



सत्यमेव जयते

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

सं: उ.क्षे.वि.स./प्रचालन/106/01/2023/5081-5122

दिनांक: 16.05.2023

**विषय: प्रचालन समन्वय उप-समिति की 207<sup>वीं</sup> बैठक की कार्यसूची।**

**Subject: Agenda of 207<sup>th</sup> OCC meeting.**

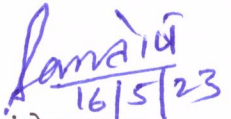
प्रचालन समन्वय उप-समिति की 207<sup>वीं</sup> बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक 19.05.2023 को 10:30 बजे से किया जायेगा। उक्त बैठक की कार्यसूची उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट <http://164.100.60.165> पर उपलब्ध है।

बैठक में सम्मिलित होने के लिए लिंक व पासवर्ड सभी सदस्यों को ई-मेल द्वारा प्रदान किया जाएगा। कृपया बैठक में उपस्थित होने की सुविधा प्रदान करें।

207<sup>th</sup> meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on 19.05.2023 from 10:30 Hrs. The agenda of this meeting has been uploaded on the NRPC web-site <http://164.100.60.165>.

The link and password for joining the meeting will be e-mailed to respective e-mail IDs in due course.

Kindly make it convenient to attend the meeting.

  
16/5/23  
(संतोष कुमार)

अधीक्षण अभियंता (प्रचालन)

**सेवा में: प्रचालन समन्वय उप समिति के सभी सदस्य।**

**To : All Members of OCC**

## 1. Confirmation of Minutes

The minutes of the 206<sup>th</sup> OCC meeting were issued vide letter of even number dated 15.05.2023.

***Sub-committee may deliberate and kindly confirm the Minutes.***

## 2. Review of Grid operations

### 2.1 Power Supply Position (Provisional) for April 2023

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of April-2023 is as under:

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	160	121	-24.2%	340	278	-18.2%
	(Req)	154	121	-21.3%	330	278	-15.8%
DELHI	(Avl)	4148	2568	-38.1%	6500	5422	-16.6%
	(Req)	3380	2568	-24.0%	6500	5465	-15.9%
HARYANA	(Avl)	5113	4160	-18.6%	9891	7604	-23.1%
	(Req)	5210	4192	-19.5%	9790	9054	-7.5%
HIMACHAL PRADESH	(Avl)	974	911	-6.5%	1740	1809	4.0%
	(Req)	981	915	-6.8%	1769	1809	2.3%
J&K and LADAKH	(Avl)	1430	1675	17.1%	3530	2890	-18.1%
	(Req)	1580	1695	7.3%	2710	2890	6.6%
PUNJAB	(Avl)	6130	4189	-31.7%	12320	8143	-33.9%
	(Req)	5310	4194	-21.0%	10456	8143	-22.1%
RAJASTHAN	(Avl)	9810	7349	-25.1%	19140	13776	-28.0%
	(Req)	8980	7391	-17.7%	14710	13776	-6.3%
UTTAR PRADESH	(Avl)	13950	11090	-20.5%	23000	23473	2.1%
	(Req)	13800	11106	-19.5%	25000	23473	-6.1%
UTTARAKHAND	(Avl)	1302	1197	-8.1%	2270	2228	-1.9%
	(Req)	1320	1212	-8.2%	2330	2228	-4.4%
NORTHERN REGION	(Avl)	43017	33259	-22.7%	77300	61000	-21.1%
	(Req)	40715	33394	-18.0%	65000	61700	-5.1%

As per above, negative / significant variation ( $\geq 5\%$ ) in Actual Power Supply Position(Provisional) vis-à-vis Anticipated figures is observed for the month of April-2023 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, UP, and Uttarakhand and in terms of Peak Demand similar variation is noted for Chandigarh, Delhi, Haryana, UTs of J&K and Ladakh, Punjab, Rajasthan, UP, and Uttarakhand. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2<sup>nd</sup> and 15<sup>th</sup> day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

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

#### 3.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of June-2023 is scheduled on 18-May-2023 via Video Conferencing

#### 3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of June-2023 is scheduled on 18-May-2023 via Video conferencing.

### 4. Planning of Grid Operation

#### 4.1. Anticipated Power Supply Position in Northern Region for June2023

The Anticipated Power Supply Position in Northern Region for June 2023 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	190	330	No Revision submitted
	Requirement	208	440	
	Surplus / Shortfall	-18	-110	
	% Surplus / Shortfall	-8.7%	-25.0%	
DELHI	Availability	3020	6210	No Revision submitted
	Requirement	4100	8080	
	Surplus / Shortfall	-1080	-1870	
	% Surplus / Shortfall	-26.3%	-23.1%	
HARYANA	Availability	5880	11830	No Revision submitted
	Requirement	6700	13410	
	Surplus / Shortfall	-820	-1580	
	% Surplus / Shortfall	-12.2%	-11.8%	
HIMACHAL PRADESH	Availability	1125	1798	09-May-23
	Requirement	1106	1791	
	Surplus / Shortfall	19	7	
	% Surplus / Shortfall	1.7%	0.4%	
J&K and LADAKH	Availability	2260	3540	No Revision submitted
	Requirement	1610	2830	
	Surplus / Shortfall	650	710	
	% Surplus / Shortfall	40.4%	25.1%	
PUNJAB	Availability	6720	12460	No Revision submitted
	Requirement	7700	14880	
	Surplus / Shortfall	-980	-2420	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	% Surplus / Shortfall	-12.7%	-16.3%	
RAJASTHAN	Availability	10300	19450	No Revision submitted
	Requirement	9670	16490	
	Surplus / Shortfall	630	2960	
	% Surplus / Shortfall	6.5%	18.0%	
UTTAR PRADESH	Availability	15000	25900	12-May-23
	Requirement	14700	27000	
	Surplus / Shortfall	300	-1100	
	% Surplus / Shortfall	2.0%	-4.1%	
UTTARAKHAND	Availability	1383	2440	12-May-23
	Requirement	1404	2520	
	Surplus / Shortfall	-21	-80	
	% Surplus / Shortfall	-1.5%	-3.2%	
NORTHERN REGION	Availability	45878	77100	
	Requirement	47198	80300	
	Surplus / Shortfall	-1320	-3200	
	% Surplus / Shortfall	-2.8%	-4.0%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of June-2023 and submit the measures proposed to be taken to bridge the gap between demand & availability, as well to dispose-off the surplus, if any, in the prescribed format.

## 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	Feb-2023
HARYANA	Apr-2018	Feb-2023
HIMACHAL PRADESH	Apr-2018	Mar-2023
PUNJAB	Apr-2018	Feb-2023
RAJASTHAN	Apr-2018	Mar-2023
UTTAR PRADESH	Apr-2018	Jan-2023
UTTARAKHAND	Apr-2018	Jan-2023

All the remaining UTs viz., J&K and Ladakh and Chandigarh are requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the format given as under:

Category→	Consumption by Domestic Loads	Consumption by Commercial Loads	Consumption by Agricultural Loads	Consumption by Industrial Loads	Traction supply load	Miscellaneous / Others
<Month>						



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

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

All utilities are requested to update the status.

## 7. NR Islanding scheme

7.1 A physical meeting was called on 28.03.2023 with DTL, DELHI SLDC, NRLDC at NRPC Secretariat to deliberate on steady state analysis of PSSE basecase of Delhi islanding scheme. Minutes were issued vide letter dtd. 18.04.2023. As discussed in the meeting, Delhi was required to submit revised scheme. Delhi has submitted revised scheme to NRPC Sectt. vide mail dtd. 04.04.2023. The same was forwarded to NRLDC for comment.

7.2 A meeting was held on 11.04.2023 among NRPC, NRLDC, HPSLDC, HPSEBL, HPPTCL and various generators involved in Shimla-Solan islanding scheme to review the progress of the Shimla-Solan islanding scheme. Minutes were issued vide letter dtd. 15.05.2023.

7.3 In 206<sup>th</sup> OCC meeting, CPRI report of Agra-Lalitpur island was discussed and accordingly UP was requested to approach CPRI as discussed in the meeting.

Latest status of Islanding Scheme of NR is attached as **Annexure-A.II.**

**Members may kindly deliberate.**

## 8. Coal Supply Position of Thermal Plants in Northern Region

8.1 In 186<sup>th</sup> OCC meeting, it was agreed that coal stock position of generating stations in northern region may be reviewed in the OCC meetings on the monthly basis.

8.2 Accordingly, coal stock position of generating stations in northern region during current month (till 10<sup>th</sup> May 2023) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	92.00	17	7.1
ANPARA TPS	2630	65.17	17	26.1
BARKHERA TPS	90	28.78	26	43.0
DADRI (NCTPP)	1820	66.73	26	13.2
GH TPS (LEH.MOH.)	920	48.64	26	36.2
GOINDWAL SAHIB TPP	540	50.49	26	8.7
HARDUAGANJ TPS	1265	50.70	26	11.9
INDIRA GANDHI STPP	1500	66.68	26	15.4
KAWAI TPS	1320	54.62	26	27.3
KHAMBARKHERA TPS	90	25.73	26	59.4
KOTA TPS	1240	75.46	26	9.3
KUNDARKI TPS	90	29.72	26	64.8
LALITPUR TPS	1980	75.37	26	24.7
MAHATMA GANDHI TPS	1320	51.48	26	30.0

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Req'd (Days)	Actual Stock (Days)
MAQSOODPUR TPS	90	35.83	26	52.5
MEJA STPP	1320	81.16	26	20.7
OBRA TPS	1094	49.20	26	11.8
PANIPAT TPS	710	36.25	26	47.4
PARICHAHA TPS	1140	50.19	26	8.6
PRAYAGRAJ TPP	1980	69.02	26	23.9
RAJIV GANDHI TPS	1200	61.00	26	20.3
RAJPURA TPP	1400	91.85	26	16.6
RIHAND STPS	3000	90.56	17	29.2
ROPAR TPS	840	52.26	26	51.4
ROSA TPP Ph-I	1200	68.64	26	15.5
SINGRAULI STPS	2000	86.29	17	17.5
SURATGARH TPS	1500	48.04	26	5.7
TALWANDI SABO TPP	1980	73.43	26	2.5
TANDA TPS	1760	58.67	26	21.5
UNCHAHAHAR TPS	1550	56.95	26	20.6
UTRAULA TPS	90	29.38	26	64.0
YAMUNA NAGAR TPS	600	77.29	26	26.7
CHHABRA-I PH-1 TPP	500	63.59	26	4.3
KALISINDH TPS	1200	69.86	26	6.7
SURATGARH STPS	1320	58.63	26	7.4
CHHABRA-I PH-2 TPP	500	57.69	26	19.4
CHHABRA-II TPP	1320	63.70	26	4.7

