampur	Yet to be carried out. As requested by Jhakri HEP & HP SLDC.
15-Dec-21	29-Dec-21	Karcham and Baspa	Exercise unsuccessful due to tripping of Wangtoo-kala Amb line during island build up.
17-Dec-21	After 15 Jan 2022.	*Budhil	Yet to be carried out. As discussed with Budhil HEP the exercise is planned to be carried out after 15th January, 2022.
22-Dec-21		Parbati-3 and Sainj	Yet to be carried out.
24-Dec-21		*Salal	Yet to be carried out. No information has been received from J&K for load management.
29-Dec-21	During March 2022	*Chamera-3	As requested by NHPC.
31-Dec-21	19th January, 2022	Koteshwar	As requested by Koteshwar HEP.
05-Jan-22	After 25 Jan 2022.	Chamera-1 and Chamera-2	Considering the proposed complete s/d of CH-1 PS for HRT inspection w.e.f. 01st Dec. 2021, the mock black start exercise may be postponed and same may be scheduled after 25 Jan 2022.
08-Jan-22	Third week of	Malana-2, AD Hydro and Phozal	Yet to be carried out.

Date	Revised Schedule date	Name of stations	Comment and Remarks
	January, 2022		
12-Jan-22		Tehri	Exercise carried out successfully.
15-Jan-22	After 14 Feb 2022	Koldam	Yet to be carried out. As discussed with Punjab SLDC the exercise is planned to be carried out after 14th February, 2022 (due to election in Punjab).

* Mock Black start exercise not carried out during Year 2020-21.

Mock Black start procedure circulated during last exercise/ previous year may be used. The unit to be selected for black start, may preferably be different from the one tested during last year exercise. Also, **Constituents are requested to adhere to the finalized schedule of mock exercises during the current season**.

Gas Power Stations:

Date	Name of stations
19-Jan-22	Anta GPS
21-Jan-22	*Auraiya GPS
28-Jan-22	*Dadri GPS

As informed by Bawana GPS, it does not have black start capability.

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

Sl. No.	Utility	Hydro Power Station	Installed Capacity (MW)
1	J&K	Baglihar	3x150
2		Baglihar stage-2	3x150
3		Lower Jhelum	3x35
4		Upper Sindh	2x11+3x35
5		Larji	3x42
6		Bhabha	3x40
7		Malana -I	2x43
8		Baspa	3x100

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

During last winter, SLDCs had been requested to carry out mock drills in respect of intra-state generators and share their reports. However, the report of such exercises was not received except for Rihand Hydro in Uttar Pradesh. The information may please be shared by SLDCs and program for this year's mock black start exercises may please be apprised to NRLDC.

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

NRLDC representative informed that mock black start exercise has been carried out successfully at Tehri and Dhauliganga.

NTPC representative informed that Black start exercise of gas station under their control area will be carried out soon.

NRLDC representative suggested to all the constituents to adhere with the planned schedule. State control area were again requested to conduct the mock black start exercise in their respective area. All utilities were requested to share the schedule of mock exercise within 15 days to NRPC/NRLDC.

35. Revision of document for Reactive Power Management for Northern Region:

Reactive Power Management document for Northern region has been revised on 30th Dec 2021 & updated document link is as below:

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

NRLDC letter in this regard is attached as **Annexure-B.XIV** of agenda.

Document is password protected and password was already informed to all the NR constituents through letter dated 30th Dec 2021.

All the members agreed to share the details/ feedback.

NRLDC representative once again requested to all the utilities to prepare the internal document for utilities own use.

36. Revision of document for System Restoration Procedure (SRP) for Northern Region:

System restoration procedure document for Northern region has been revised on 31st Jan 2021 & updated document link is as below:

https://nrldc.in/wp-content/uploads/2021/01/System-Restoration-Procedure_NR_2021.pdf

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

- Constituents were asked to provide the feedback, suggestion and updated information by 31st Dec 2021.
- Data from Tehri has been received till date.
- It is once again requested to all the NR constituents to provide the feedback, suggestions and updated information's by 15th Jan 2022.

All the members agreed to share the details/ feedback.

Utilities are requested to share the details.

NRLDC representative once again requested to all the utilities to prepare the internal document for utilities own use.

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.I.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 — Dec-2021 ◎ HARYANA — Aug-2021 ◎ HP — Mar-2021 ◎ J&K and LADAKH — Not Available ◎ PUNJAB — Aug-2021 ◎ RAJASTHAN — Dec-2021 ◎ UP — Nov-2021 ◎ UTTARAKHAND — Dec-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 — Dec-2021 ◎ HARYANA — Dec-2021 ◎ HP — Dec-2021 ◎ J&K and LADAKH — Not Available ◎ PUNJAB — Mar-2021 ◎ RAJASTHAN — Sep-2021 ◎ UP — Dec-2021 ◎ UTTARAKHAND — Dec-2021 ◎ BBMB — Dec-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 — Nov-2021 ◎ RAJASTHAN — Dec-2021 ◎ UP — Nov-2021 ◎ NTPC — Sep-2021 FGD status details are enclosed as **Annexure-A.I.II.** All States/utilities are requested to furnish updated status of FGD installation progress on monthly basis.
5	Information about variable charges of all generating units in the Region	The variable charges detail for different generating units are available on the MERIT Order Portal.	All states/UTs are requested to submit daily data on MERIT Order Portal timely.

6	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: July 2022 (90% supplies received from GE and rest is expected by Feb'22)
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection (delay due to pending supply of reactor bushings). GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection (delay due to pending supply of rector bushings). GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Tender has been invited in first week of Jan'22.
xi	RAJASTHAN	Akal	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment forwarded to NLDC, POSOCO on dt. 29.04.2021. Targeted to be completed by March 2022.
xii	RAJASTHAN	Bikaner	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment forwarded to NLDC, POSOCO on dt. 29.04.2021. Targeted to be completed by March' 2022.

xiii	RAJASTHAN	Suratgarh	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. Case for 2nd installment forwarded to NLDC, POSOCO on dt. 29.04.2021. Targeted to be completed by March 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Technical bid opened on dt.22.10.2021 & Price bid opened on 10.01.22. Order likely to be placed in Feb' 2022.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Installment received on dt.19.02.21. Technical bid opened on dt.22.10.2021 & Price bid opened on 10.01.22. Order likely to be placed in Feb' 2022.

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	Dec'21	Updated in 188th 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	Mar'22	197 out of 198 Nos.Tower erected.Stringing of 113.56/115.87 km is completed.
3	Sikar 400/220kV, 1x 315 MVA S/s	2 Nos. of 220 kV bays	Commissioned (date not available)	Not available	Feb'22	Work order was placed on dt. 13.04.2020 to M/s A to Z Ltd. Work started on dt. 4.12.2020. S/S-32/32, T/E-31/32 (T/E at 27 no. location was pending due to Rajasthan High Court stay), T/S- 7.62/8.122 km completed. Now the stay has been vacated and balance work started. Tentative completion of work / line charging is Feb – 2022, as forest clearance is awaited.
4	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned (date not available)	220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line	Mar'22	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	Jan'23	The existing scheme has been revised to construction of 220kV Transmission line on Multi-circuit Towers. The work has been awarded on 04.01.2022. A total of 4 No. 220kV bays shall be utilized i.e. 2 Nos. for 220/132kV. Kala Amb and 2 Nos. 220/132/33kV Giri Substation.

FGD Status

Updated status of FGD related data submission

NTPC (30.09.2021)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (20.12.2021)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (20.12.2021)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (09.12.2021)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (22.10.2021)
Lalitpur TPS
Lanco Anpara Power Ltd. (22.10.2021)
ANPARA-C TPS
HGPCL (17.12.2021)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS
Adani Power Ltd. (28.10.2021)
KAWAI TPS
Rosa Power Supply Company (22.10.2021)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (03.01.2022)
Prayagraj TPP
APCPL (30.09.2021)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB
NTPC
DADRI (NCTPP)
Talwandi Sabo Power Ltd.
TALWANDI SABO TPP
L&T Power Development Ltd.
Nabha TPP (Rajpura TPP)

Target Dates for FGD Commissioning (Utility-wise)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-08-2020), 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)
HGPCL	PANIPAT TPS U#6 (Target: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021)
NTPC	DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-06-2022), DADRI (NCTPP) U#6 (Target: 30-06-2022), RIHAND STPS U#1 (Target: 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: 31-03-2023), SINGRAULI STPS U#2 (Target: 31-03-2023), SINGRAULI STPS U#3 (Target: 31-03-2023), SINGRAULI STPS U#4 (Target: 31-03-2023), SINGRAULI STPS U#5 (Target: 31-03-2023), SINGRAULI STPS U#6 (Target: 31-01-2023), SINGRAULI STPS U#7 (Target: 31-01-2023), UNCHAHAR TPS U#1 (Target: 30-09-2023), UNCHAHAR TPS U#2 (Target: 30-09-2023), UNCHAHAR TPS U#3 (Target: 31-12-2023), UNCHAHAR TPS U#4 (Target: 31-12-2023), UNCHAHAR TPS U#5 (Target: 31-12-2023), UNCHAHAR TPS U#6 (Target: 30-09-2022), MEJA Stage-I U#1 (Target: 31-12-2022), MEJA Stage-I U#2 (Target: 31-12-2022), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022)

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 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: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-10-2024), 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)
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)

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(सड़क परिवहन एवं राजमार्ग मंत्रालय, भारत सरकार)
परियोजना कार्यान्वयन इकाई – भिवानी
National Highways Authority of India
(Ministry of Road Transport & Highways, Govt. of India)
Project Implementation Unit – Bhiwani
खेरड़ी मोड, एनएच 152डी, रोहतक भिवानी रोड (हरियाणा) – 124113
Kherdi Mor, NH-152D Rohtak-Bhiwani Road (Haryana) – 124113
फोन / Phone: 01258-296005, वेबसाइट /Website: www.nhai.gov.in,
ईमेल / Email: piubhiwani@nhai.org, piubhiwani@gmail.com

भारतमाला
प्रगति के पथ पर अग्रसर

भा रा रा प्रा NHAI
सड़कें ही नहीं, राष्ट्र का निर्माण भी

भाराराप्रा / पकाईभि / रा.रा.–152डी / 20008 / 2 / 2022 / 8404 17-01-2022

सेवा में,

Member Secretary,
Northern Region Power Committee,
18-A, Shaheed Jeet Singh Sansanwal Magar,
Katwaria Sarai, New Delhi

विषयः Construction of Six Lane access controlled highway (NH-152D) starting from Junction with NH-334B (Charki Dadri - Jhajjar section) near Charkhi Dadri to Junction with Rewari - Kanina road (SH-24) near Kanina [Ch. 165 + 000 to 200 + 000 ; length 35 km] on EPC mode under Bharatmala Pariyojana in the State of Haryana (Pkg-7) - **Outage of relocation/height raising of 400 kV Mahendragarh-Dhanonda Transmission line at Ch. 195+200 falling in village Dhanonda, Mahendragarh - reg.**

संदर्भः M/s ATIL letter no- ATIL/HVDC/M-K/21-22/31 dated 15-01-2022

महोदय,

This has reference to the above letter in the captioned subject. Trans Haryana 6 lane Greenfield project of NH-152D is being developed between Ismailabad (Gangheri) and Narnaul which is a part of Ambala Kotputli National Economic Corridor under the most prestigious project of Bharatmala Pariyojana of Govt. of India. The said project is high-end priority project of Government of India which is being monitored directly by PMO & is flagged on Pragati portal for its review and is targeted to be inaugurated in the month of March, 2022.

It is intimated that there is a 400kV Mohindergarh-Dhanoda line (AC line) falling in the main carriageway of NH-152D in PKG-7 at NH Chainage 195+200 which is required to be relocated. The estimate for the said line has already been approved by Competent Authority of NHAI and the approved amount has been deposited with M/s ATIL. The civil foundation work of 400kV Mohindergarh-Dhanoda line (AC line) has been completed by M/s ATIL and the site is ready for erection of tower. M/s ATIL vide letter dated 08.06.2021 had submitted that transmission loss charges amounting to Rs. 5.79 Lakhs for outage for 120 hours is to be deposited by NHAI for shifting the above-mentioned line.

In this regard, it is submitted that the subject project is in its advanced stage and is nearing completion with physical progress of around 90% and non-shifting of said tower is adversely affecting the progress of the project inter-alia completion of the project as it is falling in the main carriage way of the alignment.

As per para 5.3 of MoRTH Office Memorandum dated 16.08.2021, it is mentioned that *"In case of projects of national importance (NHAI projects), deemed availability may be given for the shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown."*

भाराराप्रा / पकाईभि / रा.रा.–152डी / 20008 / 2 / 2022 / 8404 17-01-2022

In view of the above and the subject project being of National Importance, it is therefore requested that deemed availability may please be consented for the shutdown of 400kV Mohindergarh-Dhanoda line (AC line). The period of shutdown (**for 120 hours**) would be taken between 5th Feb, 2022 to 15th Feb, 2022 suitably so that the project work may be completed within stipulated time.

सधन्यवाद!

भवदीय

17/1/22.