## 9. SPS protection logic review at PPGCL(Agenda by UPSLDC)

- 9.1 The aforesaid matter was deliberated in the 206<sup>th</sup> OCC meeting held on 18.04.2023 wherein forum asked UPSLDC to submit the revised logic and thereafter a separate meeting would be conducted among officials of NRPC, NRLDC, UPSLDC and Bara TPS for finalization and approval of the revised SPS scheme.
- 9.2 The abovesaid meeting was conducted on 12.05.2023 for discussing the revised scheme of SPS at BARA TPS wherein after detailed discussions, it was decided to bring the revised scheme in the 207<sup>th</sup> meeting for approval.(Copy of revised SPS scheme is attached as **Annexure-A.III.**)

**Members may kindly deliberate.**

## 10. REPLACEMENT OF EXISTING 100 MVA, 220/132 KV ICT AT SITARGANJ WITH REGIONAL SPARE 160MVA ,220/132kV ICT WITH PROVISION OF THE LT AUXILIARY SUPPLY FROM THE TERTIARY. (Agenda by Powergrid/NR-3)

- 10.1 Powergrid NR-3 vide mail dated 12.05.2023 has intimated that 01 No. 220/132kV, 160MVA ICT at Sitarganj has been commissioned (DOCO 05.07.2022) as Regional Spare ICT at Sitarganj Substation of NR-3 under the project "Provision for Spare ICTs in Northern Region".
- 10.2 At 220/132kV Sitarganj Substation of NR3, 03 Nos. 100MVA 220/132kV ICTs are installed and commissioned, all of which do not have tertiary winding for the provision of taking auxiliary supply for the systems installed at Sitarganj Substation. Further there are 02 Nos. UPCL LT Supply Feeder Sources available at Sitarganj Substation which are not reliable in operation and both feeders frequently experience fault or interruption of supply which causes frequent switching of the auxiliary supply (especially during the summer season). The details of the tripping/switching of the LT feeders are as presented below: -

Sl. No	Month and Year (April 2022-March 2023)	No. of Tripping/switching of LT Feeder of Sitarganj
1	April 2022	39
2	May 2022	120
3	June 2022	194
4	July 2022	244
5	August 2022	182
6	September 2022	97
7	October 2022	45
8	November 2022	22
9	December 2022	34
10	January 2023	61
11	February 2023	31
12	March 2023	27

Therefore, Powergrid NR-3 has proposed following to mitigate the above problem: -

- i. Replacement of existing 100MVA 220/132kV ICT at Sitarganj with Regional Spare 160MVA 220/132kV ICT (having the provision of the LT Auxiliary Supply from the tertiary) and keeping the replaced 100 MVA220/132 ICT as regional spare.
- ii. Reimbursement of the cost to be incurred in the replacement of the 100MVA 220/132kV ICT at Sitarganj with Regional Spare ICT along with the cost for the provision of necessary tertiary bay equipment & protection system for using the tertiary winding for station auxiliary power supply needs. Total erection and commissioning cost towards replacement of ICT and providing tertiary bay equipment will be approx 1.25 Cr + Taxes.
- iii. Required outage for the above replacement may be considered as deemed available in view to system improvement and reliable grid operation.

**Members may kindly deliberate.**

## 11. NON COMPLIANCE OF N-1 CONTINGENCY IN ICTs AT ALLAHABAD AND MAINPURI SUB STATIONS (Agenda by Powergrid/NR-3)

- 11.1. Powergrid vide mail dated 12.05.2023 has mentioned that Loading on 400/200 KV ,315 MVA ICTs at Allahabad and Mainpuri sub-stations have increased substantially in past few years and margins for increase in further loading of ICTs has also reduced. It is also observed that in case of peak load conditions, tripping / shutdown of one ICT will lead to violation of N-1 contingency.
- 11.2. CGM, AM, NR3 has also requested for capacity augmentation of ICTs at Allahabad & Mainpuri S/S vide letter dt.20.04.2023(Copy attached as **Annexure-A.IV**) and M/S UPSLDC has also expressed their concern about these two sub-stations.
- 11.3. In view of the above, Powergrid NR-3 has requested CTU to do the system studies based on present and future forecasted load to review the need for additional transformation capacity at Allahabad and Mainpuri substations. Further, for contingency measure due to overloading of ICTs, System Protection Scheme (SPS) may also be considered and advised till implementation of capacity augmentation.

**Members may kindly deliberate.**

## **12. Regional Transmission Deviation Account of NR-Declaration of High inflow season (Agenda by NRPC Sectt.)**

- 12.1. Provisions of Sharing Regulation (12.1) CERC (Sharing of ISTS Charges and Loss) Regulations, 2020 states that:

*“Transmission Deviation, in MW, shall be computed as under:*

*(a) For a generating station, net metered ex-bus injection, in a time block in excess of the sum of Long Term Access, Medium Term Open Access and Short Term Open Access:*

*Provided that for a hydro-generating station, overload capacity of 10% during peak season shall be taken into account”*

- 12.2. However, para 43.3.10 of Statement of Reasons (SoR) of these regulations states that:

*“Regarding hydro generating stations’ overload capacity of 10%, the Regulation has been modified to include that such exemption/ consideration shall be applicable only during high inflow period.”*

- 12.3. In view of the above, a mechanism needs to be finalised to declare peak season for all Hydro Stations of NR that would be used to prepare RTDA by NRPC sectt.

**Members may kindly deliberate.**

खण्ड-ख: उ.क्षे.भा.प्रे.के.

Part-B: NRLDC

## **13. NR Grid Highlights for April2023**

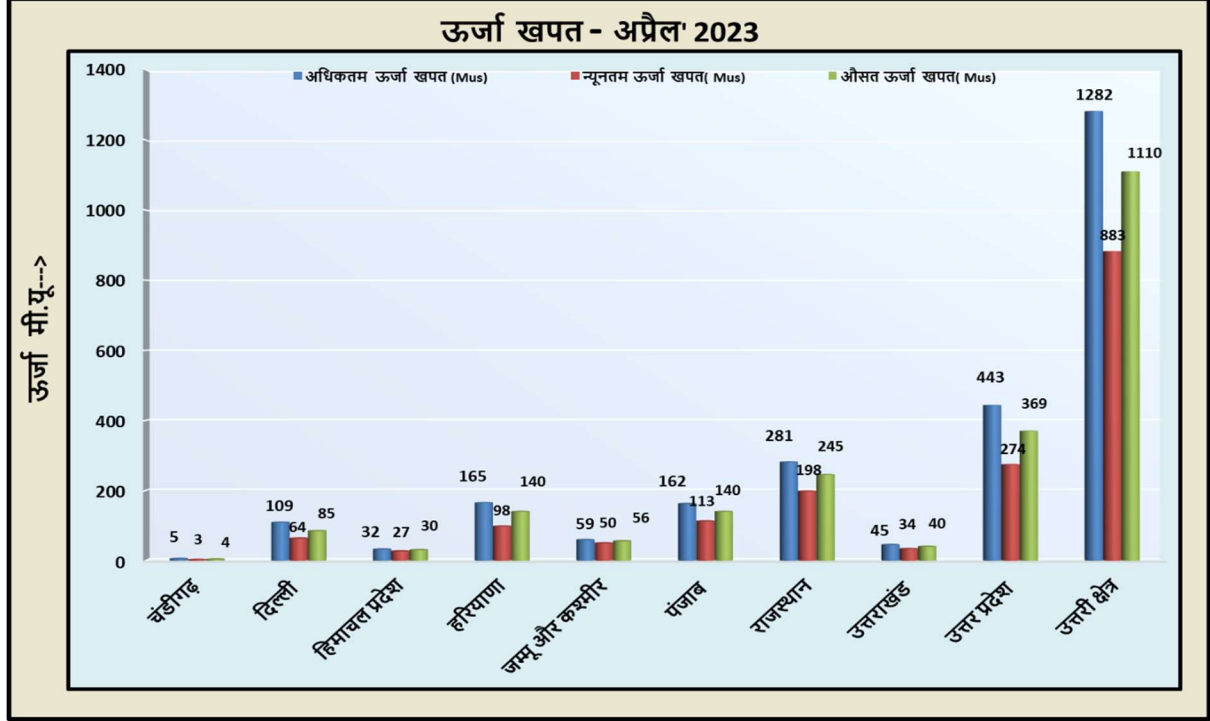
Following are major grid highlights of April 2023:

- Maximum energy consumption of Northern Region was **1282 MUs** on 18<sup>rd</sup> April'23 and it was 6.7 % lower than April' 2022 (1337 MUs 30<sup>th</sup> April'22)
- Average energy consumption per day of Northern Region was **1110 MUs** and it was 9.1 % lower than April'22 (1220 Mus per day)

- Maximum Demand met of Northern Region was **60996 MW** on 18<sup>th</sup> April'23 @19:00 hours (based on data submitted by Constituents) as compared to 62217 MW on 30<sup>th</sup> April'22 @12:00 hours

**No all-time high value recorded in April'23:**

**Energy Consumption:**



- Comparison of Average Energy Consumption (MUs/Day) of NR States for the April'22 vs April'23

क्षेत्र/राज्य	अप्रैल - 2022	अप्रैल - 2023	%अंतर
चंडीगढ़	4.9	4.0	-17.3%
दिल्ली	105.7	85.1	-19.5%
हिमाचलप्रदेश	32.1	30.5	-5.2%
हरियाणा	151.3	139.8	-7.6%
जम्मूऔरकश्मीर	44.9	55.8	24.4%
पंजाब	162.4	139.8	-13.9%
राजस्थान	258.9	245.3	-5.3%
उत्तराखंड	41.2	40.2	-2.4%
उत्तरप्रदेश	419.0	369.4	-11.8%
उत्तरीक्षेत्र	1220.5	1110.0	-9.1%

**Frequency Data**

Month	Avg.F req.(H)	Max.Freq.(Hz)	Min. Freq.(Hz)	<49.9 0(%ti	49.90– 50.05(	>50.05 (%)
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	z)			me)	%time)	time)
<b>Apr'23</b>	49.99	<b>50.33</b> on 23.04.23 at 08:59 hrs	<b>49.49</b> On 15.04.23 at 22:09 hrs	12.2	67.9	19.9
<b>Apr'22</b>	49.93	50.26 On 14.04.22 at 18:02 hrs	49.43 on 19.04.22 at 14:09 hrs	31.9	59.3	8.8

### **Summer Preparedness Meeting with SLDCs**

Online Meeting with the SLDCs namely Punjab, Rajasthan, Haryana and Uttar Pradesh were held on 06th, 12th, 24th and 27th of April 2023 respectively. The main objective of the meeting was to have detailed discussion with officials of SLDCs to understand the issues/constraints in their system (state network) and their plans for meeting the high demand during the upcoming summer season. SCADA Telemetry issues were also discussed during the meeting.