(के०एम०शर्मा)
परियोजना निदेशक

संलग्नः– यथोक्त

प्रतिलिपीः निम्न को सूचनार्थ एवं आवश्यक कारवाई हेतु प्रेषित।

1) महाप्रबंधक(तक०), सह क्षेत्रीय अधिकारी, क्षेत्रीय कार्यालय -दिल्ली।
2) M/s Adani Power (Mundra) Limited
3) M/s Adani Transmission (India) Ltd.
4) Authority Engineer M/s FP India PMC Services Pvt Ltd. (AE-3)
5) Contractor M/s GAWAR-SCCPL(JV) (Pkg-07)

adani
Transmission

Ref: - ATIL/HVDC/M-K/21-22/31

Date: 15.01.2022

To,
Project Director
National Highway Authority of India
Project Implementation Unit (PIU)-Bhiwani
Kherdi Mor, NH152D, Rohtak- Bhiwani Road (Haryana)-124113

भा०रा०रा०प्रा०प०का०ई०-भिवानी
आवक सं. 10665 दिनांक 15-01-22

	प्रबंधक (तक)								लेखाकार		
	उप प्रबंधक (तक)			1	2				IT Expert	कानूनगो/ पटवारी	
	स्थल अभियन्ता								OA	Steno	
	1	2	3	4	5	6	7		1	2	1	2

फा.सं. 20008/2 प.नि.

Kind Attn: Mr. K.M. Sharma

Subject: Construction of Six –Lane acces controlled highway (NH-152D) starting from Junction with NH-334B (Charkhi Dadri-Jhajjar Section) near Charkhi Dadri to Junction with Rewari-kanina road (SH-24) Near Kanina(ch. 165+000to 200+000; length 35KM) on EPC mode under Bhartmala Pariyojna in the state of Haryana(Pkg-7) – Outage of relocation/height raising of electrical HT Towers/Lines.

Ref:-

1. Our letter ATIL/HVDC/M-K/21-22/40 dated 17-12-2021
2. Your letter NHAI/PIU/NH152D/20008/1/2021/7867 dated 23.11.2021
3. Your letter NHAI/PIU/NH152D/20008/1/2021/Pkg-7/Elec./6671 dated 05.08.2021
4. Our letter ATIL/HVDC/M-K/21-22/5 dated 08.06.2021

Dear Sir,

With reference to above subject, ATIL had submitted transmission loss of Rs. 6.44 Crore for both AC and HVDC lines outage for 120 hours and 84 hours respectively vide its letter referred above at 4. In this regard we wish to inform you that these are estimated transmission loss however, actual financial loss will depend on the actual outage hours and same shall be borne by NHAI as per actuals.

Further, the above outage charges were submitted considering the works to be executed in single outage for both AC and HVDC line. However, as understood from NHAI that there is priority of the AC line shifting and HVDC line work cannot be taken simultaneously due to the unresolved ROW. Hence, in this regard we wish to inform you that civil foundation work for the AC line 400kV Mohindergarh-Dhanoda line is completed and site is ready for the erection, stringing work which require approximate outage of 120 Hours. The transmission availability loss for the 120 Hours already conveyed vide our letter referred above at 4 which is amounting to Rs. 5.79 Lacs.

In view of above, the shifting work for 400kV Mohindergarh-Dhanoda line can be taken up and outage can be proposed in the Feb-22/March-22 upon confirmation of following from NHAI:

1. Confirmation letter from NRPC regarding the deemed availability for the outage to ATIL or deposit of the outage charges before 15 days of outage.
2. NOC from respective generating company (APMuL) regarding the outage. APMuL has already conveyed their letter APMuL/NHAI/23062021/1 dated 23rd June-21

Adani Transmission (I) Ltd
Plot No. 83, Adani House,
Sector-32, Gurgaon,
Haryana-122001, India
CIN: U40101GJ2013PLC077700

Tel +911664257126
Fax +911664257126
Info@adani.com
www.adani.com

Registered Office: "Adani Corporate House", Shantigram, Near Vaishno Devi Circle, S. G. Highway, Khodiyar, Ahmedabad-382421

adani
Transmission

Also, we seek NHAI intervention in getting the outage approval from NRPC as we propose to take the outage between 24th Feb-22 to 28th Feb-22.

Further, our request is to resolve the Right of Way issues in 33kV Earth Electrode Mohindergarh Kaithal Line so that entire outage activity can be taken up in one go.

Thanking You,

For Adani Transmission (I) Ltd

Authorized Signatory

Encl:

1. Our letter no. ATIL/HVDC/M-K/21-22/5 dated 08.06.2021
2. APMuL letter no. APMuL/NHAI/23062021/1 dated 23rd June-21

Adani Transmission (I) Ltd
Plot No. 83, Adani House,
Sector-32, Gurgaon,
Haryana-122001, India
CIN: U40101GJ2013PLC077700

Tel +911664257126
Fax +911664257126
Info@adani.com
www.adani.com

Registered Office: "Adani Corporate House", Shantigram, Near Vaishno Devi Circle, S. G. Highway, Khodiyar, Ahmedabad-382421

adani

Transmission

Ref: - ATIL/HVDC/SIKAR/20-21/5 Date: -08-06-21

To,
Project Director
National Highway Authority of India
Project Implementation Unit (PIU)-Bhiwani
H.No-1397-P, Huda Sector-13,
Bhiwani (Haryana)-127021
Contact No:-01664-256100, 101

Kind Attn: Mr K. M. Sharma

Subject: Construction of Six –Lane access controlled highway (NH-152D) starting from Junction with NH-334B (Charkhi Dadri-Jhajjar Section) near Charkhi Dadri to Junction with Rewari-Kanina road (SH-24) Near Kanina (ch. 165+000 to 200+000; length 35KM) on EPC mode under Bharatmala Pariyojna in the state of Haryana (Pkg-7).- Revised Transmission Loss Charges.

Ref.: -

1. Our letter no. ATIL/HVDC/SIKAR/20-21/60 dated 17-12-2020
2. Our letter no. ATIL/HVDC/SIKAR/20-21/69 dated 26-02-2021
3. CEA mail dated 27th May-2021
4. CEA mail dated 01st June-2021

Dear Sir,

With reference to the above subject, we had submitted the work estimates of the realignment/shifting work of towers under our transmission line 400kV D/C Mahendergarh-Dhanoda line and 33kV Electrode Mahendergarh-Kaithal line which is a part of our 500kV HVDC Mundra-Mahendergarh line. Considering the work require outage, we had submitted tentative transmission loss charges estimate which was calculated considering minimum outage duration of 5 Days (120Hrs) for 400kV D/C Mahendergarh-Dhanoda Line and 4 Days (84Hrs) monopole operation for 500kV HVDC Mundra-Mohindergarh Line in the month of March-21 with works to be executed in single outage.

In this regard we wish to inform you that we had submitted transmission loss charges for our 500kV HVDC Mundra-Mahendergarh Line considering the monopole operations however, OEM has opined that such running is not recommended for longer durations (i.e. > 4Hrs) due to possibility of higher stresses in the terminal equipment in case of fault near to Mahendergarh inverter terminal and disposal of number of faults in the station grounding is not recommended. Hence, bi-pole outage of our 500kV HVDC Mundra-Mahendergarh Line required instead of monopole outage.

Adani Transmission (I) Ltd
House No 1671p, Sector 13
HUDA Colony, Bhiwani-127021
Haryana, India

Tel +911664257126
Fax +911664257126
Info@adani.com
www.adani.com

adani
Transmission

In view of above total transmission loss charges revised to amounting Rs. 6,44,80,993/- (Six Crore Forty Four Lacs Eighty Thousand Nine Hundred Ninety Three Only) considering minimum outage duration of 5 Days (120Hrs) for 400kV D/C Mahendergarh-Dhanoda Line and 4 Days (84Hrs) bi-pole operation for 500kV HVDC Mundra-Mohindergarh Line.

The availability loss amount may vary as per the actual outage duration and the month in which outage is availed. With the above, other terms and conditions as communicated earlier vide our letter referred above at ref-1 remains unaltered.

Recently, we have also received the CEA request to provide the nos. of days basis for both lines and annual fixed transmission charges for 400kV D/c Mahendergarh-Dhanoda line vide mail dated 01st June-21. Hence, same is being provided from end along with this revised transmission loss calculations.

Further, we reiterate that this is an inter-regional line connected with Mundra Power Station, any outage of this line directly affects the evacuation of power from the station and leads to generation loss. Hence for any generation related loss that may occur due to this modification work, you are requested to separately take up the issue with generating company. Details of the executive from the respective generating company is as below:

i) Mr. Anshul Garg (ID: Anshul.garg@adani.com, Mob: +91 8980802414)

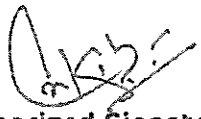
ATIL would like to receive a clear communication from NHAI and Mundra Power Station for their clearance for permission of outage without any cost implications to ATIL.

As you are aware that rates are volatile in nature hence, the validity of the rates of our offer was up to 10-03-2021. It is requested to deposit the work estimates for commencement of work.

Assuring you of our best services at all time.

Thanking You,

for Adani Transmission (India) Ltd.



(Authorized Signatory)

Encl.: 1.Transmission Loss calculation (Annexure-1 &

2) CC to: 1. Northern Region Power Committee
2. APMuL

Adani Transmission (I) Ltd
House No 1671p, Sector 13
HUDA Colony, Bhiwani-127021
Haryana, India

Tel +911664257126
Fax +911664257126
Info@adani.com
www.adani.com

Summary of Transmission Loss

500 kV HVDC Mundra-Mohindergarh

Case No.	SPV	Line Name	Total Outage		Availability Loss	YTD% at the end of FY 21-22
			Outage in Days	Outage in Hrs.	Incentive Loss in INR	
1	ATIL Asset-1 HVDC	500 kV HVDC Mundra-Mohindergarh-Pole-1	4	84	63,902,404	98.52
		500 kV HVDC Mundra-Mohindergarh-Pole-2	4	84		

400 kV D/C Mohindergarh-Dhanoda Line

Case	SPV	Line Name	Total Outage		Availability Loss	YTD% at the end of FY 21-22
			Outage in Days	Outage in Hrs.	Incentive/ ARR Loss	
2	ATIL Asset-1 HVAC	400 kV D/C Mohindergarh-Dhanoda Line-1	5	120	578,589	99.737
		400 kV D/C Mohindergarh-Dhanoda Line-2				

Total Transmission Loss (Case 1 + Case 2) 64,480,993

* Note:

1) As per CERC regulations availability calculation of ATIL Asset-1 HVDC is on cummulative basis.

Detailed calculation of Transmission revenue loss

Annexure-I

A Calculation without NHAI work

Sl.No	FY 2020-21	%	Tariff	No. of Days in year	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	F.Y 21-22
	No. of Days in Month				30	31	30	31	31	30	31	30	31	31	28	31	
	Asset-1		6,790,322,000														
	±500 kV bipole Mundra-Mohindergarh , 400 kV Mohindergarh-Bhiwani (PG), Mohindergarh-Dhanonda & 400 kV D/C Mundra-Dehgam																Total Tariff + Incentive
1	Asset-1 - HVDC	95.58%	6,490,087,913	365	543,006,302	565,333,845	547,076,797	563,933,245	563,933,245	519,710,374	565,377,614	546,744,884	565,490,562	565,352,082	510,515,285	565,452,386	6,621,886,621
	Normative Availability for HVDC system-Asset-1				95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	
	Target Availability for HVDC System for the incentive		NATAF		97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	
	Actual Availability for HVDC system-Asset-1		TAFMn		99.23%	99.63%	99.75%	99.75%	99.75%	98.93%	99.12%	99.22%	99.31%	99.38%	99.43%	99.46%	

B Calculation with NHAI work

Sl.No	FY 2020-21	%	Tariff	No. of Days in year	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	F.Y 21-22
	No. of Days in Month				30	31	30	31	31	30	31	30	31	31	28	31	
	Asset-1		6,790,322,000														
	±500 kV bipole Mundra-Mohindergarh , 400 kV Mohindergarh-Bhiwani (PG), Mohindergarh-Dhanonda & 400 kV D/C Mundra-Dehgam																Total Tariff + Incentive
1	Asset-1 - HVDC	95.58%	6,490,087,913	365	543,006,302	565,333,845	547,076,797	563,933,245	563,933,245	519,710,374	565,377,614	546,744,884	501,757,883	563,426,854	510,785,192	564,897,981	6,557,984,237
	Normative Availability for HVDC system-Asset-1				95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	
	Target Availability for HVDC System for the incentive		NATAF		97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	97.50%	
	Actual Availability for HVDC system-Asset-1		TAFMn		99.23%	99.63%	99.75%	99.75%	99.75%	98.93%	99.12%	99.22%	98.04%	98.24%	98.39%	98.52%	

C Loss due to NHAI work

63,902,404

adani

Power

Ref. : APMuL/NHAI/23062021/1

Date : 23rd June 2021

Project Manager
National Highway Authority of India
Project Implementation Unit (PIU)-Bhiwani
H.No-1397-P, Huda Sector-13,
Bhiwani (Haryana) – 127021

Kind Attn.: Mr. K.M.Sharma

Sub.: Construction of Six -Lane access controlled highway (NH-152D) starting from Junction with NH-3348 (Charkhi Dadri-Jhajjar Section) near Charkhi Dadri to Junction with Rewari-Kanina road (SH-24) Near Kanina (ch. 165+000 to 200+000; length 35KM) on EPC mode under Bharatmala Pariyojna in the state of Haryana (Pkg-7).- outage of 500kV Bi-Pole Mundra-Mahendergarh Transmission Line.