The representatives from SLDCs, STUs, Discoms and NRLDC attended the meetings.

The upcoming meetings will be with Uttrakhand SLDC, HP SLDC, J&K (UT) and Ladakh (UT) SLDC on 15th, 16th, and 17th May 2023 respectively.

***Detailed presentation on grid highlights of Apr'2023 will be shared by NRLDC in OCC meeting***

## **14. Grid Operation related issues**

### **a) Ensuring reliability at substation level**

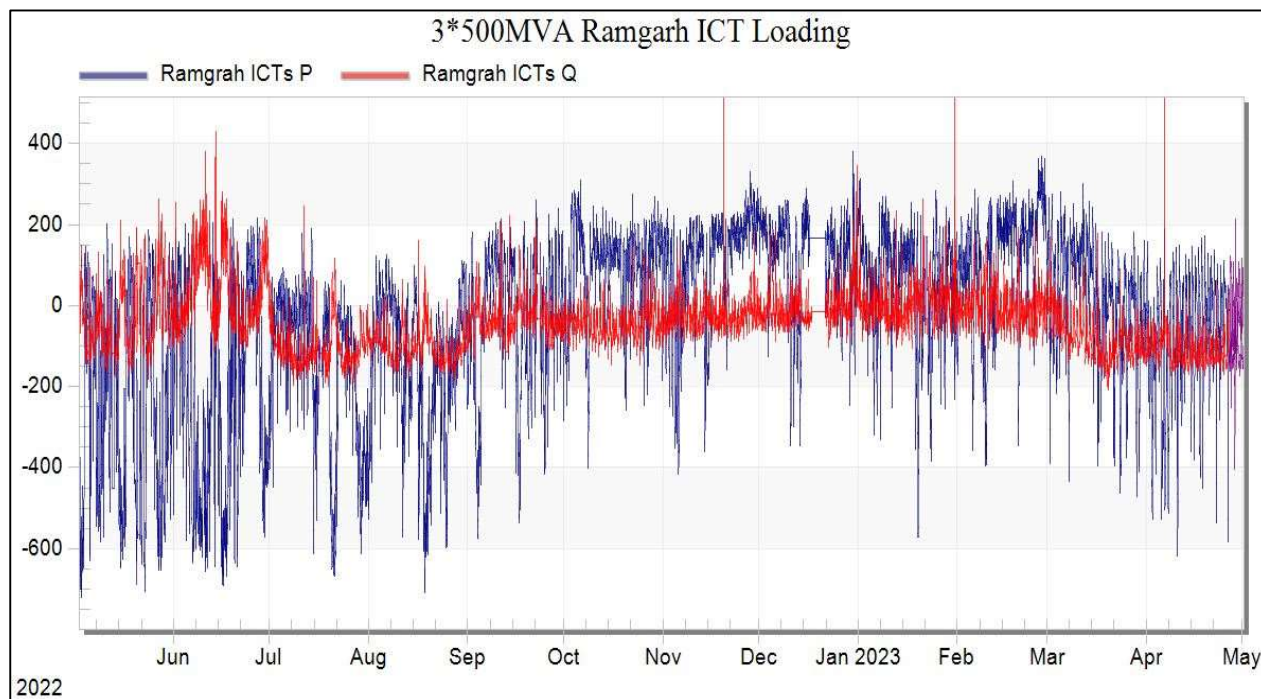
Due to various testing works/pending commissioning works, diameters are open at few substations in Northern region. For instance, due to the testing works for Bhadla-2 STATCOM, the main bay of STATCOM is open and 765/400 kV 1500MVA ICT 3 is in same dia.

In an event on 5th May 2023, 400kV Bus-1 at Bhadla-II tripped on busbar protection. Before the tripping, emergency shutdown of 400/220kV ICT-VII main bay was availed to attend CT alarm, during shutdown activities 400kV bus 1 got tripped due to bus bar protection operation. Due to this the 400/220kV 500MVA ICT 7 got tripped as it was connected with only Tie CB with 400kV bus 2 (Tie CB was not supposed to trip).



Bhadla. To overcome this, RVPN requested for shifting of 400/220 kV, 500 MVA ICT from 400 kV GSS Ramgarh to 400 kV GSS Bhadla after approval in whole-time director meeting.

In the proposal, it was mentioned by RVPN that loading of 400/220kV 3\*500MVA ICTs at Ramgarh GSS is low. On observing the loading pattern of ICTs for last year as shown below, it can be clearly seen that the ICT loading is exceeding 650MW during high wind generation period (Jun-Aug months).



In view of above, 400/220kV 2\*500 MVA ICTs at Ramgarh may become N-1 non-compliant (80-85% sensitivity) during high wind generation months. Accordingly, it is suggested that new 500MVA ICT at Ramgarh may be commissioned expeditiously after repair from OEM premises. Moreover, till the commissioning of new 500MVA ICT, SPS may be planned and implemented at 400/220kV Ramgarh GSS after discussion in OCC forum so as to avoid wind generation loss in case of N-1 contingency.

**Members may like to discuss.**

**c) ADMS status of NR states**

Following was discussed w.r.t. ADMS status in Delhi control area in 64 NRPC meeting held on 24.03.2023:

*“A.14.37 NRLDC representative inquired about the operation of ADMS in their state and why some manual intervention was needed. DTL representative explained that in the case where Delhi as a whole was underdrawing and one DISCOM was overdrawing, a fully automatic ADMS would shed the load of that DISCOM, leading Delhi as a whole to underdraw more from the grid. Due to this, ADMS of respective DISCOMS is operated only after confirmation from Delhi SLDC.*”

**A.14.38 However, MS NRPC stressed that ADMS should be fully automatic, and the NRLDC representative suggested adding a logic to the ADMS that could sense the overall drawl of Delhi before its operation to ensure certainty of action**

A.14.39 TPDDL representative reported that ADMS was fully implemented at their end but faced challenges due to poor communication infrastructure during outages. They were unable to revive 100% of the load shed through ADMS when system conditions improved, leading to manual intervention, commercial losses, and marking the outage as under breakdown. NRLDC representative and MS NRPC urged them to find a solution to improve ADMS and make it automatic.”

Delhi may implement the ADMS as suggested by the forum in 64<sup>th</sup> NRPC meeting on priority.

Similarly, the issue of ADMS in Haryana was also discussed in separate meeting held on 24.04.2023 and it was recorded that:

“NRLDC advised SLDC Haryana to coordinate with Discoms & STU and expedite implementation of ADMS in Haryana control area. Issue regarding implementation of ADMS may be discussed in upcoming OCC meeting in May-2023. If required by Haryana SLDC, a committee may be constituted for visiting UHBVN/DHBVN control centres at Panchkula/Hissar to sort out the issues regarding the implementation of ADMS.

For implementation of ADMS, data sanitization is required (as told by Discoms). Haryana SLDC informed that under SCADA upgradation an application namely Load Shed Support (LSS) has been envisaged which will meet the ADMS requirement. NRLDC insisted that implementation of ADMS in Haryana control may be expedited on priority as it has become a perennial issue.”

For Rajasthan, it was discussed in 206 OCC meeting that scheme is likely to be implemented in RVPN by 20.06.2023.

Haryana STU, SLDC and DISCOM may discuss among themselves and finalise plan for ADMS implementation.

**Delhi, Rajasthan and Haryana SLDC are requested to provide update.**

**Other states are also requested to provide update.**

**d) Jawaharpur TPS dynamic data submission & synchronisation without NRLDC code**

It is important to note that all checks and data formats to be provided in approved first time charging procedure need to be duly submitted by utilities. Availability of fit-for-purpose steady state and dynamics models of generating stations will enable secure operation of Indian power grid and enable identification of potential weak points in the grid so as to take appropriate remedial actions.

Dynamic data analysis of generating station is helpful to:

- Permit power system assets to be run with margins determined on the basis of security assessments

- Facilitate the tuning of control systems, such as power system stabilizers, voltage- and frequency-based special control schemes etc.
- Improve accuracy of online security tools, particularly for unusual operating conditions, which in turn is likely to result in higher reliability of supply to power system users
- Perform various studies including dynamic studies, islanding studies, black start studies etc. as per requirement.

After receiving dynamic data from generating station, testing is carried out on single machine infinite bus system. An infinite Bus is represented with a generator connected of very high MVA and very low X source. The generator to be tested is modelled along with Generator Transformer (Star (grounded) Delta connected) and two transmission lines of 100 Kms connecting to the Infinite Bus. Generator, Exciter, Stabilizer and Governor of the actual generator to be tested is modelled.

Flat run, bus fault and line fault in this subsystem is then simulated to assess the response of generating station when connected to infinite bus. The oscillatory nature of response is observed and it is checked whether machine is reaching steady state or not for all cases.

Unit 1 of 660MW at Jawaharpur TPS was to be synchronized in last week of April 2023. First Time Charging approval for said unit was not issued by NRLDC. NRLDC mail vide dated 28.04.2023, conveyed that documents along with dynamic data for synchronization of 660MW generating unit-1 Jawaharpur TPS were submitted on late night of 26.04.2023 and same is being checked by NRLDC study team. Further, NRLDC control room also conveyed that approval for charging of said unit has not been issued.

However, 660MW Unit 1 at Jawaharpur TPS was synchronized at 04:06 hrs. Load was increased upto 46MW and hand tripped box up at 04:27hrs on 29.04.2023.

Given the above highlighted importance of dynamic data and its importance, all utilities are requested to follow the NR FTC procedure to ensure the secure and reliable operation of grid.

***Member may like to discuss.***

**e) Procedure for integration of power system element into the grid**

As a handholding initiative an online session was taken by NRLDC on **10.05.2023** to familiarize the "**procedure for integration of power system element into the grid**" for new and modified elements. NRLDC officials from SCADA, Metering, Protection department, Studies department and FTC coordinator explained the requirement and issued faced during the process of new element charging. More than 100 officials from UPPTCL, UP SLDC offices substations, generating stations etc. including Director Operation UPPTCL, ED NRLDC were present during the session.

It was a healthy discussion between the UP and NRLDC officials and it is expected that utilities will be benefited from such session as well it will ease the coordination between the two while facilitating the new element charging. Similar sessions with other states/utilities shall be organised by NR in near future.

***This is for kind information of OCC forum.***

**f) Long outage of transmission elements**



It is requested to expedite restoration of the Grid elements under long outage at the earliest and also provide an update regarding their expected restoration date/time in the meeting/ NRLDC outage portal.

Some of the key elements that need to be revived at the earliest:

- 400/220 kV 240 MVA ICT 2 at Orai(UP)
- 400/220 kV 315 MVA ICT 2 at Mundka(DV)
- 400/220 KV 240 MVA ICT 3 AT Moradabad (UP)
- 400KV Bus 1 at Vishnuprayag(JP)
- 400KV Bus 2 at Parbati\_3(NH)
- 400KV Bus 2 at Noida Sec 148(UP)
- 400 KV Jodhpur-Kankani (RS) Ckt-1
- 400 KV Gr.Noida\_2(UPC)-Noida Sec 148 (UP) Ckt-1
- 220 KV Gazipur(DTL)-Noida Sec62(UP) (UP) Ckt-1
- 220 KV Gazipur(DTL)-Shahibabad(UP) (UP) Ckt-2
- 220 KV Kishenpur (PG)-Mir Bazar (PDD) Ckt-1

List of generating units under long outage is attached as **Annexure-B.I**. It can be seen that number of thermal generating units are under outage in Rajasthan. It is requested to provide update regarding the likely revival date for these generating units in the meeting/ NRLDC outage portal.

**Member may like to discuss.**

**g) Update of Important grid element document in line with IEGC:**

In line with section 5.2. (c) of IEGC, list of important grid elements in Northern region would be compiled by NRLDC shortly. Such elements shall be opened/closed only on instructions from NRLDC. NRLDC has requested utilities to submit the list of all elements with details charged under their jurisdiction from 1.4.2022 till date including those expected to be commissioned till May 2023 so that the same could be included in the list vide email dated 23<sup>rd</sup> March 2022.

In 206 OCC meeting, it was requested to provide details before 30th April 2023. However, response from most of the utilities is still pending.

Last updated document is available at following link <https://nrlcdc.in/download/important-grid-element-of-northern-region-may-2022/?wpdmdl=10389>. Any other feedback related to inclusion/deletion of elements may also be provided at the earliest.

**Utilities to provide update.**

**h) Update of Operating Procedure document of Northern region:**

In compliance with Regulation 5.1 (f) of Indian Electricity Grid Code, Operating Procedure document would be updated by NRLDC in mid-July 2023. Latest available document is available@ <https://nrlcdc.in/download/final-operating-procedure-for-northern-region-2022-23/?wpdmdl=10826>

Utilities are requested to provide their inputs/comments for any suggested changes in the document. It is requested that inputs/comments may be provided by 31st May 2023.

**Members may please discuss.**

**i) AMC related issues in Rajasthan**

## 15. Data Preparation for Resource Adequacy Studies

In 206 OCC meeting, the agenda was discussed in detail wherein NRLDC representative presented the letter from Chairperson, CEA and excel sheet in which data was requested by CEA and explained all the data requirements as mentioned in excel file. It was also mentioned that utilities may discuss with NRLDC officers regarding any query/ issues faced while preparation of data.

Format in which data is to be submitted by respective utilities is available @ [https://docs.google.com/spreadsheets/d/1yHDNxVEUHuWdCunNLR7vg009LZX7JMkf/edit?usp=share\\_link&ouid=101952646418859842988&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1yHDNxVEUHuWdCunNLR7vg009LZX7JMkf/edit?usp=share_link&ouid=101952646418859842988&rtpof=true&sd=true).

In the meeting, all state utilities were asked to furnish the data and nomination of officers for data preparation and to carry out RA studies to CEA with copy to NRPC/ NRLDC. ISGS generators were asked to submit the data to NRLDC in attached format for compilation and further sharing with CEA. OCC members agreed to provide the data by 30th Apr 2023.

However, response of most of the members is pending. It is requested to furnish the data to CEA/ NRPC/ NRLDC as agreed in 206 OCC meeting at the earliest.

**Members may please discuss.**

## 16. TTC/ATC of state control areas for summer 2023

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

Based on feedbacks received till date, SLDCs are requested to go through the tentative ATC/TTC limits for June 2023 as shown below and provide comments. If no comments are received, these limits will be assumed confirmed and uploaded on NLDC website. SLDCs are also requested to upload these limits in their respective websites. States are also requested to regularly provide update regarding the upcoming transmission elements which would improve import capability of respective state control area.

STATE	PRESENT IMPORT TRANSFER CAPABILITY	CONSTRAINTS	REMEDIAL ACTION TO MITIGATE THE CONSTRAINTS
Haryana	TTC: 9100MW RM: 600MW	N-1 Contingency of 2*315 MVA ICT at Deepalpur	New 500MVA ICT approved in 4 NRPCTP held on 05.10.2021. SPS commissioned as immediate measure. <b><i>In 206 OCC meeting, Indigrd representative informed that talks are going on and some points are yet to be finalised between HVPN and Indigrd for commissioning of new ICT (delayed as substation constructed under PPP</i></b>

			<i>model).</i>
	ATC: 8500MW	N-1 Contingency of 3*150+500 MVA ICT at Panipat BBMB	Proposal for new ICT to be given by HVPN/DTL. Drawl to be planned from other nearby stations. Lack of space at Panipat as informed by BBMB in OCC meeting. Other options to be explored by HVPN. <b>No progress reported in 206 OCC meeting</b>
		N-1 Contingency of 2*500 MVA ICT at Kurukshetra (PG)	New 500MVA ICT approved in 4 NRPCTP held on 05.10.2021. <b>In 206 OCC meeting, it was informed that ICT is expected before end of May 2023.</b>
		<p><b>As informed by Haryana SLDC, upcoming following transmission elements would help increase import capability of Haryana:</b></p> <ul style="list-style-type: none"> <li>• <b>220kV Sec 32 Panchkula and 220kV lines to Panchkula (PG) (expected by Jun 2023 end)</b></li> <li>• <b>220kV lines from Panchkula(PG) to Pinjore (expected by Jun 2023 end)</b></li> </ul> <p><b>HVPN/ Haryana SLDC to provide upate.</b></p>	
Punjab	TTC: 9000MW	N-1 Contingency of 2*315 MVA ICT at Nakodar	ICT capacity at Nakodar would be augmented from 315MVA to 500MVA by July 2023 (1st ICT) and Sep 2023 (2nd ICT). One 315MVA ICT damaged, to be borrowed from POWERGRID. <b>(Expected by May'23)</b>
		N-1 Contingency of 2*500+1*25 0+1*315 MVA ICT at Moga	One 250MVA ICT to be replaced by 500MVA ICT. Bay equipment of higher ratings to be used. Approved in 11 CMETS held on 30.09.2022 <b>(Expected by May'23)</b>
	RM: 500MW	N-1 Contingency of 2*315+2*50 0 MVA ICT at Ludhiana	One 315MVA ICT to be replaced by 500MVA ICT (expected May 2023). Approved in 11 CMETS held on 30.09.2022. <b>(Expected by May'23)</b>
	ATC: 8500MW	<b>Punjab SLDC to provide update regarding the commissioning of these ICTs and 400/220kV Dhanansu S/s.</b>	
Rajasthan	TTC: 7600MW	N-1 Contingency of 2*315 MVA ICT at Chittorgarh	Rajasthan STU has planned and implemented SPS at these locations. (except Bhilwara & Hindaun)

	RM: 600MW	N-1 Contingency of 2*315 MVA ICT at Jodhpur	
	ATC: 7000MW	N-1 Contingency of 2*315 MVA ICT at Ajmer	
		N-1 Contingency of 2*315 MVA ICT at Bikaner	
		N-1 Contingency of 2*315 MVA ICT at Merta	New 1*500MVA ICT under bidding at these S/s by RVPNL.
		N-1 Contingency of 2*315 MVA ICT at Hindaun	
		N-1 Contingency of 1*315+1*500 MVA ICT at Bhilwara	Capacity augmentation at Chittorgarh expected by July 2023, for all other substations after next winter season. <b>RVPN to provide update, if any.</b>
	(Issues observed with load >14500MW)		New 400/220kV Dholpur S/s likely to provide some relief, however approved by CEA on 27Jan 2023, so issue likely to persist for next 1-2 winter seasons.
		Low voltage issues at Hindaun, Alwar.	Other immediate measures required by RVPN. 400kV Bharatpur is under internal approval with LILO of 400kV Agra-Sikar. <b>RVPN to provide update, if any.</b>
			Severe issues observed during Dec 2022-Jan 2023 months.
		Low voltage issues in RE generation pockets	Additional reactive power support devices for maintaining grid voltages within IEGC prescribed limits to be planned. Intrastate RE generators to support the grid by operating in voltage control mode.
	N-1 contingency of 400kV	Commissioning of 765kV Jodhpur (Kankani) to be expedited. Additional transmission system requirement to be	