Ref: (1) Letter from ATL to APMuL vide letter ATIL/HVDC/SIKAR/20-21/8 dated 14.06.2021
(2) ATL letter addressed to NHAI, Bhiwani no. ATIUHVDC/SIKAR/20-21/5 dated 08.06.2021

Dear Sir

We are in receipt of the letter u/r (1) from Adani Transmission Ltd. regarding the subject matter where in outage of HVDC Bipole is proposed for construction of NH-152D.

We would like to inform you that Adani Power Mundra Ltd. (APMuL) has a total installed capacity of 4620 MW & corresponding ex-bus capacity is 4285 MW.

Stage	Unit		Ex-bus Capacity (MW)	Connectivity	Remark
Stage - I	1,2,3,4	A	1200	STU	LT PPA with Gujarat
Stage - II	5 & 6	B	1234	CTU & STU	Merchant
Stage-III	7,8 & 9	C	1851	CTU	
			• 1495	CTU	LT PPA with Haryana
			• 40	Direct connectivity	LT PPA with MPSEZ
			• 316	CTU	Merchant
Total		D = A + B + C	4285		

APMuL Mundra has both CTU and STU connectivity for power evacuation in following manner:

Connectivity	Capacity (MW)
STU	3320
CTU	4000
• D/c of 400 kV Mundra – Sami – Dehgam	• 1500
• HVDC Bipole	• 2500
Total	**7320**

During normal circumstances, SLDC Gujarat allow us to export only 2750 MW through CTU network considering N-1 contingency of HVDC. In order to carry out the construction activity of NH-152D proposed by NHAI Bhiwani, the outage of HVDC Bipole has to be availed. The Gujarat SLDC shall only allow us to export 750 MW (Haryana Long Term) through CTU network considering N-1-1 contingency and balance power has to be routed through Gujarat STU network (GETCO).

Adani Power (Mundra) Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: L40100GJ1996PLC030533

Tel +91 79 2555 4444
Fax +91 79 2555 7177
info@adani.com
www.adanipower.com

adani

Power

Accordingly, we will have to seek open access for injecting generation from Unit 5 & 6 of APL Mundra TPP equivalent to 1234 MW through STU, as per the limit set by Gujarat SLDC.

This will entail an additional cost of around Rs. 1.76 Crore per day for four days (i.e. Rs. 7.05 Crore) as shown in table below. This additional cost is towards STU open access charges which are over & above the CTU open access charges which are already borne by APMuL

Sr. No	Item	Unit		Figure
1	APL Mundra U#5 & 6 generation capacity	MW	A	1234
2	Energy generated per day	kWh	B = A x 24 x 1000	29616000
3	STU Transmission Charges	Rs./kWh	C	0.3642
4	STU Transmission Losses (3.70%)	Rs./kWh	D	0.14
5	Total STU Transmission Charges & Losses	Rs./kWh	E = C + D	0.50
6	Total Additional Charges to be paid by APL Mundra per day to Gujarat SLDC	Rs.	F = B x E	14932387
7	Total outage days	Days	G	4
8	Total Additional Charges	Rs.	H = F x G	5,97,29,549
9	Applicable GST@18%	Rs.	I = H x 18%	1,07,51,319
10#	Final Additional Charges including GST	Rs.	J = H + I	7,04,80,868

Final additional charge is excluding 5th day outage of Mohindergarh-Dhanonda line, any additional charges liability due to outage of Mohindergarh-Dhanonda line shall be claimed by APMuL from NHAI, Bhiwani over & above mentioned charges.

The above charges have to be paid to Nodal Regional Load Despatch Centre (RLDC) as per the open access approval issued. In-case actual amount paid to RLDC is more or less than the amount calculated in above table, then, APMuL shall recover or refund the charges to NHAI, Bhivani as the case may be.

In case of any deduction made on account of IT TDS then NHAI, Bhivani shall ensure the revision of TDS return as per the actual additional charges.

We request you to kindly credit Rs. 7,04,80,868/- in APMuL bank account (details mentioned below) for commencement of work.

Beneficiary's Name	Adani Power (Mundra) Limited
Bank Name	State Bank of India
Branch & Name address	CCG Branch, Navrangpura, Ahmedabad
A/c No/Type	37537690079
Bank City	Ahmedabad
IFSC Code (11 Digit)	SBIN0004152

Yours faithfully
For **Adani Power (Mundra) Ltd.**

Authorized Signatory

Copy to: Adani Transmission Limited

Adani Power (Mundra) Ltd
Adani Corporate House
Shantigram, S G Highway
Ahmedabad 382 421
Gujarat, India
CIN: L40100GJ1996PLC030533

Tel +91 79 2555 4444
Fax +91 79 2555 7177
info@adani.com
www.adanipower.com

No. 2/7/2017-Trans-Pt(1)
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001
****

Dated- 16th August, 2021

OFFICE MEMORANDUM

Subject: **Minutes of the meeting taken by Secretary (Power) to discuss the issue of Supervision charges, Shutdown charges and preparation of estimates for shifting of power lines by private transmission companies- reg.**

The undersigned is directed to forward herewith the minutes of the meeting taken by Secretary (Power) to discuss the issue of Supervision charges, Shutdown charges and preparation of estimates for shifting of power lines by private transmission companies, on 11.08.2021 for information and further necessary action.

Encl: as stated.

(Goutam Ghosh)
Director (Trans)

To

1. Secretary(MoRTH), GoI, New Delhi.
2. Chairperson, CEA, New Delhi.
3. Chairman, NHAI, New Delhi.
4. CMD, PGCIL, Gurugram.
5. CMD, POSOCO, New Delhi.
6. COO, CTUIL, Gurugram.
7. DG, EPTA, New Delhi

Copy to: Sr. PPS/PPS/PS to Secretary(Power)/ AS(Trans)/ JS(Trans)/ Director(Trans), MoP.

Minutes of the meeting taken by Secretary (Power) to discuss the issue of Supervision charges, Shutdown charges and preparation of estimates for shifting of power lines by private transmission companies, on 11.08.2021.

A meeting was held under the Chairmanship of Secretary (Power) on 11.08.2021 to discuss the issues raised by Secretary, Ministry of Road Transport and Highways (MoRTH) vide his DO letter dated 02.08.2021 and by CMD, PGCIL related to supervision charges, cost estimates and shutdown charges levied by transmission licensees for shifting of transmission lines for NHAI projects. List of participants is attached at **Annexure – I**.

2. At the outset, Secretary (Power) welcomed all the participants and requested CEA to start the discussions. Representative of CEA made a presentation (copy at **Annexure-II**) highlighting the issues raised in the DO letter of Secretary, MoRTH and comments/status on these issues. Discussion/ decisions taken in the meeting are as under:

3. Supervision Charges:

3.1 It has been mentioned in the MoRTH's letter that private Transmission licensees levy Supervision Charges @15% of total Project Cost irrespective of the implementing agency. MoRTH requested to rationalize the supervision charges for private transmission developers in line with supervision charges levied by POWERGRID for shifting of transmission lines in NHAI projects.

3.2 It was noted that the supervision charges levied by POWERGRID are as below:-

NHAI Projects	Shifting works by concessionaire of NHAI	Shifting works by POWERGRID
Under Bharatmala Pariyojana	2.5%	2.5%
Other Projects of NHAI	2.5%	15%

3.3 It was generally agreed by private transmission developers to levy supervision charges in line with above supervision charges levied by POWERGRID for shifting of transmission lines for NHAI projects.

3.4 Representative of Torrent Power submitted that NHAI levies higher charges from private transmission licensees for crossing of National Highways compared to the charges levied from POWERGRID.

3.5 Member(Projects), NHAI submitted that this policy of NHAI was general in nature and not specific to transmission developers.

3.6 After detailed deliberations, it was decided that-

i. Private transmission developers would levy supervision charges for shifting of transmission lines for NHAI projects in line with supervision charges levied by POWERGRID (para 3.2), subject to the condition that NHAI shall not differentiate between private and public transmission developers in respect of charges levied

by them for crossing of National Highways by transmission lines.

ii. Based on decisions taken in the meeting, CEA shall issue Guidelines on Supervision charges to be levied by all transmission licensees for shifting of transmission line in case of NHAI projects.

4. Cost Estimates:

4.1 In the MoRTH letter dated 02.08.2021, it was pointed out that cost estimates submitted by private transmission developers for shifting works are on higher side and requested that CEA should vet these estimates in time bound manner (within 7 days)

4.2 It was informed by CEA that-

a) Cost Estimates for shifting of transmission line include (i) Supply Cost, (ii) Erection Cost, (iii) Uninstallation Charges, (iv) RoW charges, (v) Availability Charges, & (vi) Other Charges like Contingency, Administrative etc.

b) Cost estimates are based on BoQ of items/material/services

c) Generally both NHAI and Transmission licensees carry out survey and work out the route alignment and accordingly BoQ prepared.

d) Before vetting the Cost estimates, CEA examines the technical aspects including BoQ.

e) For examination of the cost estimates, POWERGRID's schedule of rates used on cost of items/services.

f) Cost estimates in respect of Right of Way/Crop/Tree compensation charges depend on several factors which varies from location to location and these charges are considered as per actual.

g) Normally CEA takes 30 working days to vet the cost estimates, provided the BoQ has been vetted by NHAI.

4.3 On the issue of using Schedule of Rate (SoR) of POWERGRID for vetting of cost estimates, CMD, POWERGRID informed that SoR is applicable for large volume of works, and should not be used for estimation of cost for shifting of lines, which is a small volume work. He informed that actual cost of shifting may be taken from POWERGRID on annual basis and it may be appropriately escalated (to reflect price increase in next one year) to vet the cost estimates. Representative of IndiGrid endorsed the views of POWERGRID.

4.4 After detailed deliberations, it was decided that-

i. CEA shall build and maintain a database in the beginning of every year, with the help of POWERGRID that will include rates for various items to be used in shifting of transmission line; and update it quarterly, with the help of change in indices and actual cost incurred in shifting of various lines.

ii. CEA shall vet the cost estimates within 15 days, after vetting of BoQ by NHAI.

5. Shutdown charges:

5.1 Secretary, MoRTH in his DO letter mentioned that shutdown charges are levied on MoRTH agencies for shifting of transmission lines. Till last year, the charges were about @ 2% of estimated costs, and now it has increased to about Rs 5 cr to 7 cr in some estimates. MoRTH requested MoP to give deemed availability certificate for waiving of these charges.

5.2 Representative of CEA informed that

i. CERC (Terms and Conditions of Tariff) Regulations, 2019 provide that the transmission elements under outage only due to following reasons shall be deemed to be available: "Shut down availed for maintenance of another transmission scheme or construction of new element or renovation/upgradation/ additional capitalization in existing system approved by the Commission".

ii. Presently Regional Power Committees (RPCs) do not provide deemed availability in cases of outages of transmission lines for construction of projects of NHAI/ Railways etc.

5.3 It was noted that generally customers of transmission lines are not affected by shutdown of a particular transmission line during the period of shifting of utilities, because of redundancy in the power system. Therefore, it was suggested that in case of projects of national importance (NHAI projects), deemed availability may be given for the shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown. It was also suggested that there is need for standardization of shutdown period, so that deemed availability period is not utilized for other than intended purposes.

5.4 After detailed deliberations, it was decided that

i. In case of NHAI projects, RPC Secretariat would provide deemed availability certificate for the shutdown period availed by transmission licensees for shifting of their transmission lines, provided that transmission customers are not affected by the shutdown of the line. Shutdown charges would be computed by CEA as per standard norms and would be included in the cost estimates to be provided to NHAI for shifting of lines.

ii. Decision at para 5.4(i) will be immediately implemented. CERC shall also be requested to suitably modify their Regulations, so that RPC Secretariat can issue deemed availability certificate for the shutdown period availed by transmission licensees for shifting of their transmission lines in NHAI projects, provided that transmission customers are not affected by the shutdown of the line.

iii. CEA shall standardize the shutdown period required for such shifting works, so that deemed availability period is not utilized for other than intended purposes.

5.5 A provision may be added in the Standard RfP for TBCB projects that the developer shall abide by the Guidelines of CEA w.r.t. shifting of transmission lines for NHAI projects and other projects notified by Ministry of Power.

6. CEA will issue formal guidelines in accordance with decisions taken in this meeting.

7. DG, EPTA suggested that a separate meeting may also be organized to resolve similar issues with Railways. EPTA was requested to send the details to Ministry of Power in this regard.