		Barmer-Bhinmal D/C (under high wind gen.)	assessed by RVPN <b>RVPN to provide update, if any.</b>
		Huge MVAR drawl at RVPN during winter months (even below 0.8 at number of 400/220kV ICTs)	<b>As intimated by RVPN in 206 OCC meeting, PO for capacitors at transmission level is not completed as clearance is awaited from PSDF.</b>  <b>Proposal for capacitor at distribution level is under discussion in NRPC system studies sub committee and would be taken up after obtaining necessary approval from the sub committee.</b>  <b>RVPN to provide update, if any.</b>
<b>Uttar Pradesh</b>	TTC: 15100MW  RM: 600MW	N-1 Contingency of 2*500 MVA ICT at Azamgarh	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS implemented. Commissioning of 400/220kV Jaunpur S/S likely to provide relief (commissioned).
		N-1 Contingency of 3*315+1*500 MVA ICT at Samath	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS implemented. Commissioning of 400/220kV Sahupuri S/S likely to provide relief (Oct'2023)
		N-1 Contingency of 2*315+1*240 MVA ICT at Obra	New ICT/ Capacity augmentation to be planned by UPPTCL. SPS has been implemented by UPPTCL as confirmed in meeting.
		N-1 Contingency of 3*315 MVA ICT at Allahabad	New ICT/ Capacity augmentation may be proposed by UPPTCL. Commissioning of 400/220kV Jaunpur S/s likely to provide relief (commissioned).
	ATC: 14500MW	N-1 Contingency of 2*315 MVA ICT at Sohawal(P G)	<b>New 500MVA ICT approved in 3 NRPC TP held on 19.02.2021. Informed in 206 OCC meeting that new ICT expected by end of May 2023. SPS has already been commissioned.</b>  <b>NRLDC representative further suggested that mock testing may be carried out at all 400/220kV S/S in UPPTCL where SPS has been implemented.</b>  <b>UP SLDC stated that mock testing has</b>



			<p><b>already been carried out at Nehtaur S/s and would also be carried out at other substations shortly.</b></p> <p><b>UP SLDC to provide update regarding SPS mock testing.</b></p>
		<p>N-1 Contingency of 1*240+1*315+1*500 MVA ICT at Gorakhpur (UP)</p>	<p>Capacity augmentation at Gorakhpur (UP) from 1055MVA to 1315MVA to be expedited. SPS implemented.</p> <p><b>Informed in 206 OCC meeting, Capacity augmentation to be done in 2-3 months time. UP SLDC to provide update.</b></p>
Delhi	TTC: 7100MW	<p>N-1 contingency of 2*315 MVA ICT at Bawana</p>	<p>After bus -split due to high fault level at Bawana, ICTs N-1 non-compliant. Additional ICT/ load shifting to other station to be planned. Delhi SLDC to make sure that essential loads such as hospitals, DMRC, other important loads have alternate supply available so as to avoid load loss in case of N-1 contingency.</p> <p><b>In 206 OCC meeting, no update was provided regarding SPS at Bawana. Delhi SLDC representative stated that bus split and radial operation would be done at Bawana 2 ICT section (in case of high loading) till the implementation of SPS.</b></p> <p><b>NRLDC representative asked Delhi SLDC to submit which feeders would be opened, Radial network details &amp; Bus split to be implemented during high demand.</b></p> <p><b>Delhi SLDC agreed to submit these details along with ATC/TTC limits at the earliest.</b></p> <p><b>Delhi SLDC to provide update.</b></p>
	RM: 300MW		
	ATC: 6800MW		<p>N-1 Contingency of 3*315 MVA ICT at Mundka</p>

			<p><b>end.</b></p> <p><b>NRLDC representative stated that non-availability of ICT at Mundka would create N-1 related issues at Mundka. Last year, even with three ICTs, N-1 non-compliance was observed and presently, only two ICTs are available. It was also mentioned that given the criticality, mock testing of already implemented SPS may be carried out at 400/220kV Mundka.</b></p> <p><b>Delhi SLDC representative agreed for the same.</b></p> <p><b>Delhi SLDC to provide update.</b></p>
<b>Himachal Pradesh</b>	<p>TTC: 1400MW RM: 100MW ATC: 1300MW</p> <p>(lean hydro)</p> <p>No major transmission issues during summer/monsoon</p>	<p>N-1 Contingency of 3*315 MVA ICT at Nallagarh</p> <p>High loading of 220kV Nallagarh-Upernangal D/C line</p>	<p>New ICT/ Capacity augmentation to be proposed by HPPTCL/ PSTCL, based on future load growth. Drawl by Punjab, Chandigarh &amp; HP from 400/220kV Nallagarh</p> <p><b>CT ratio at Nallagarh end to be updated for utilising full line capacity of 220kV Nallagarh- Upernangal D/C. In 206 OCC meeting, HP representative informed work to be done in next shutdown of line (7 &amp; 14 May 2023).</b></p> <p><b>HP SLDC to provide update.</b></p>
<b>Uttarakhand</b>	<p>TTC: 1700MW RM: 100MW ATC: 1600MW</p>	<p>N-1 Contingency of 2*315 MVA ICT at Kashipur</p> <p>High loading of 220kV CB Ganj-Pantnagar</p>	<p>New ICT/ Capacity augmentation to be planned by PTCUL. SPS implemented at Kashipur. As intimated by SLDC Uttarakhand, no Bid received for new 315MVA ICT at Kashipur</p> <p>400kV Pantnagar is under study to relieve loading of 220kV CB Ganj-Pantnagar</p> <p><b>Uttarakhand SLDC vide email dated 28.04.2023 submitted their ATC/TTC assessment for summer 2023. NRLDC vide email dated 02.05.2023 have shared their comments to the ATC/TTC assessment done by Uttarakhand.</b></p> <p><b>Uttarakhand SLDC to provide update.</b></p>
		High loading	Additional connectivity/ conductor

		of 220kV lines from Roorkee (PG)	upgradation to be planned by PTCUL (400kV Landhora S/S by LILO of 400kV Kashipur-Roorkee line under discussion). Under discussion with CTUIL and CEA.
<b>J&amp;K</b>	TTC: 2200MW RM: 100MW ATC: 2100MW (lean hydro)	N-1 Contingency of 2*315 MVA ICT at Amargarh	New ICT/ Capacity augmentation may be expedited by NRSSXXIX (planned for Mar'2026). Additional planned 220kV and low voltage lines to be expedited to manage drawl from Amargarh. As per latest discussion held in 16 CMETS held on 28.02.2023, new ICT to be implemented in next 21 months.
	No major transmission issues during summer/monsoon	High loading of 220kV lines from Wagoora(PG)	Additional connectivity to be planned and already approved schemes to be expedited by JKPTCL
		Low voltage issues during winter season	Large dependency on SVC at New Wanpoh for MVAR support. Capacitor installation at low voltage level to be expedited.

## J&K

Loading of 400/220kV Amargarh ICTs was above N-1 contingency limits for last 30 days. 220kV Amargarh-Ziankote D/C lines are also N-1 non-compliant for most of the time during winter months.

Apart from above, there are issues related to huge MVAR drawl by J&K control area during winter season.

Not assessing its ATC. J&K representatives had intimated during 47<sup>th</sup> TCC and 49<sup>th</sup> NRPC meeting that they would be sharing ATC/TTC assessment with NRLDC from October 2021, however the same is still awaited.

***NRLDC had taken online training sessions for J&K representative (two in Feb 2023, two in March 2023 and two in Apr 2023).*** J&K and Ladakh U/Ts are once again requested to advise the concerned officers to evaluate their ATC/TTC limits in coordination with NRLDC and share latest assessment with NRLDC and NRPC.

***Punjab, Haryana, HP, Uttarakhand & UP are communicating with NRLDC regularly regarding ATC/TTC assessment for summer/monsoon 2023. However, other states such as Delhi, Rajasthan and J&K are yet to provide their ATC/TTC assessments for summer/monsoon 2023.***

***Punjab, Haryana and UP have shared their ATC/TTC assessment considering number of transmission elements that were anticipated to be commissioned.***

**Based on actually commissioned transmission elements, these states are requested to review and submit their ATC/TTC for summer/monsoon 2023.**

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

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 are uploading ATC/TTC limits on their websites.

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

**It is seen that most of the links are old and have old ATC/TTC limits. It is requested to regularly update ATC/TTC limits as agreed between SLDC and NRLDC.**

**Members may like to discuss.**

#### 17. Frequent forced outages of transmission elements in the month of April'23:

The following transmission elements were frequently under forced outages during the month of **April'23**:

S. No.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	6	NPCIL/Rajasthan
2	220 KV Dasuya(PS)-Jalandhar(BB) (BBMB) Ckt-2	4	BBMB/Punjab
3	220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1	4	BBMB/Delhi
4	400 KV Bareilly-Unnao (UP) Ckt-1	9	UP
5	400 KV Ballabgarh(PG)-Tughlakabad(PG) (DTL) Ckt-2	3	Delhi/POWERGRID
6	220 KV Khara(UP)-Saharanpur(PG) (UP) Ckt-1	3	UP/POWERGRID

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

Status of remedial action as agreed in last OCC (206) meeting:

- Status of review of protection system and healthiness of CBs at Gumma(HP) S/s
- Issue of A/R operation in 400 KV Suratgarh(RVUN)-Bikaner(RS) (RS) Ckt-1.

It may be noted that frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are requested to analyze the root cause of the tripping and share the remedial measures taken/being taken in this respect.

Members may like to discuss.

## **18. Multiple element tripping events in Northern region in the month of April '23:**

A total of 28 grid events occurred in the month of April'23 of which **09** are of GD-1 category, **09** are of GI-2 Category & **10** is of GI-1 category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.III**.

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 **1560msec** in the event of multiple element tripping at 400/220kV Sultanpur(UP) at 08:56hrs on 26<sup>th</sup> April, 2023. During the event, Y-ph bus isolator of 220kV Sultanpur-Tanda New ckt damaged during switching operation and created Y-N bus fault.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **6** events out of **28** grid events occurred in the month. The other events with delayed clearance of faults are as follows:

1. Multiple elements tripping at 400/220kV Daulatabad(Har) at 17:53hrs on 01<sup>st</sup> April, 2023, fault clearance time: 360msec
2. Multiple elements tripping at 220/132kV Safidon(Har) at 18:32hrs on 11<sup>th</sup> April, 2023, fault clearance time: 440msec
3. Multiple elements tripping at 220/132kV Mau(Har) at 01:43hrs on 14<sup>th</sup> April, 2023, fault clearance time: 1280msec
4. Multiple elements tripping at 220kV Dasuya(Pun) at 17:15hrs on 15<sup>th</sup> April, 2023, fault clearance time: 680msec
5. Multiple elements tripping at 220kV Salal(NHPC) at 10:33hrs on 25<sup>th</sup> April, 2023, fault clearance time: 320msec

Remedial actions taken by constituents to avoid such multiple elements tripping may be shared.

Status of remedial action as agreed in last OCC (206) meeting:

- Protection system review at 400/220kV Panki(UP) S/s
- Healthiness of differential protection in 220kV Moga(PG)-Mogan(PS) lines and protection system review at 220kV Mogan(PS).
- Detail report of multiple element tripping at 220/66kV Jamalpur(BBMB) at 21:17hrs on 30<sup>th</sup> March, 2023.

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken by respective utilities in OCC & PSC forum. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events to RLDC in line with the regulations.

Members may like to discuss.

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

A total of 3 inter-regional lines tripping occurred in the month of April'23. The list is attached at **Annexure-B.IV**. 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.

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

**20. Status of submission of DR/EL and tripping report of utilities for the month of April'23.**

The status of receipt of DR/EL and tripping report of utilities for the month of April'2023 is attached at **Annexure-B.V**. It is to be noted that as per the IEGC provision under clause 5.2 (r), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has been improved from POWERGRID (NR-2, NR-3), UP, HP, Haryana, Rajasthan & Uttarakhand in February'2023 compared to the previous month. However, reporting status from POWERGRID (NR-1), Punjab, Delhi, J&K & RE stations need improvement.

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

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

In last 24 OCC meetings, this point was discussed and Utilities were requested to submit the present status of PSS tuning/re-tuning and Step Response Test of their respective generators as per the below mentioned format.

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

The status of test performed till date is attached at **Annexure-B.VI**.

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.

Members are requested to update about their future plan for PSS tuning and share the reports of PSS tuning/re-tuning and Step Response Test if conducted in their control area.

Members may like to discuss.

## 22. Status of Bus bar protection:

Clause - 4 in schedule - V of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010 reads as *"Bus bar protection and local breaker backup protection shall be provided in 220kV and higher voltage interconnecting sub- stations as well as in all generating station switchyards"*.

During analysis of many grid incidents/disturbances, it has been found that the Busbar protection at the affected substation was **not present or non-operational** which resulted in considerably increasing both the number of affected elements and fault clearance time. Accordingly, it becomes critical to monitor and keep Busbar protection at all the 220 kV and above voltage level substations healthy and operational.

Constituents were requested vide NRLDC letter dated 28<sup>th</sup> Dec 2022 to furnish status of Busbar protection in the following format in your control area.

Details are yet to be received from Delhi, Punjab & Delhi.

Constituent wise status of bus bar protection where bus bar protection is either not installed or installed but not operational is attached as **Annexure-B.VII**.



Constituents agreed in last OCC meeting to share the current status of the bus bar protection, however no details received as of now. Constituents are requested to share the present status w.r.t. to the same.

Members may like to discuss.

### **23. Sharing of station event logger detail during First Time Charging of elements:**

It is observed that many a times utility submits bay wise individual event logger details in Format –II (Protection setting/DR/Event logger) during FTC request. However, station event logger details need to be submitted. Constituents are requested to ensure the same during FTC request.

Members may like to discuss.

### **24. Replacement of electromagnetic relays with numerical relays:**

Clause-5.2(r) of IEGC, clause-15(4) of CEA Grid standards and clause-48(4) of CEA Construction Standards 2022 mandates that *“each line or transformer or reactor or any other bay shall be provided with facility for disturbance recording, event logging and time synchronizing equipment”*.

During analysis of grid incidents/disturbances, it has been found that there are few stations where electromechanical relays are still in use and thus disturbance recorder are not available there which accounts for violation of Clause-5.2(r) of IEGC, clause-15(4) of CEA Grid Standards and clause 48(4) CEA Construction Standards 2022.

In addition, clause-3 in part III (Grid Connectivity Standards applicable to Transmission Line and Sub-Station) of Standards for Connectivity to the Grid, 2007 reads as

*“Two main numerical Distance Protection Schemes shall be provided on all the transmission lines of 220 kV and above for all new sub-stations. For existing sub-stations, this shall be implemented in a reasonable time frame”*

It is known that Disturbance recorder (DR) is essential for analysis of grid incidents/disturbances. Its non-availability eventually affects the proper analysis of grid incidents/disturbances and monitoring of protection system.

Therefore, all the constituents/SLDC/STU are requested to review the same in their control area and take expedite actions to replace electromechanical relays with numerical relays.

## Follow up issues from previous OCC meetings

Annexure-A. I

1	Down Stream network by State utilities from ISTS Station	Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.	List of downstream networks is enclosed in <b>Annexure-A. I. I.</b>																																						
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.	<p>Data upto following months, received from various states / UTs:</p> <table border="1" data-bbox="906 857 1554 1160"> <tr><td>⊙ CHANDIGARH</td><td>Sep-2019</td></tr> <tr><td>⊙ DELHI</td><td>Mar-2023</td></tr> <tr><td>⊙ HARYANA</td><td>Dec-2022</td></tr> <tr><td>⊙ HP</td><td>Jan-2023</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Not Available</td></tr> <tr><td>⊙ PUNJAB</td><td>Jul-2022</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Feb-2023</td></tr> <tr><td>⊙ UP</td><td>Mar-2023</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Mar-2023</td></tr> </table> <p>All States/UTs are requested to update status on monthly basis.</p>	⊙ CHANDIGARH	Sep-2019	⊙ DELHI	Mar-2023	⊙ HARYANA	Dec-2022	⊙ HP	Jan-2023	⊙ J&K and LADAKH	Not Available	⊙ PUNJAB	Jul-2022	⊙ RAJASTHAN	Feb-2023	⊙ UP	Mar-2023	⊙ UTTARAKHAND	Mar-2023																				
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3	Healthiness of defence mechanism: Self-certification	<p>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”.</p> <p>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</p>	<p>Data upto following months, received from various states / UTs:</p> <table border="1" data-bbox="906 1357 1554 1688"> <tr><td>⊙ CHANDIGARH</td><td>Not Available</td></tr> <tr><td>⊙ DELHI</td><td>Dec-2022</td></tr> <tr><td>⊙ HARYANA</td><td>Mar-2023</td></tr> <tr><td>⊙ HP</td><td>Apr-2023</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Not Available</td></tr> <tr><td>⊙ PUNJAB</td><td>Jun-2022</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Dec-2022</td></tr> <tr><td>⊙ UP</td><td>Mar-2023</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Mar-2023</td></tr> <tr><td>⊙ BBMB</td><td>Mar-2023</td></tr> </table> <p>All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quarterly basis for the rest .</p> <p>Status:</p> <table border="1" data-bbox="906 1917 1554 2215"> <tr><td>⊙ CHANDIGARH</td><td>Not Available</td></tr> <tr><td>⊙ DELHI</td><td>Increased</td></tr> <tr><td>⊙ HARYANA</td><td>Increased</td></tr> <tr><td>⊙ HP</td><td>Increased</td></tr> <tr><td>⊙ J&amp;K and LADAKH</td><td>Not increased</td></tr> <tr><td>⊙ PUNJAB</td><td>Increased</td></tr> <tr><td>⊙ RAJASTHAN</td><td>Increased</td></tr> <tr><td>⊙ UP</td><td>Increased</td></tr> <tr><td>⊙ UTTARAKHAND</td><td>Increased</td></tr> </table>	⊙ CHANDIGARH	Not Available	⊙ DELHI	Dec-2022	⊙ HARYANA	Mar-2023	⊙ HP	Apr-2023	⊙ J&K and LADAKH	Not Available	⊙ PUNJAB	Jun-2022	⊙ RAJASTHAN	Dec-2022	⊙ UP	Mar-2023	⊙ UTTARAKHAND	Mar-2023	⊙ BBMB	Mar-2023	⊙ CHANDIGARH	Not Available	⊙ DELHI	Increased	⊙ HARYANA	Increased	⊙ HP	Increased	⊙ J&K and LADAKH	Not increased	⊙ PUNJAB	Increased	⊙ RAJASTHAN	Increased	⊙ UP	Increased	⊙ UTTARAKHAND	Increased
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©	BBMB	Increased																			
4	Status of FGD installation vis-à-vis installation plan at identified TPS	<p>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.</p> <p>Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.</p>	<p>Status of the information submission (month) from states / utilities is as under:</p> <table border="1"> <tr> <td>©</td> <td>HARYANA</td> <td>Sep-2022</td> </tr> <tr> <td>©</td> <td>PUNJAB</td> <td>Mar-2023</td> </tr> <tr> <td>©</td> <td>RAJASTHAN</td> <td>Mar-2023</td> </tr> <tr> <td>©</td> <td>UP</td> <td>Apr-2023</td> </tr> <tr> <td>©</td> <td>NTPC</td> <td>Feb-2023</td> </tr> </table> <p>FGD status details are enclosed as <b>Annexure-A. I. II.</b></p> <p>All States/utilities are requested to update status of FGD installation progress on monthly basis.</p>	©	HARYANA	Sep-2022	©	PUNJAB	Mar-2023	©	RAJASTHAN	Mar-2023	©	UP	Apr-2023	©	NTPC	Feb-2023			
©	HARYANA	Sep-2022																			
©	PUNJAB	Mar-2023																			
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©	UP	Apr-2023																			
©	NTPC	Feb-2023																			
5	Information about variable charges of all generating units in the Region	The variable charges detail for different generating units are available on the MERIT Order Portal.	All states/UTs are requested to submit daily data on MERIT Order Portal timely.																		
6	Status of Automatic Demand Management System in NR states/UT's	The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:	<p>Status:</p> <table border="1"> <tr> <td>©</td> <td>DELHI</td> <td>Fully implemented</td> </tr> <tr> <td>©</td> <td>HARYANA</td> <td>Scheme not implemented</td> </tr> <tr> <td>©</td> <td>HP</td> <td>Scheme not implemented</td> </tr> <tr> <td>©</td> <td>PUNJAB</td> <td>Scheme not implemented</td> </tr> <tr> <td>©</td> <td>RAJASTHAN</td> <td>Under implementation. Likely completion schedule is 30.06.2023.</td> </tr> <tr> <td>©</td> <td>UP</td> <td>Scheme implemented by NPCIL only</td> </tr> </table>	©	DELHI	Fully implemented	©	HARYANA	Scheme not implemented	©	HP	Scheme not implemented	©	PUNJAB	Scheme not implemented	©	RAJASTHAN	Under implementation. Likely completion schedule is 30.06.2023.	©	UP	Scheme implemented by NPCIL only
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7	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAR TCR	Anticipated commissioning: May'23
ii	DTL	Peeragarhi	1x50 MVAR at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAR at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAR at 400 kV & 1x25 MVAR at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAR at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAR at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAR at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAR at 400 kV & 1x25 MVAR at 220 kV	400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA. Commsioned 27th Jan'23
ix	PUNJAB	Nakodar	1x25 MVAR at 220 kV	1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February' 2023.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Price bid has been opened and is under evaluation. Retendered in Jan'23
xi	RAJASTHAN	Akal	1x25 MVAR	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVar	Main bus shutdown is required for commissioning of 1x25 MVAR reactor at Bikaner, same is expected upto March' 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVar	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November' 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVar	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months.
xv	RAJASTHAN	Jodhpur	1x125 MVar	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months.