8. The meeting ended with thanks to chair.

*****

Annexure-I
F. No. 2/7/2017-Trans-Pt(1)

Date/Time of the meeting: 11.08.2021 at 1.00 pm
Venue: MS Teams Platform

Subject: **Minutes of the meeting taken by Secretary (Power) to discuss the issue of Supervision charges, Shutdown charges and preparation of estimates for shifting of power lines by private transmission companies- reg.**

List of Participants

Ministry of Power

1. Shri Alok Kumar, Secretary - in the chair
2. Shri Vivek Kumar Dewangan, Additional Secretary(Trans)
3. Shri Mritunjay Kumar Narayan, Joint Secretary (Trans)
4. Shri Goutam Ghosh, Director (Trans)
5. Shri Bihari Lal, Under Secretary(Trans)

Central Electricity Authority

6. Shri Goutam Roy, Member(PS)
7. Shri Ishan Sharan, CE
8. Smt. Manjari Chaturvedi, Director

NHAI

9. Shri Manoj Kumar, Member(Projects)

PGCIL

10. Shri K Sreekant, CMD
11. Smt. Seema Gupta, Director(Operations)
12. Shri Shyam Kumar, GM
13. Shri Ajit Kumar Bishnoi

POSOCO

14. Shri KVS Baba, CMD
15. Shri Debasis De, ED(NLDC)

CTUIL

16. Shri Subir Sen, COO
17. Shri Ashok Pal, ED

Representatives from EPTA

18. Shri Vijay Chhibber, DG
19. Shri Rohit Gera, Sterlite Power
20. Shri Harsh Shah, Indigrid
21. Shri Nihar Raj, Adani Power
22. Shri L N Mishra, Torrent Power
23. Shri TAN Reddy, Sterlite Power

*****

191st OCC Meeting

18.01.2022

प्रचालन समन्वय उपसमिति की बैठक
दिसम्बर - 2021

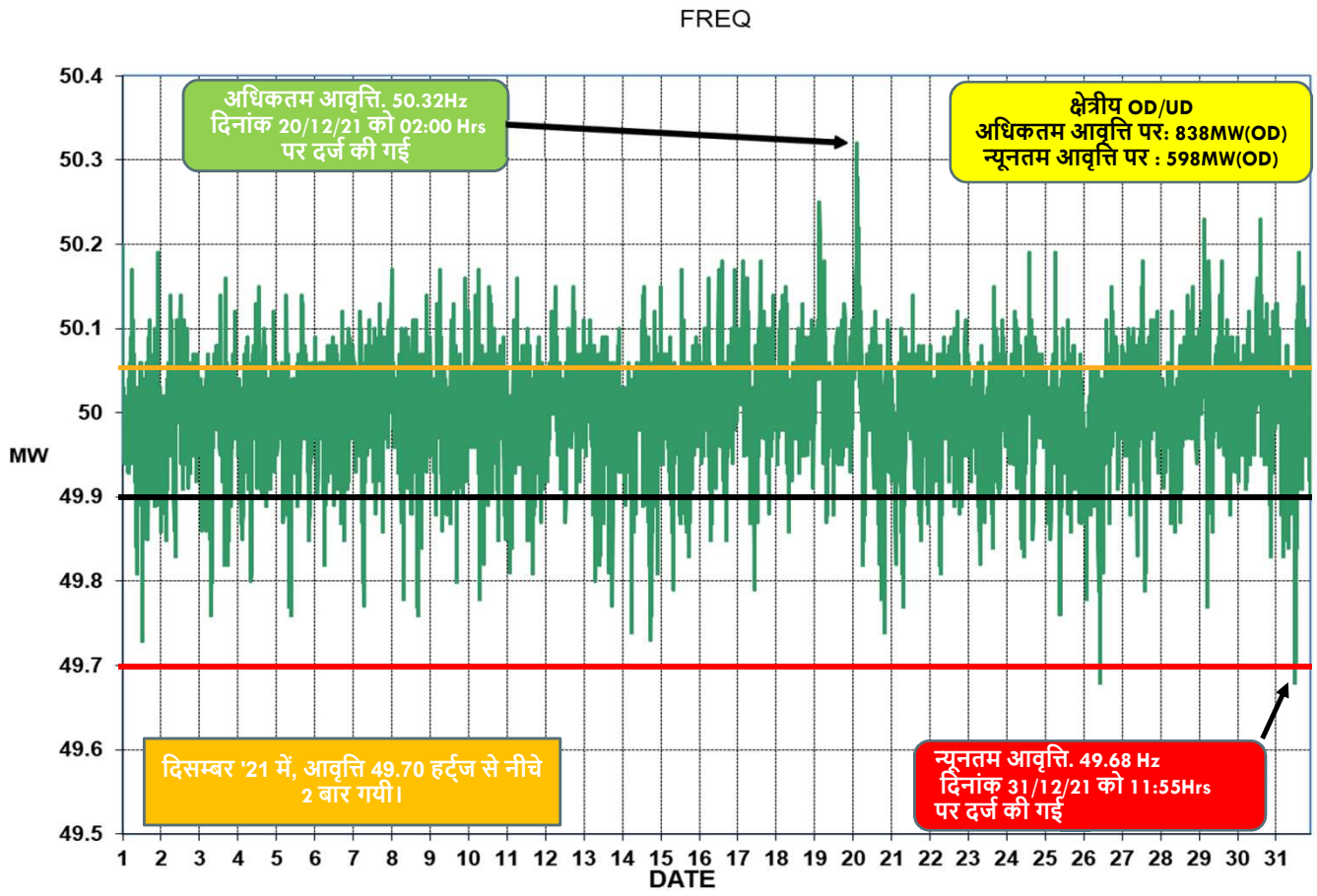
B.20

पिछले एक साल मे आवृत्ति की स्थिति

आवृत्ति बैंड	दिसम्बर 2020	जनवरी 2021	फरवरी 2021	मार्च 2021	अप्रैल 2021	मई 2021	जून 2021	जुलाई 2021	अगस्त 2021	सितम्बर 2021	अक्टूबर 2021	नवम्बर 2021	दिसम्बर 2021
< 49.7 Hz(%)	0.01	0.00	0.02	0.01	0.00	0.02	0.07	0.04	0.17	0.21	0.31	0.09	0.03
<49.8 Hz(%)	0.36	0.24	0.46	0.65	0.93	0.50	1.06	0.67	1.3	0.69	2.43	1.17	0.71
<49.9 Hz(%)	4.79	4.86	7.12	7.13	7.96	6.63	6.12	5.35	7.67	4.18	11.10	8.02	6.92
49.90-50.05 Hz(%)	**75.72**	**76.10**	**76.27**	**72.78**	**75.06**	**74.49**	**74.81**	**75.06**	**76.93**	**77.01**	**74.38**	**74.10**	**73.14**
50.05-50.10 Hz(%)	16.42	15.82	14.10	16.78	13.51	15.41	14.74	16.71	14.14	15.83	12.70	14.77	15.09
>50.10 Hz(%)	3.20	3.16	2.52	3.21	2.49	2.89	3.18	2.78	1.25	2.26	1.81	3.05	3.89
>50.20 Hz(%)	0.05	0.06	0.08	0.10	0.04	0.07	0.09	0.10	0.01	0.03	0.06	0.07	0.25
औसत आवृत्ति	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.01	50.00	50.00	49.99	50.00	50.00

B.20

दिसम्बर-2021 के दौरान आवृत्ति की स्थिति
(As per 5 Minute SCADA data)



B.20

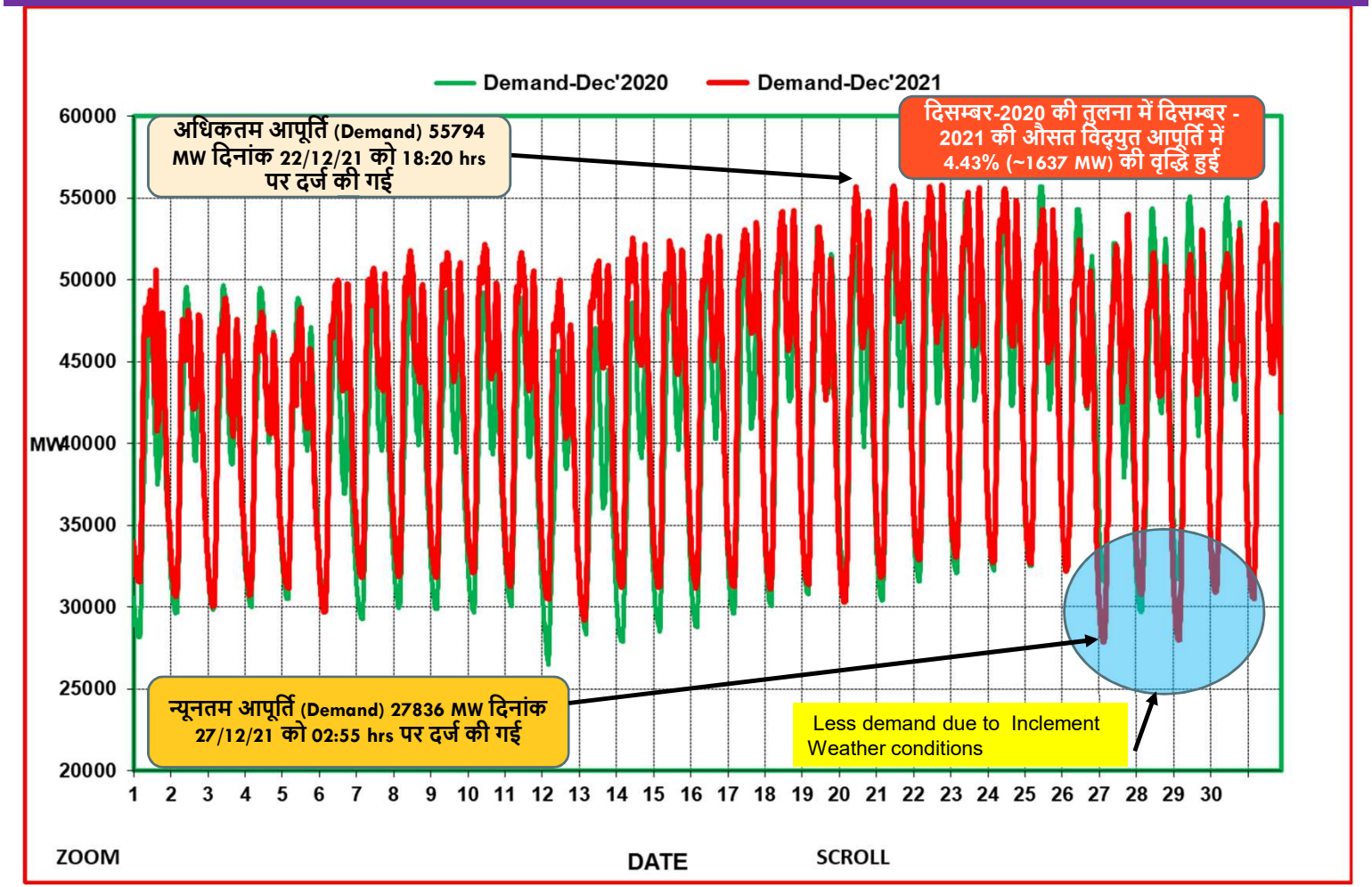
दिसम्बर-2021 के दौरान अधिकतम मांग (Demand Met), अधिकतम ऊर्जा खपत (Energy consumption) और अब तक का कीर्तिमान (राज्यों द्वारा जमा आंकड़ों के अनुसार)

राज्य	अधिकतम मांग (MW)	दिनांक / समय	रिकॉर्ड अधिकतम मांग (in MW) (upto Nov'21)	दिनांक / समय	अधिकतम ऊर्जा खपत (MU)	दिनांक	रिकॉर्ड अधिकतम ऊर्जा खपत (MU) (Upto Nov'21)	दिनांक
पंजाब	7329	08.12.21 at 09:30	13633	01.07.19 को 12:00 बजे	147.46	08.12.21	306.09	01.07.21
हरियाणा	7497	21.12.21 at 10:00	12120	07.07.21 को 14:45 बजे	139.04	22.12.21	266.15	07.07.21
राजस्थान	15696	24.12.21 at 10:00	14645	19.08.21 को 11:00 बजे	287.45	24.12.21	310.790	19.08.21
दिल्ली	4583	31.12.21 at 11:00	7409	02.07.19 को 15:35 बजे	74.02	31.12.21	147.10	02.07.19
उत्तर प्रदेश	18587	22.12.21 at 19:00	24795	16.07.21 को 23:00 बजे	324.55	22.12.21	514.49	07.07.21
उत्तराखंड	2318	28.12.21 at 09:00	2372	22.01.21 को 08:00 बजे	43.05	28.12.21	49.68	10.07.21
हिमाचल प्रदेश	1955	18.12.21 at 08:30	1931	23.01.21 को 10:00 बजे	36.16	17.12.21	36.90	29.12.20
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	2743	31.12.21 at 19:00	2680	20.01.21 को 19:00 बजे	57.52	31.12.21	55.30	16.01.21
चंडीगढ़	250	21.12.21 at 09:00	426	08.07.21 को 15:00 बजे	4.08	20.12.21	8.41	08.07.21
उत्तरी क्षेत्र #	55546	20.12.21 at 11:00	73183	18.08.21 को 13:00 बजे	1088.66	22.12.21	1650.07	07.07.21