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Mar'23	02 No. of bays shall be utilized for LILO-II of 220kV Hiranagar Bishnah Transmission Line, the work of which is under progress and shall be completed by March'2023. Updated in 204th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	End of 2023	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. The work is in progress and expected to be commission by the end of 2023. Updated in 204th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Jul'24	Updated in 205th OCC by HVPNL
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahjahanpur (PG) - Gola line	Apr'23	Updated in 205th OCC by UPPTCL
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	Commissioned	Commissioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Jun'23	Issue related to ROW as intimated in 202nd OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad	Commissioned: 6 Under Implementation: 4	Utilized: 6 Unutilized: 0	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
	GIS	Total: 10	Under Implementation:4	• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6	Utilized: 0	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Jun'23	Updated in 205th OCC by HPPTCL
		Total: 6	Unutilized: 6	• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8	Utilized: 0	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Dec'23	Forest approval is pending for 220 KV Pali - Sector 56 D/C line. Updated in 205th OCC by HVPNL
		Total: 8	Unutilized: 8	• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	Dec'23	Updated in 205th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8	Utilized: 2	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
		Total: 8	Unutilized: 4	• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. <b>Status:-</b> Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL
16	400/220kV Sonapat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonapat	05.10.2023	Updated in 205th OCC by HVPNL
				• Sonapat - HSIISC Rai 220kV D/c line	-	Updated in 205th OCC by HVPNL. <b>Status:</b> Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely



Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
			Implementation:2	<ul style="list-style-type: none"> <li>Sonepat - Kharkhoda Pocket A 220kV D/c line</li> </ul>	31.07.2024	<p>Updated in 205th OCC by HVPNL.</p> <p><b>Status:</b> The Possession of land for construction of 220KV S/Stn. Pocket-A i.e 6.33 Acres and for Pocket-B is 5.55 Acres has been taken over by HVPNL. Work order yet to be issued by O/o CE/PD&amp;C, Panchkula for construction of 2 no. 220KV GIS S/Stn Pocket-A &amp; Pocket-B.</p>
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	<ul style="list-style-type: none"> <li>LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)</li> </ul>	-	Work order is finalized as updated in 201st OCC by RVPNL. 5 months from layout finalization.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	<ul style="list-style-type: none"> <li>Kotputli - Pathreda 220kV D/c line</li> </ul>	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jalandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	<ul style="list-style-type: none"> <li>Network to be planned for 2 bays</li> </ul>	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	<ul style="list-style-type: none"> <li>Roorkee (PG)-Pirankaliyar 220kV D/c line</li> </ul>	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	<ul style="list-style-type: none"> <li>Network to be planned for 2 bays</li> </ul>	Jun'23	<ul style="list-style-type: none"> <li>Lucknow -Kanduni, 220 kV D/C line expected energization date Jun'23 updated by UPPTCL in 205th OCC due to sub-station commissioning delay</li> <li>No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.</li> </ul>
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	<ul style="list-style-type: none"> <li>Network to be planned for 2 bays</li> </ul>	Apr'23	<ul style="list-style-type: none"> <li>Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date is 15.04.2023 updated by UPPCL in 205th OCC</li> </ul>
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	<ul style="list-style-type: none"> <li>Network to be planned for 2 bays</li> </ul>	-	<ul style="list-style-type: none"> <li>UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years).</li> <li>No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.</li> </ul>
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	<ul style="list-style-type: none"> <li>Abdullapur – Rajokheri 220kV D/c line</li> </ul>	Jul'23	SCDA System work pending at 220 KV S/stn. Rajokheri Updated in 205th OCC by HVPNL
25	400/220kV Panchkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	<ul style="list-style-type: none"> <li>Panchkula – Pinjore 220kV D/c line</li> </ul>	Sep'23	Updated in 205th OCC by HVPNL
				<ul style="list-style-type: none"> <li>Panchkula – Sector-32 220kV D/c line</li> </ul>	Sep'23	Updated in 205th OCC by HVPNL
				<ul style="list-style-type: none"> <li>Panchkula – Raiwali 220kV D/c line</li> </ul>	Commissioned	Updated in 194th OCC by HVPNL
				<ul style="list-style-type: none"> <li>Panchkula – Sadhaura 220kV D/c line: Sep'23</li> </ul>	Jul'24	Updated in 205th OCC by HVPNL
		Commissioned:7	Utilized: 6	<ul style="list-style-type: none"> <li>Amritsar – Patti 220kV S/c line</li> </ul>	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
26	400/220kV Amritsar S/s	Approved in 50th NRPC- 1 no. Total: 8	Unutilized: 1 Approved in 50th NRPC- 1 no.	• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahadurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL	31.03.2024	Updated in 205th OCC by HVPNL. <b>Status:</b> Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	31.03.2024	Updated in 205th OCC by HVPNL. <b>Status:</b> Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	31.07.2024	
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC
				• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Mar'23	Saharanpur(PG)-Devband D/c line expected energization date last week of March'23 updated by UPPTCL in 205th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	May'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by May 2023.Updated in 205th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is not ready.Updated in 198th OCC by HPPTCL
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

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

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule	Downstream connectivity by States
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Mar'22	DTL to update the status
2	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Apr'22	Chandigarh to update the status.
3	400/220kV Jauljivi GIS Out of these 8 nos. 220kV Line Bays, 4 nos. (Pithoragath-2, & Dhauliganga-2) would be used by the lines being constructed by POWERGRID and balance 4 nos. bays would be used by the lines being constructed by PTCUL.	2x315	Feb'22	<ul style="list-style-type: none"> <li>• 220kV Almora-Jauljibi line</li> <li>• 220kV Brammah-Jauljibi line</li> </ul> PTCUL to update the status of lines.

# FGD Status

# Updated status of FGD related data submission

## **NTPC (27.02.2023)**

MEJA Stage-I

RIHAND STPS

SINGRAULI STPS

TANDA Stage-I

TANDA Stage-II

UNCHA HAR TPS

## **UPRVUNL (15.02.2023)**

ANPARA TPS

HARDUAGANJ TPS

OBRA TPS

PARICHHA TPS

## **PSPCL (16.02.2023)**

GGSSSTP, Ropar

GH TPS (LEH.MOH.)

## **RRVUNL (16.03.2023)**

CHHABRA SCPP

CHHABRA TPP

KALISINDH TPS

KOTA TPS

SURATGARH SCTPS

SURATGARH TPS

# Updated status of FGD related data submission

**Lalitpur Power Gen. Co. Ltd.  
(17.10.2022)**

Lalitpur TPS

**Lanco Anpara Power Ltd.  
(18.06.2022)**

ANPARA-C TPS

**HGPCL (14.09.2022)**

PANIPAT TPS

RAJIV GANDHI TPS

YAMUNA NAGAR TPS

**Adani Power Ltd. (18.02.2022)**

KAWAI TPS

**Rosa Power Supply Company  
(18.06.2022)**

Rosa TPP Phase-I

**Prayagraj Power Generation  
Company Ltd. (17.10.2022)**

Prayagraj TPP

**APCPL (25.02.2022)**

INDIRA GANDHI STPP

# Pending submissions

**GVK Power Ltd.**

GOINDWAL SAHIB

**NTPC**

DADRI (NCTPP)

**Talwandi Sabo Power Ltd.**

TALWANDI SABO TPP

**L&T Power Development Ltd.**

Nabha TPP (Rajpura TPP)



# Target Dates for FGD Commissioning (Utility-wise)

<b>Adani Power Ltd.</b>	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
<b>APCPL</b>	INDIRA GANDHI STPP U#1 (Target: 31-01-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2023), INDIRA GANDHI STPP U#3 (Target: 30-06-2023)
<b>GVK Power Ltd.</b>	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
<b>HGPCL</b>	PANIPAT TPS U#6 (Target: 31-12-2022), PANIPAT TPS U#7 (Target: 31-12-2022), PANIPAT TPS U#8 (Target: 31-12-2022), RAJIV GANDHI TPS U#1 (Target: 31-12-2024), RAJIV GANDHI TPS U#2 (Target: 31-12-2024), YAMUNA NAGAR TPS U#1 (Target: 31-12-2024), YAMUNA NAGAR TPS U#2 (Target: 31-12-2024)

**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: 31-03-2023), RIHAND STPS U#1 (Target: 31-10-2025), RIHAND STPS U#2 (Target: 30-06-2026), RIHAND STPS U#3 (Target: 31-12-2024), RIHAND STPS U#4 (Target: 31-03-2025), RIHAND STPS U#5 (Target: 30-06-2025), RIHAND STPS U#6 (Target: 31-10-2025), SINGRAULI STPS U#1 (Target: 31-12-2024), SINGRAULI STPS U#2 (Target: 31-12-2024), SINGRAULI STPS U#3 (Target: 31-12-2024), SINGRAULI STPS U#4 (Target: 31-12-2024), SINGRAULI STPS U#5 (Target: 31-03-2025), SINGRAULI STPS U#6 (Target: 31-06-2024), SINGRAULI STPS U#7 (Target: 31-03-2024), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-08-2022), MEJA Stage-I U#1 (Target: 31-10-2023), MEJA Stage-I U#2 (Target: 30-06-2023), TANDA Stage-I U#3 (Target: ), TANDA Stage-I U#4 (Target: ), TANDA Stage-II U#3 (Target: 31-03-2023), TANDA Stage-II U#4 (Target: 30-09-2023)