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

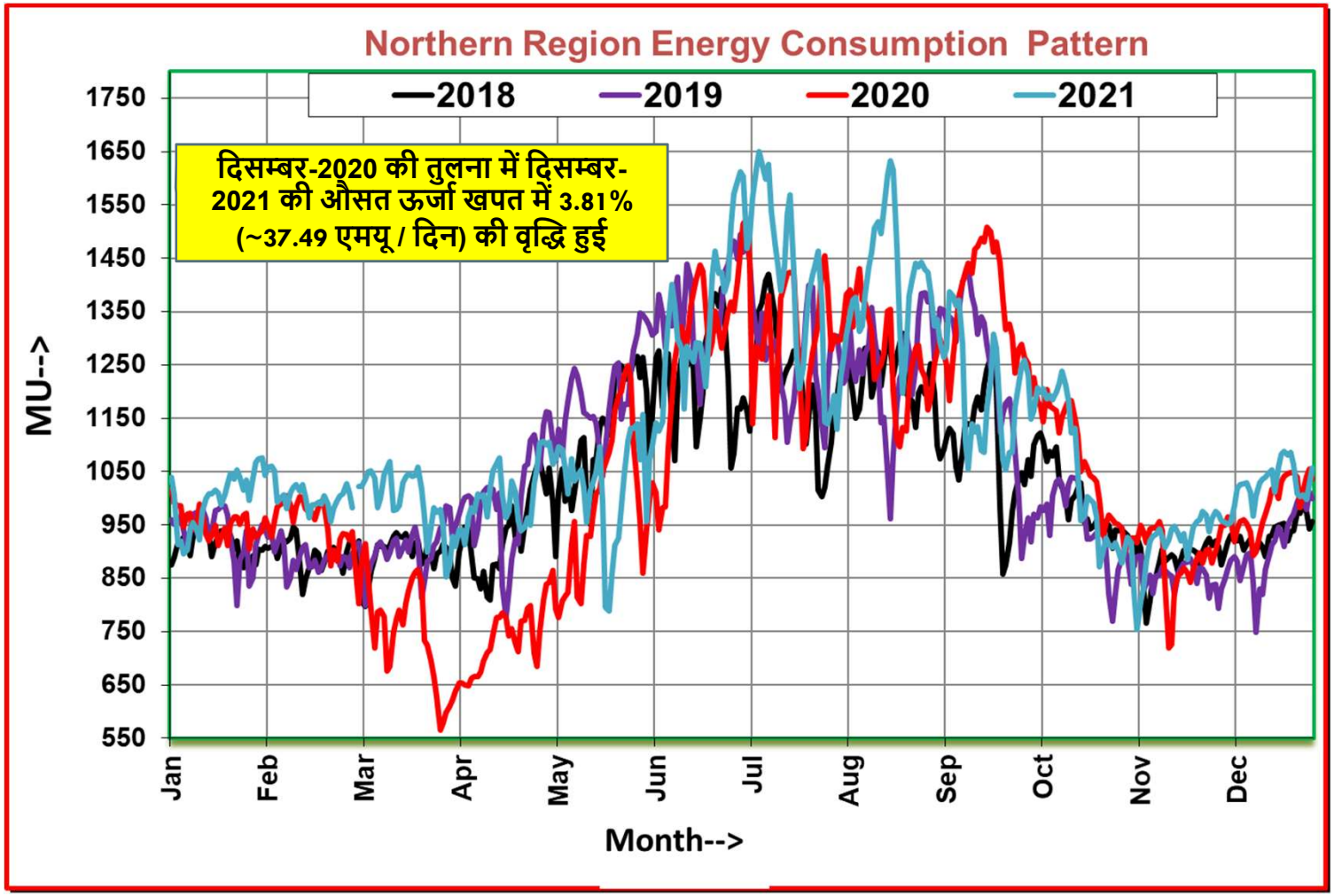
B.20

क्षेत्रीय विद्युत आपूर्ति (Demand) दिसम्बर 2020 बनाम दिसम्बर 2021 (As per 5 Minute SCADA data)



B.20

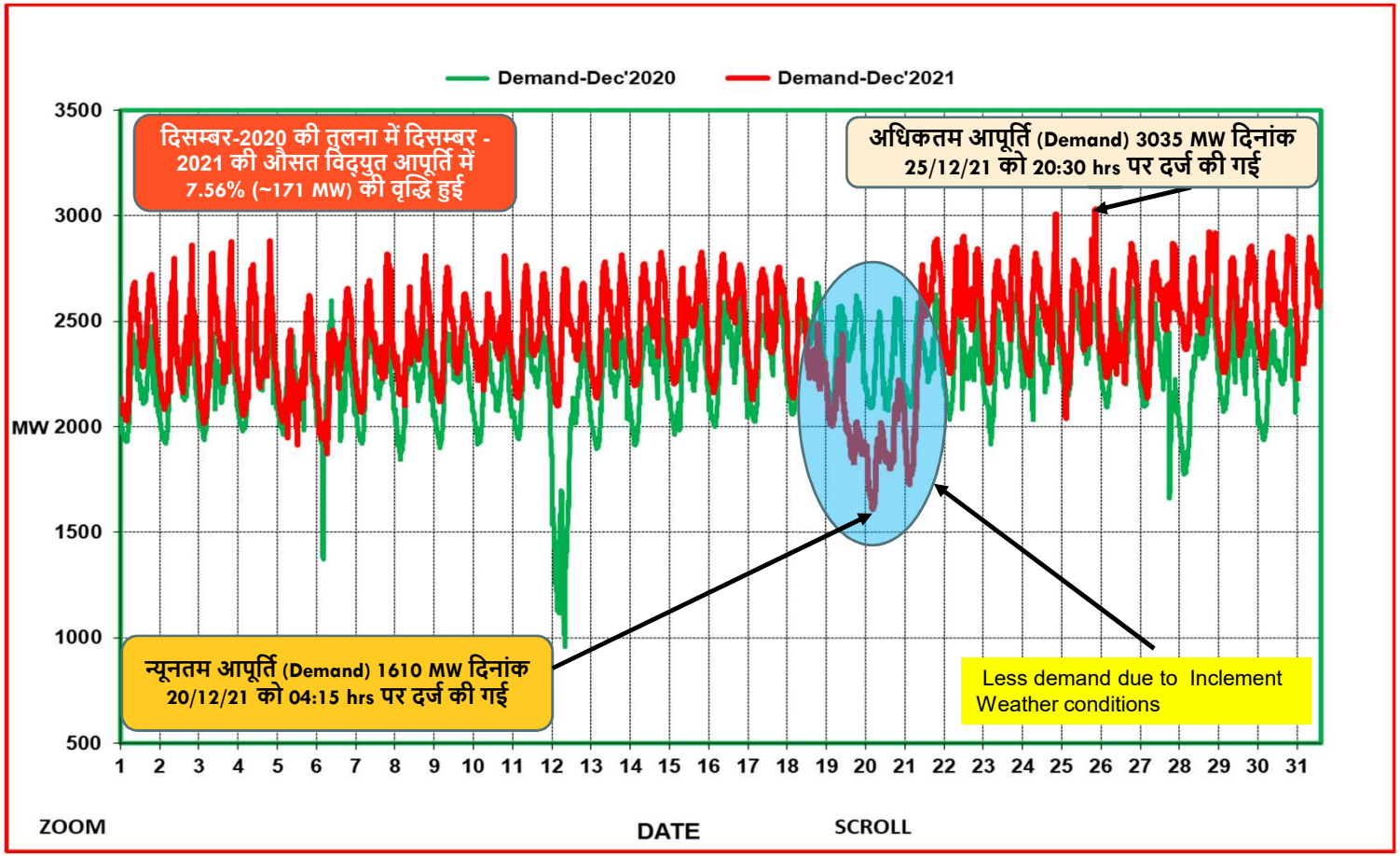
उत्तरी क्षेत्र की ऊर्जा खपत(MUs)



B.20

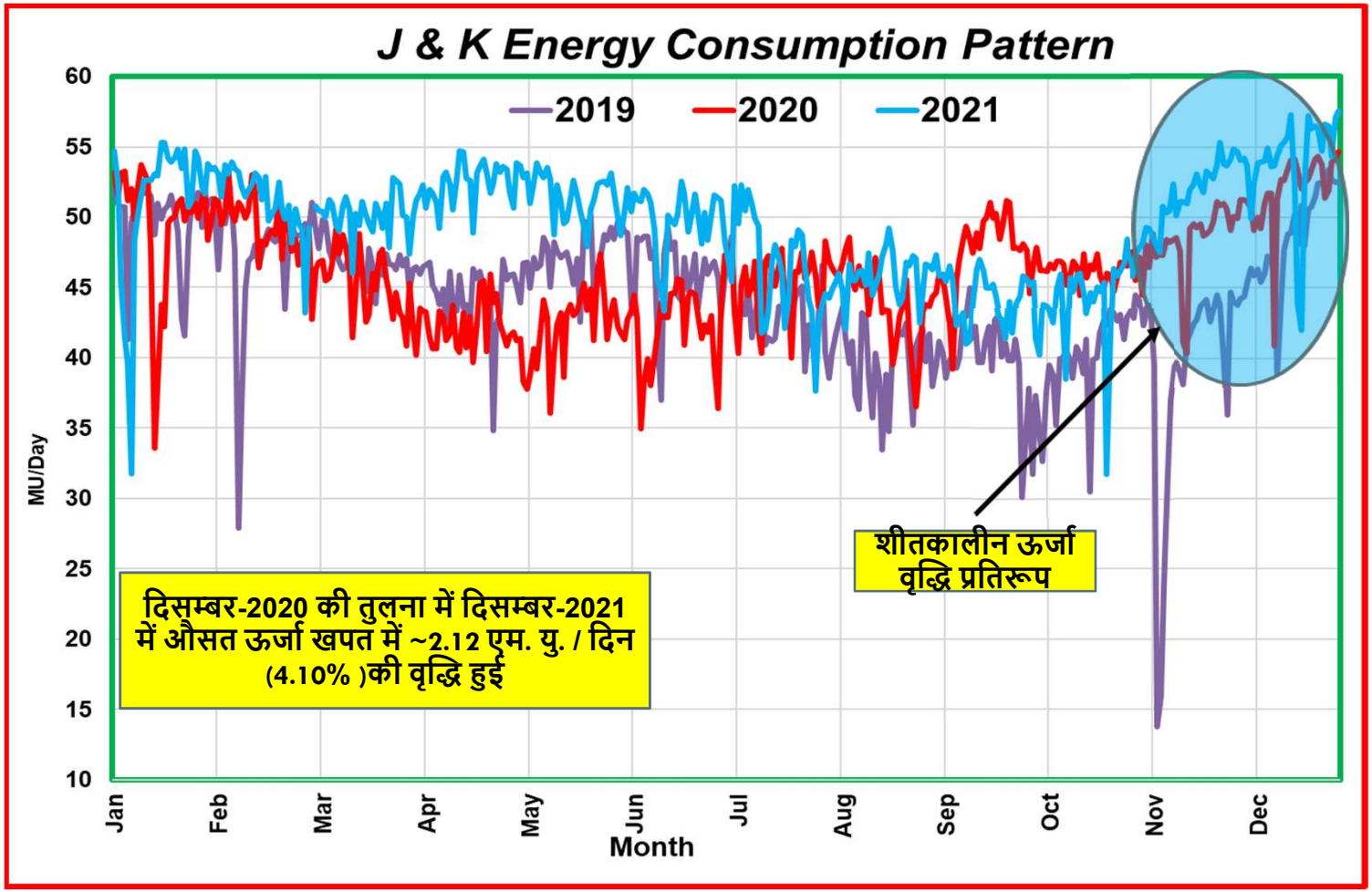
जम्मू और कश्मीर (यूटी) विद्युत आपूर्ति (Demand) दिसम्बर 2020 बनाम दिसम्बर 2021

(As per 5 Minute SCADA data)



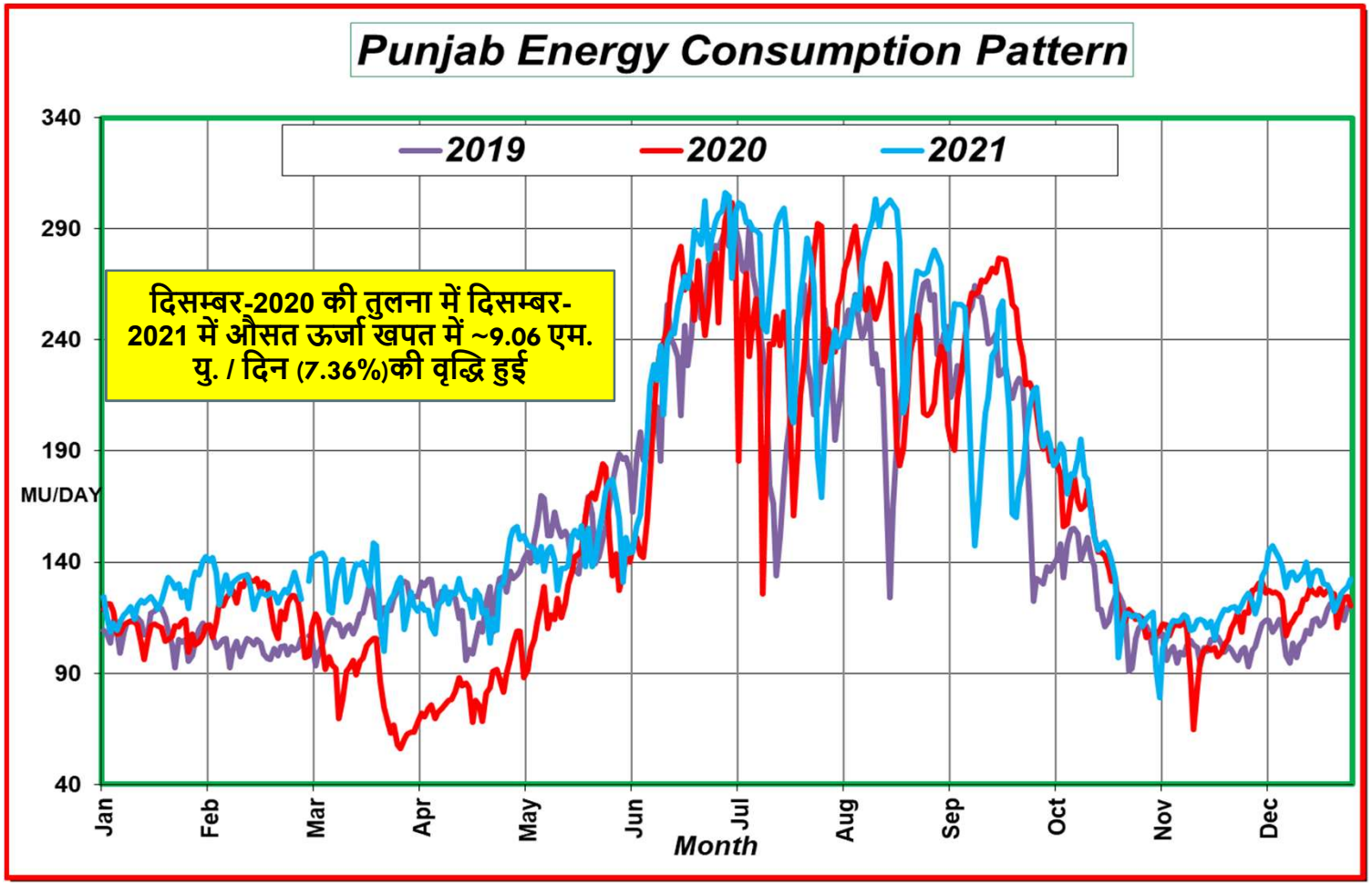
B.20

जम्मू और कश्मीर (यूटी) की ऊर्जा खपत(Mus/Day)



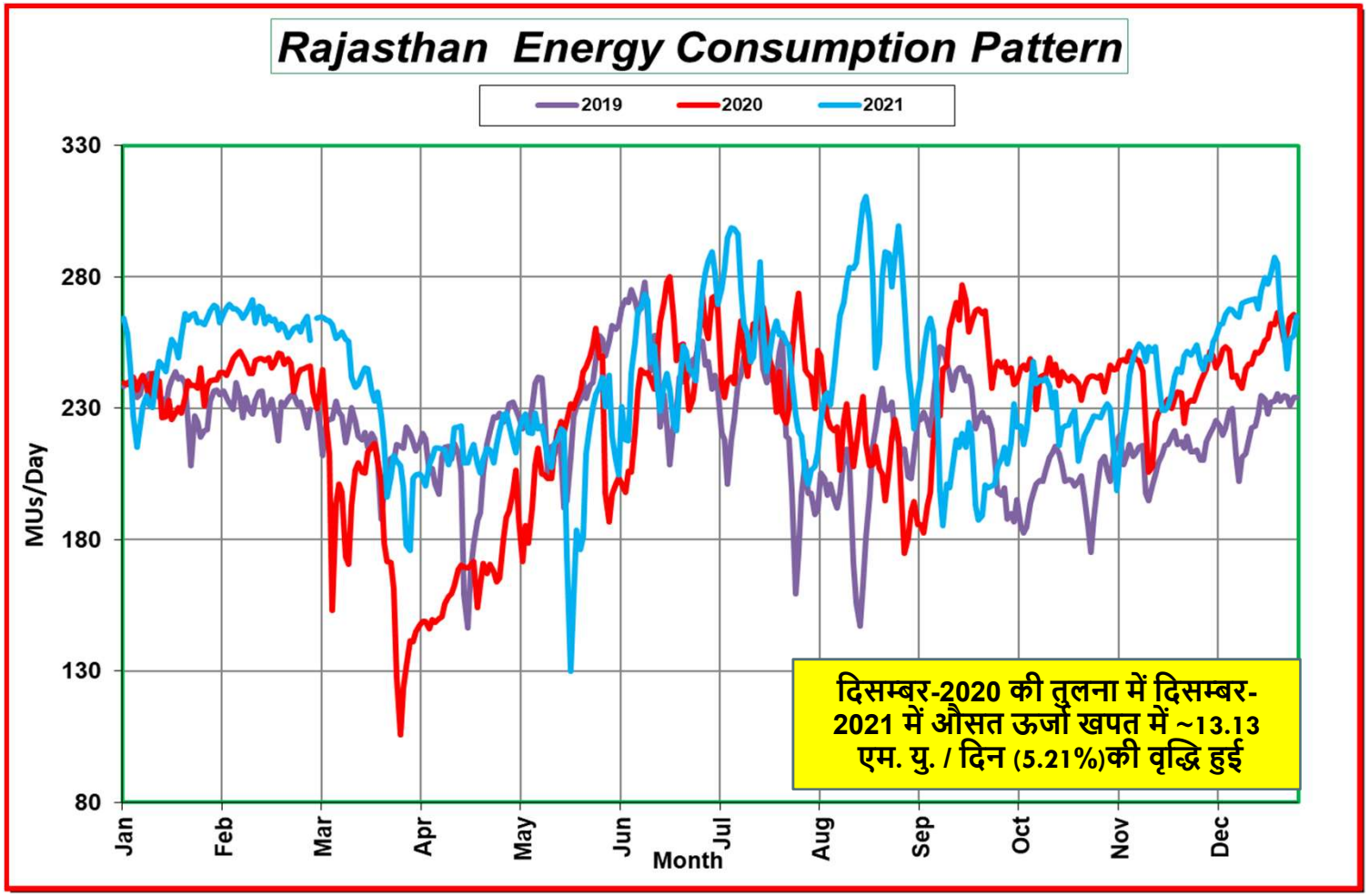
B.20

पंजाब की ऊर्जा खपत(Mus/Day)



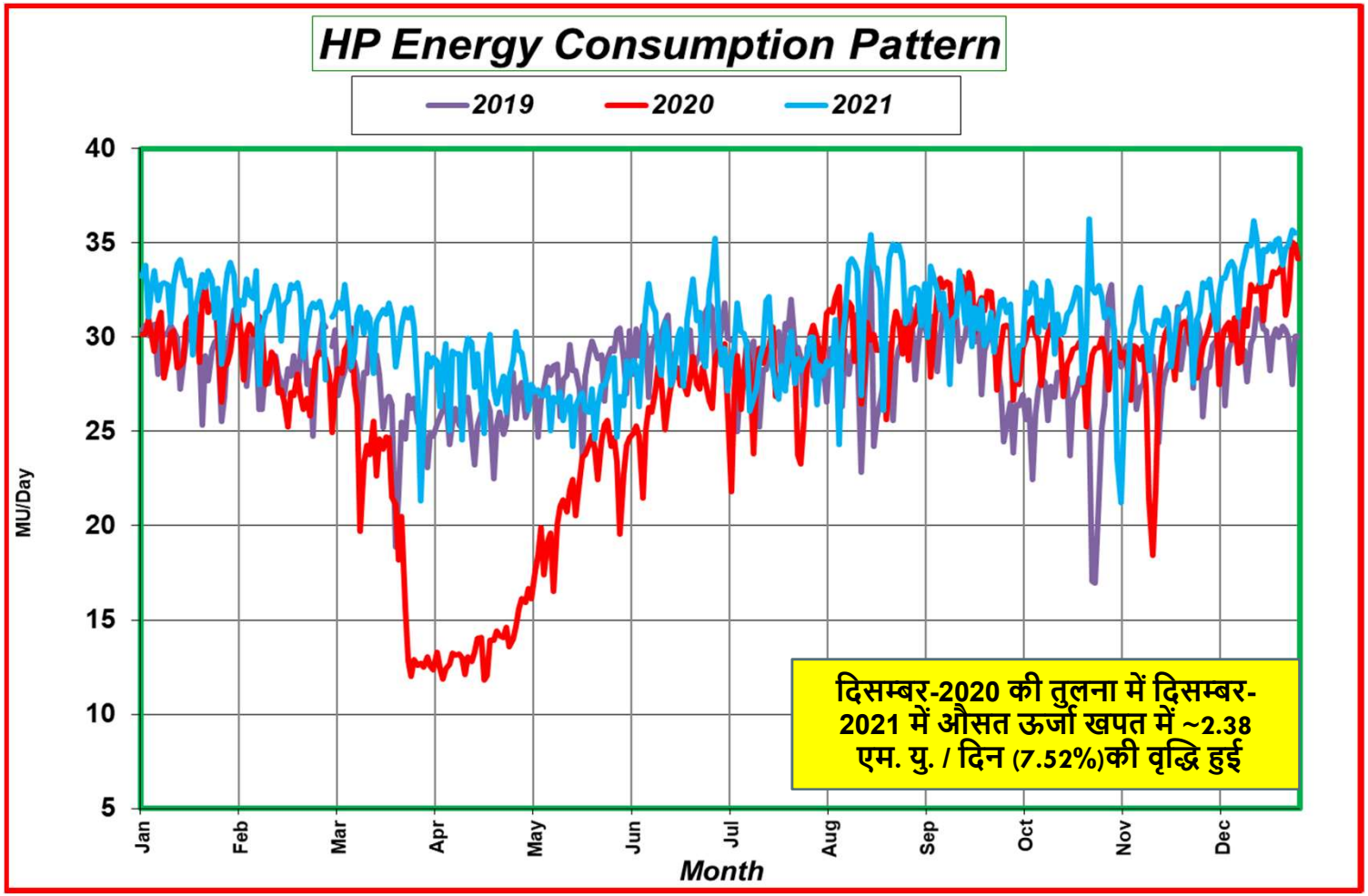
B.20

राजस्थान की ऊर्जा खपत(Mus/Day)



B.20

हिमाचल प्रदेश की ऊर्जा खपत(Mus/Day)



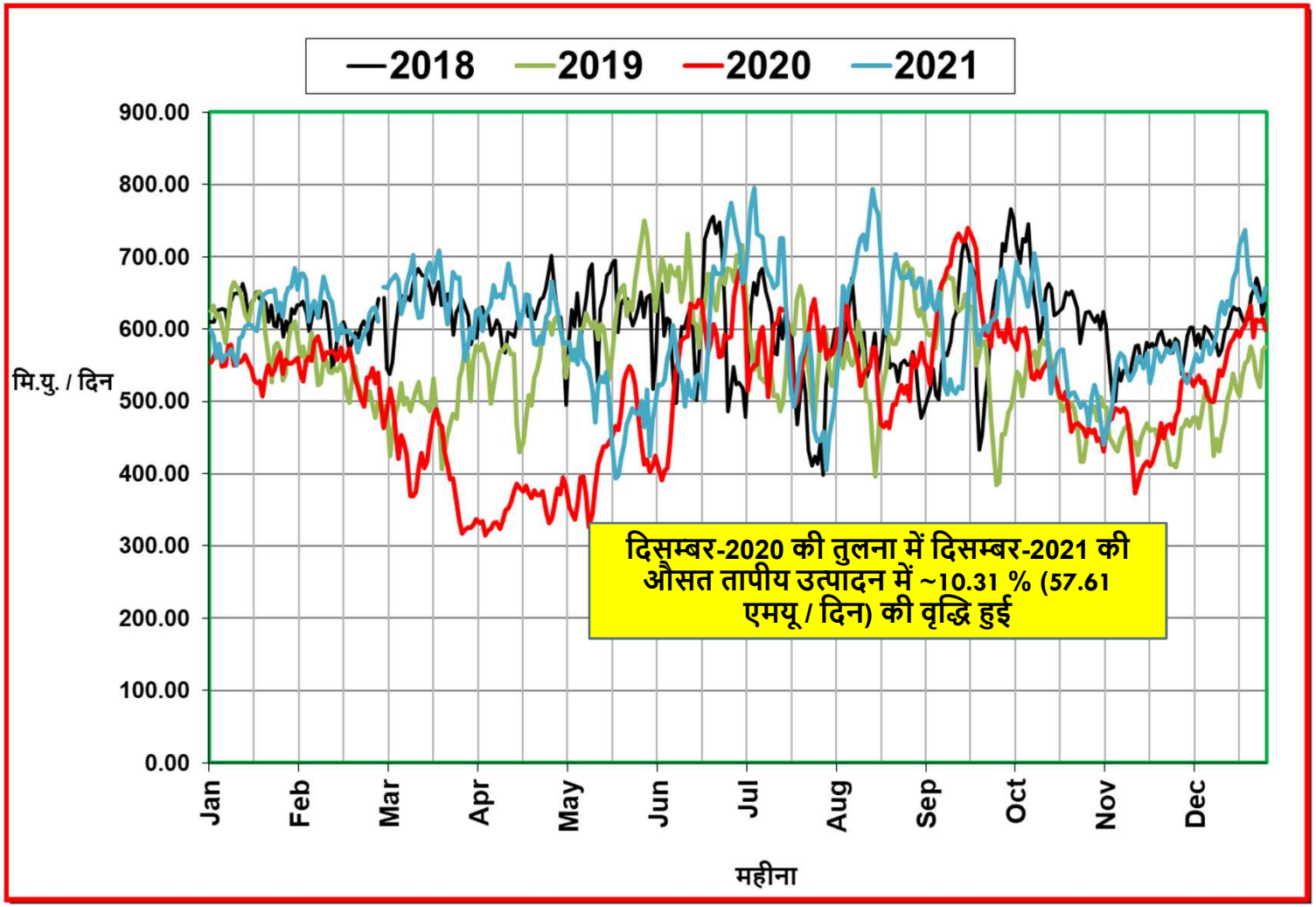
B.20

उत्तरी क्षेत्र की औसत ऊर्जा खपत में वृद्धि(% में) दिसम्बर -2021/ दिसम्बर -2020 / दिसम्बर -2019

राज्य	दिसम्बर-2019	दिसम्बर-2020	दिसम्बर-2021	% वृद्धि (दिसम्बर -2020 vs दिसम्बर -2019)	% वृद्धि (दिसम्बर -2021 vs दिसम्बर -2020)
पंजाब	110.24	122.98	132.04	11.56%	7.36%
हरियाणा	119.64	130.37	128.43	8.96%	-1.49%
राजस्थान	224.48	251.94	265.07	12.23%	5.21%
दिल्ली	69.59	65.99	66.63	-5.17%	0.96%
उत्तर प्रदेश	260.78	285.89	297.49	9.63%	4.06%
उत्तराखंड	36.88	38.77	39.37	5.14%	1.53%
चंडीगढ़	4.04	3.62	3.54	-10.39%	-2.27%
हिमाचल प्रदेश	29.54	31.60	33.97	6.97%	7.52%
जम्मू और कश्मीर (UT) तथा लद्दाख़ (UT)	48.21	51.87	53.99	7.58%	4.10%
उत्तरी क्षेत्र	903.01	983.03	1020.52	8.86%	3.81%

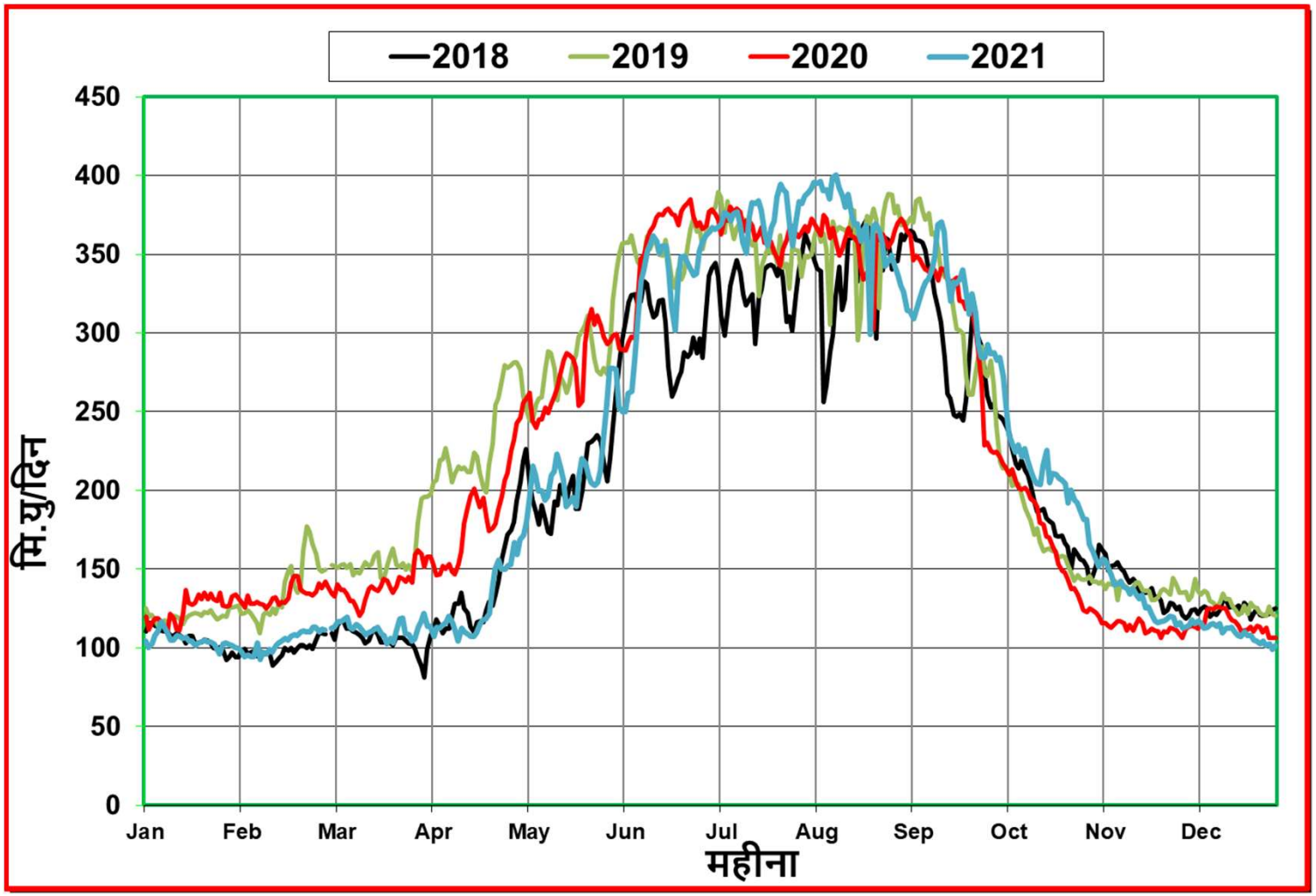
B.20

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



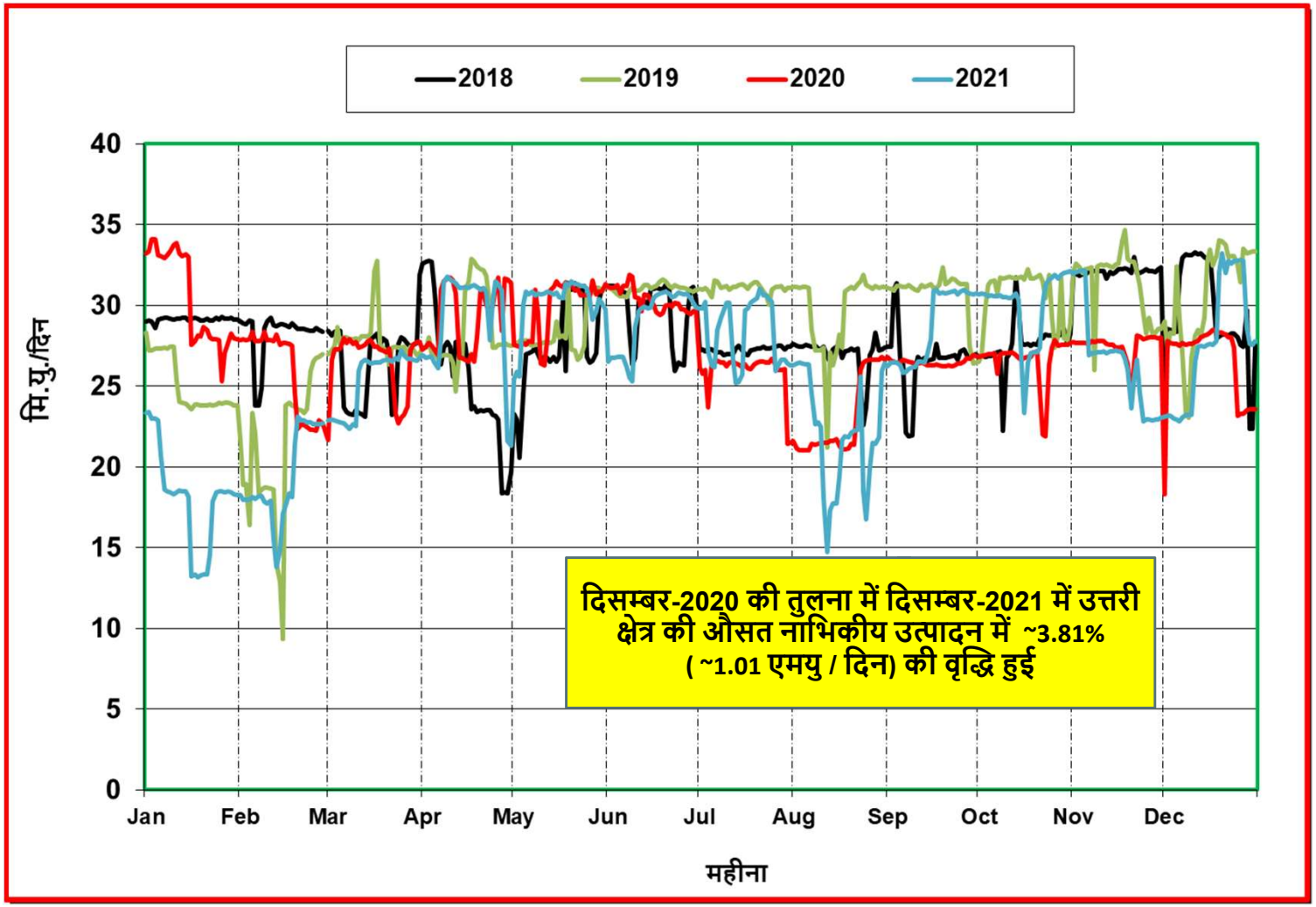
B.20

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



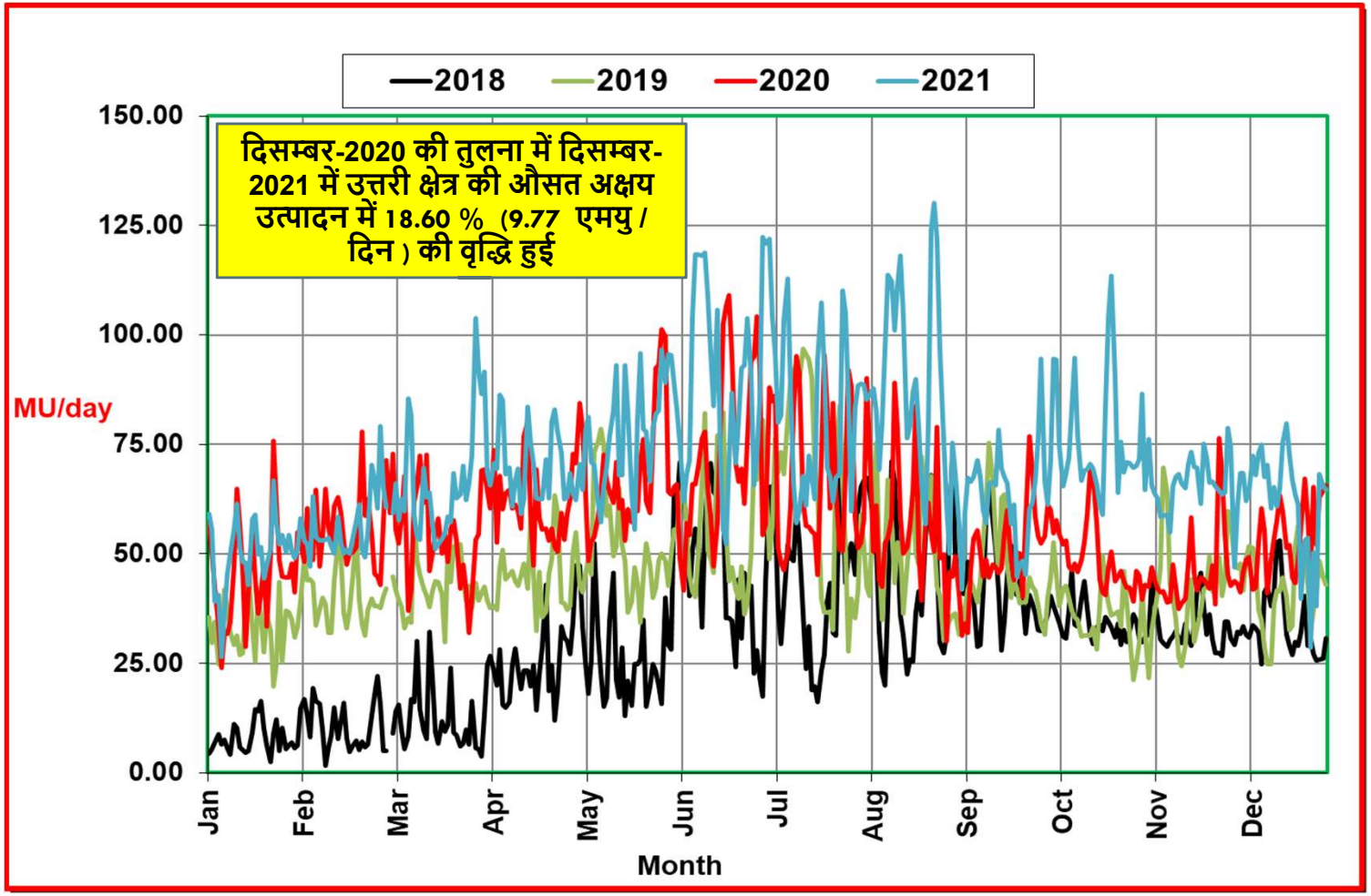
B.20

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



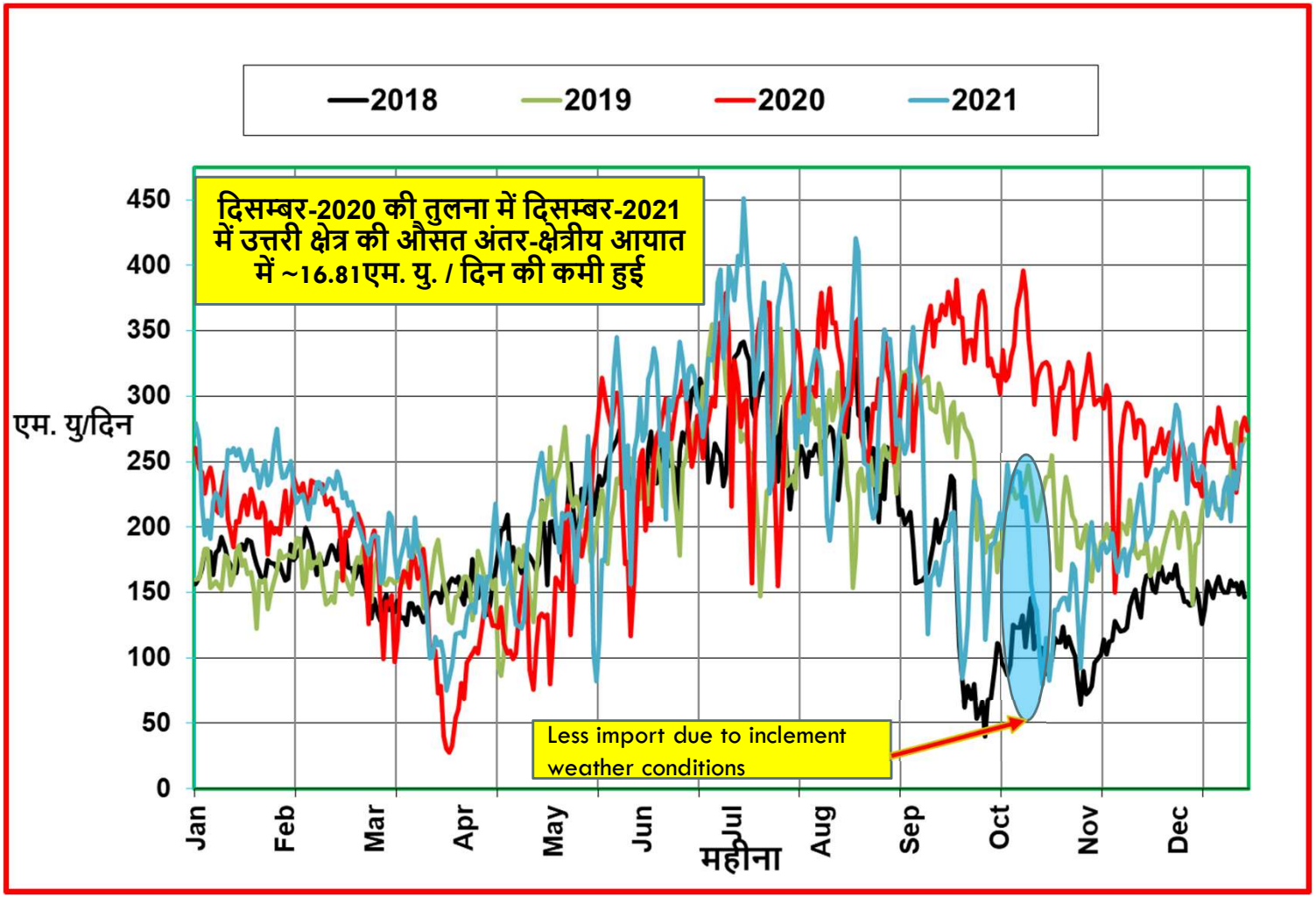
B.20

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



B.20

अंतर-क्षेत्रीय आयात(Mus/Day) की स्थिति



B.20

RE Penetration

	Maximum Daily MU Penetration			
	December '2021		Record upto November'2021	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	2.54	29-12-2021	12.28	01-04-2020
Rajasthan	14.24	17-12-2021	36.46	22-10-2021
UP	9.51	12-12-2021	7.70	22-11-2021
NR	7.58	18-12-2021	12.77	22-10-2021

	Maximum Instantaneous Penetration in MW			
	December '2021		Record upto November'2021	
	Max % Penetration	Date	Max % Penetration	Date
Punjab	6.64	28-12-2021	26.87	22-04-2020
Rajasthan	29.09	31-12-2021	68.38	31-03-2020
UP	10.04	18-12-2021	15.13	01-04-2021
NR	21.29	19-12-2021	27.06	22-10-2021

B.20

उपलब्धता सारांश - दिसम्बर-2020 बनाम दिसम्बर-2021

	दिसम्बर-2020 (मि.यु. /दिन)	दिसम्बर-2021 (मि.यु. /दिन)	दिसम्बर माह में वृद्धि (मि.यु./दिन)
तापीय (Thermal) उत्पादन	558.82	616.42	57.61
जलीय (Hydro) उत्पादन	115.29	110.00	-5.29
नाभिकीय (Nuclear) उत्पादन	26.59	27.60	1.01
अंतर-क्षेत्रीय (Inter-Regional) कुल आयात	258.59	241.78	-16.81
अक्षय (Renewable) उत्पादन	52.49	62.26	9.77
कुल उपलब्धता	**1011.78**	**1058.06**	**46.29**

	LONG OUTAGES REPORT AS ON 12-01-2022						
S. No`	**Element Name**	**Type**	**Owner**	**Outage Date and Time**		**Outage days**	**Reason / Remarks**
A	**LINE**						
1	220 KV Kishenpur(PG)-Ramban(PDD) (PDD) Ckt-1	Line	PDD JK	31-03-2020	16:43	651	Due to heavy land slide near village Dalwas at Ramban damages occurred to 220 KV D/C KPTL at Location No :-187,188 &189 and there is every apprehension of collapsing Tower Loc No 189 .
2	220 KV Abdullapur(PG)-RailwayHR(RLY) (HVPNL) Ckt-1	Line	HVPNL	13-05-2021	13:25	243	For cleaning of allied equipment installed in the switchyard of 220kV S/Stn. Railway traction.
3	220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1	Line	UPPTCL	12-08-2021	09:00	153	Emergency shutdown of line taken, as tower no. 34 is affected by flood.
4	220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1	Line	UPPTCL	12-08-2021	09:12	153	Emergency shutdown of line taken, as tower no. 34 is affected by flood.
5	400 KV UNNAO-PANKI (UP) CKT-1	Line	UPPTCL	11-10-2021	10:02	93	Shutdown required due to PTPS Panki (Diversion work due to Extension of PTPS Panki.
6	220 KV JIND(PG)-MUND (HV) (HVPNL) CKT-1	Line	HVPNL	18-11-2021	11:42	55	SD taken by Haryana for Augmentation of Conductor 0. Sq inch zebra to HTLS Conductor 1200A (D-3)
7	220 KV JIND(PG)-MUND (HV) (HVPNL) CKT-2	Line	HVPNL	18-11-2021	11:44	55	SD taken by Haryana for Augmentation of Conductor 0. Sq inch zebra to HTLS Conductor 1200A (D-3)
8	220 KV AGRA(PG)-FEROZABAD(UP) (UP) CKT-1	Line	UPPTCL	27-11-2021	09:55	46	Jumpering work for making Lilo point of 220 kv Firozabad(400)-Agra(765) PG line at 220 kv Tundla. FTC process completed but yet to be charged due to PLCC issue at Tundla end.
B	**BAYS**						
1	419 MAIN BAY - 50 MVAR BUS REACTOR NO 1 AT 400KV AMARGARH(NRSS XXIX) AND 400KV BUS 2 AT AMARGARH(NRSS XXIX)	BAY	NRSS XXIX	07-07-2020	09:34	554	CEA clearance awaited
2	40452B MAIN BAY - 400KV SURATGARH(RVUN)-RATANGARH(RS) (RS) CKT-1 AT Ratangarh(RS)	BAY	RRVPNL	25-12-2020	17:05	382	Emergency shutdown for refilling of SF6 gas in R-phase of Circuit Breaker. Later leakage found. Revival delayed due to non-availability of required spare parts.
3	400 KV Kadarpur (GPTL) - Bus 1	BUS	GPTL	17-04-2021	13:18	269	E/S/D taken due to abnormal humming sound observed from 400KV B-phase BUS-1 CVT at Kadarpur.
4	425 MAIN BAY - 400/220KV 500 MVA ICT 3 AT DADRI(NT)	BAY	NTPC	20-11-2021	16:20	52	Due to 400KV Main breaker 2552 of ICT 3 opening/ closing problem from remote the bay was kept out while ICT 3 was charged thru tie bay breaker 2652.

S.No	Element Name	Type	Owner	Outage		Outage days	Reason / Remarks
C	ICT						
1	400/220 kV 315 MVA ICT 1 at Bhilwara(rs)	ICT	RRVPNL	12-05-2019	23:42	975	Oil leakage in transformer. Expected revival in Dec-2021.
2	400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)	ICT	UPPTCL	13-03-2020	02:46	670	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.
3	400/220 kV 315 MVA ICT 2 at Bawana(DV)	ICT	DTL	30-03-2021	17:35	287	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	19-08-2020	16:30	511	500 MVA ICT-I also got damaged due to fire in ICT-II, for protection testing. Expected revival in Oct-2021.
5	400/220 kV 315 MVA ICT 2 at Mundka(DV)	ICT	DTL	20-09-2019	00:419	845	Due to fire in ICT.
6	765/400 kV 1500 MVA ICT 2 at Gr.Noida_2(UPC)	ICT	UPPTCL	12-11-2021	14:22	60	PRV- 1 & 2 Trip, Differential protection and Buchholz Trip. inspected our 1500 MVA ICT-2 (R-Ph), During inspection it is found that the IV Bushing got damaged and oil flowed out from the bushing. During complete internal inspection by OEM M/s BHEL winding found faulty
7	400/220 kV 315 MVA ICT 4 at Mundka(DV)	ICT	DTL	13-11-2021	19:15	59	Buchholz trip.
8	400/220 kV 240 MVA ICT 3 at Moradabad(UP)	ICT	UPPTCL	13-12-2021	22:38	29	Due to high DGA values, Hydrogen gas is above permissible limit.
9	220/33 kV 125 MVA ICT 4 at Saurya Urja Solar(SU)	ICT	SAURYA URJA	20-12-2021	20:15	22	ICT-4 tripped due to operation of of PRD, REF, Differential and Buchholz relay.

D	LINE REACTOR						
1	50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP)	LR	UPPTCL	28-10-2021	22:27	75	R and Y phase bushing damaged at Agra(UP).
2	50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-2 @Allahabad(PG)	LR	POWERGRID	27-11-2021	00:32	46	After multiple emails and telephonic conversations to furnish the reason for the outage no reply has been obtained from CPCC-3.
3	50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-1 @Allahabad(PG)	LR	POWERGRID	27-11-2021	00:32	46	After multiple emails and telephonic conversations to furnish the reason for the outage no reply has been obtained from CPCC-3.
E	**BUS REACTOR**						
1	80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ)	BR	SJVNL	17-10-2019	12:58	817	Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection. Expected revival in Dec-2021.
2	50 MVAR Bus Reactor No 1 at 400KV Moradabad(UP)	BR	UPPTCL	03-12-2021	22:22	39	R-phase bushing damaged.

F	GENERATING UNITS					
S.No	Station	Owner	Outage Reason	Outage Date	Outage Time	Outage duration(in days)
1	40 MW Sewa-II HPS - UNIT 2	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	25-09-2020	00:00	474
2	40 MW Sewa-II HPS - UNIT 3	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	25-09-2020	00:00	474
3	40 MW Sewa-II HPS - UNIT 1	NHPC	Excessive leakage in HRT between audit-II and Dam. Expected by Jan-2022.	25-09-2020	00:00	474
4	600 MW RGTPP (Khedar) - UNIT 2	HVPNL	Capital Overhauling. Expected date to be confirmed from HVPNL. Expected by Dec-2021.	02-03-2021	00:00	316
5	66 MW Pong HPS - UNIT 4	BBMB	Failure of compressed air system of Breaking. Expected by Oct-2021 end.	28-07-2021	15:00	167
6	250 MW Chhabra TPS - UNIT 4	RRVPNL	Due to ESP structure damage	09-09-2021	00:47	124
7	35 MW Budhil HPS (IPP) - UNIT 1	Greenko Budhil	Flooding of power house due to damage of Main Inlet Valve at Budhil.	26-10-2021	17:00	77
8	100 MW Koteshwar HPS - UNIT 1	THDC	due to fault in GT	04-11-2021	22:58	68
9	250 MW Suratgarh TPS - UNIT 2	RRVPNL	Due to a problem in the PLC System of Wet Evacuation of ESP Hoppers, it is not possible to evacuate Ash from ESP Hoppers.	30-11-2021	03:06	43

F	GENERATING UNITS					
S.No	**Station**	**Owner**	**Outage Reason**	**Outage Date**	**Outage Time**	**Outage duration(in days)**
10	180 MW Chamera I HPS - UNIT 1	NHPC	Annual Maintenance	30-11-2021	19:35	42
11	180 MW Chamera I HPS - UNIT 2	NHPC	Annual Maintenance	01-12-2021	00:01	42
12	180 MW Chamera I HPS - UNIT 3	NHPC	Annual Maintenance	01-12-2021	00:05	42
13	126 MW Bhakra HPS - UNIT 4	BBMB	Annual Maintenance	01-12-2021	09:30	42
14	130 MW Parbati III HEP - UNIT 1	NHPC	Annual Maintenance	01-12-2021	13:05	41