<b>L&amp;T Power Development Ltd (Nabha)</b>	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
<b>Lalitpur Power Gen. Company Ltd.</b>	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
<b>Lanco Anpara Power Ltd.</b>	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
<b>Prayagraj Power Generation Company Ltd.</b>	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
<b>PSPCL</b>	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2026), GGSSTP, Ropar U#3 (Target: 31-12-2026), GGSSTP, Ropar U#4 (Target: 31-12-2026), GGSSTP, Ropar U#5 (Target: 31-12-2026), GGSSTP, Ropar U#6 (Target: 30-12-2026)

<b>Rosa Power Supply Company</b>	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
<b>RRVUNL</b>	KOTA TPS U#5 (Target: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025)
<b>Talwandi Sabo Power Ltd.</b>	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)
<b>UPRVUNL</b>	ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)





उत्तर प्रदेश राज्य मार प्रषण कन्द्र

उ०प्र०पॉवर ट्रांसमिशन कारपोरेशन लि०  
(उत्तर प्रदेश सरकार का उपक्रम)  
यू०पी०एस०एल०डी०सी० परिसर, विभूति खण्ड- II  
गोमती नगर, लखनऊ-226010  
ई-मेल : cepso@upsldc.org  
sera@upsldc.org



## U.P. State Load Despatch Centre

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

No: - 2063 /SE(R&A)/EE-II/SPS

Dated: - 16/05/2023

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

### Subject - Regarding revision of System Protection Scheme (SPS) at Bara TPS.

It is to inform you that 1500MVA, 765/400kV ICT-II has been commissioned on 31.03.2023 at Bara TPS. Following the commissioning of aforementioned ICT, SPS installed at Bara TPS needs to be revised. Discussion on revised SPS scheme at Bara TPS was held in 206<sup>th</sup> OCC meeting of NRPC and the special meeting held on subject issue on dated 12.05.2023. Based on discussion in the aforesaid meetings the revised logic has been finalized by UPSLDC which is enclosed herewith.

It is requested to kindly include this proposal as agenda in 207<sup>th</sup> OCC meeting of NRPC so that the same may be discussed and approved.

Encl: - As above

*(Signature)*  
16/5

Arshad Jamal Siddiqui)  
Superintending Engineer (R&A)

No: - 2063 /SE(R&A)/EE-II/SPS

Dated: - 16/05/2023

Copy forwarded to following for kind information and necessary action:-

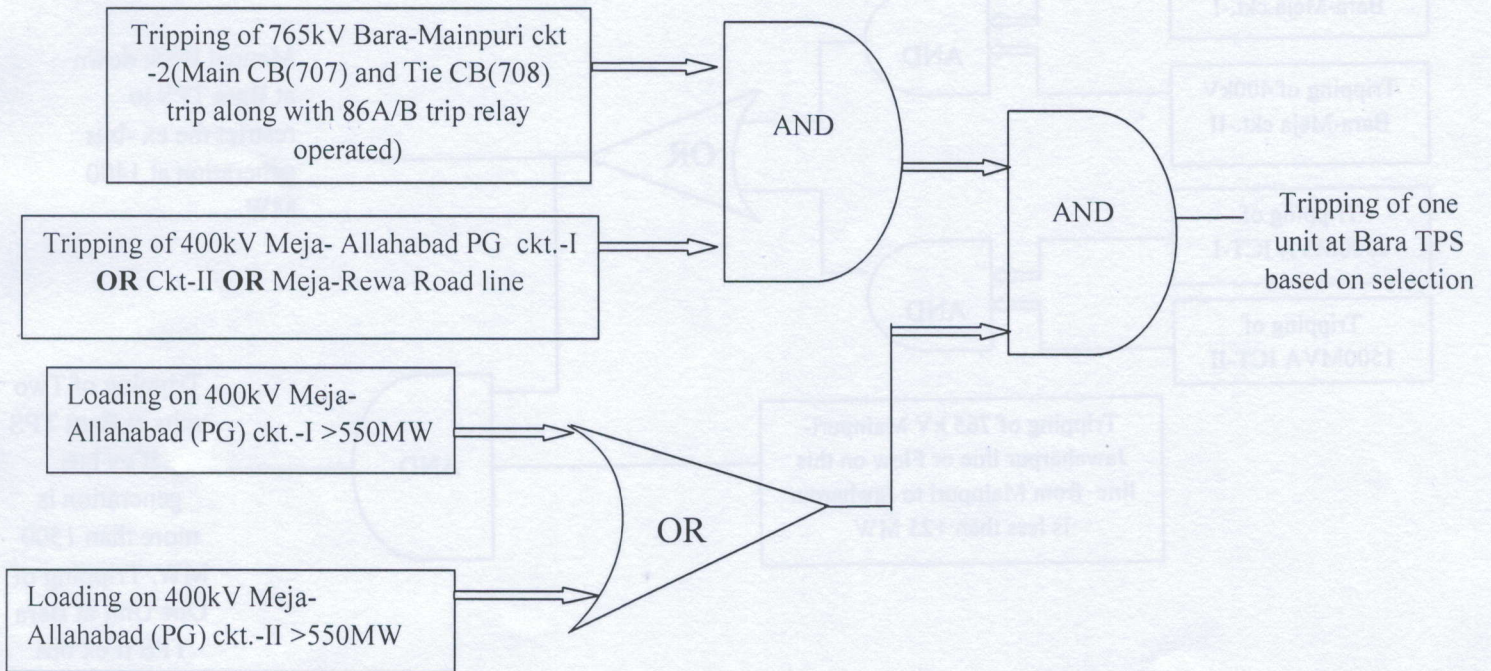
1. Director, UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.
3. Chief Engineer (PSO), UPSLDC Vibhuti Khand – II, Gomti Nagar, Lucknow.
4. General Manager, NRLDC18-A, SJSS Marg, Katwaria Sarai, New Delhi – 110016.
5. President, M/s Prayag Raj Thermal Power Plant, Village-Khansemra, PO-Lohgara, Tehsil-Bara, Distt-Allahabad 212107.

(Arshad Jamal Siddiqui)  
Superintending Engineer (R&A)



## Revised logic for SPS at Bara TPS

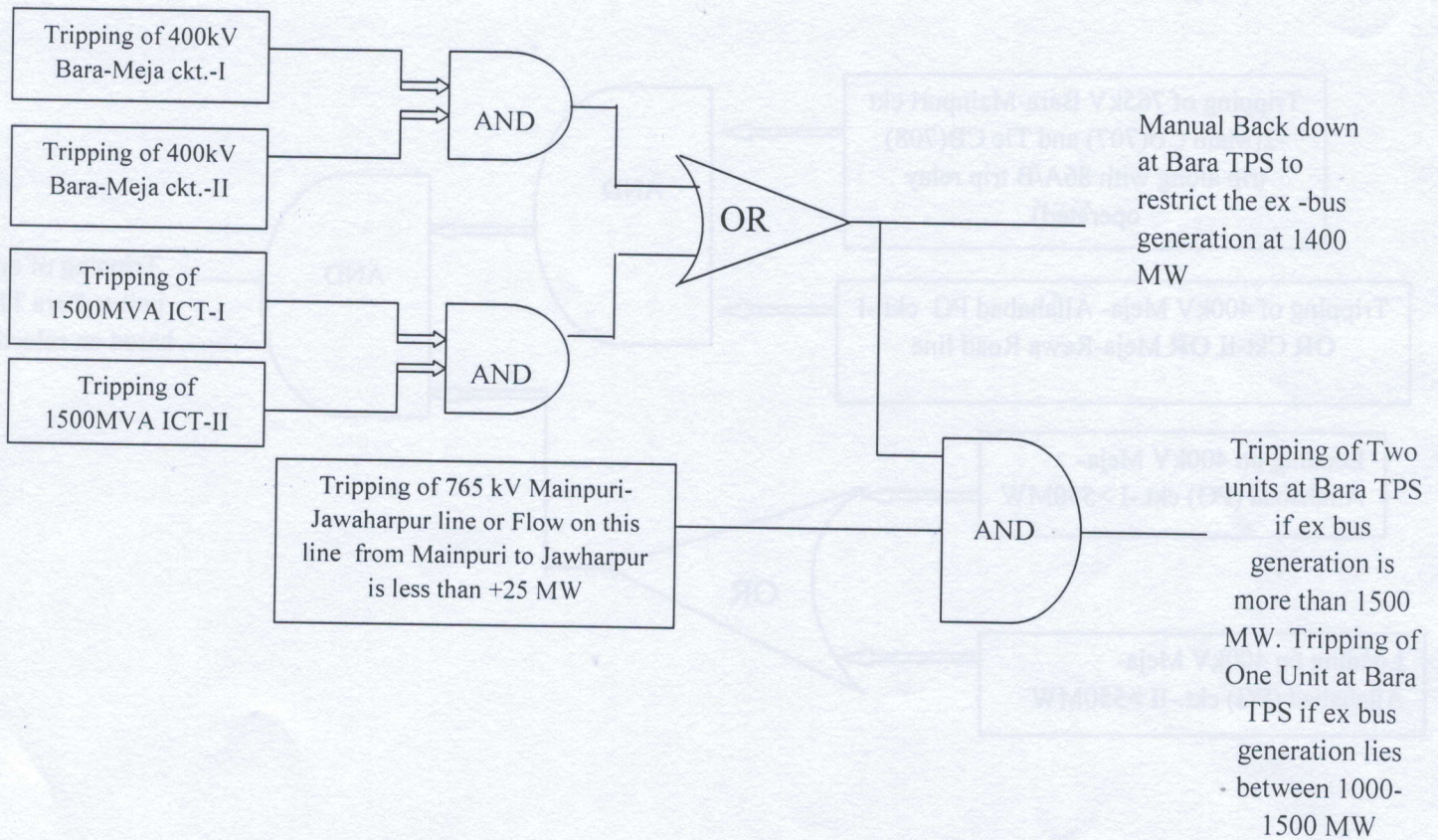
### Logic-1



**Note-** To avoid the loading on 400kV Meja- Allahabad PG ckt.-I &II to go beyond 650 MW following the tripping of 765 kV Bara-Mainpuri Ckt -II ,as a Standard Operating Procedure, control room operator shall take action to bring down generation at Bara TPS to restrict the loading on 400kV Meja- Allahabad PG ckt.- I &II below 550 MW



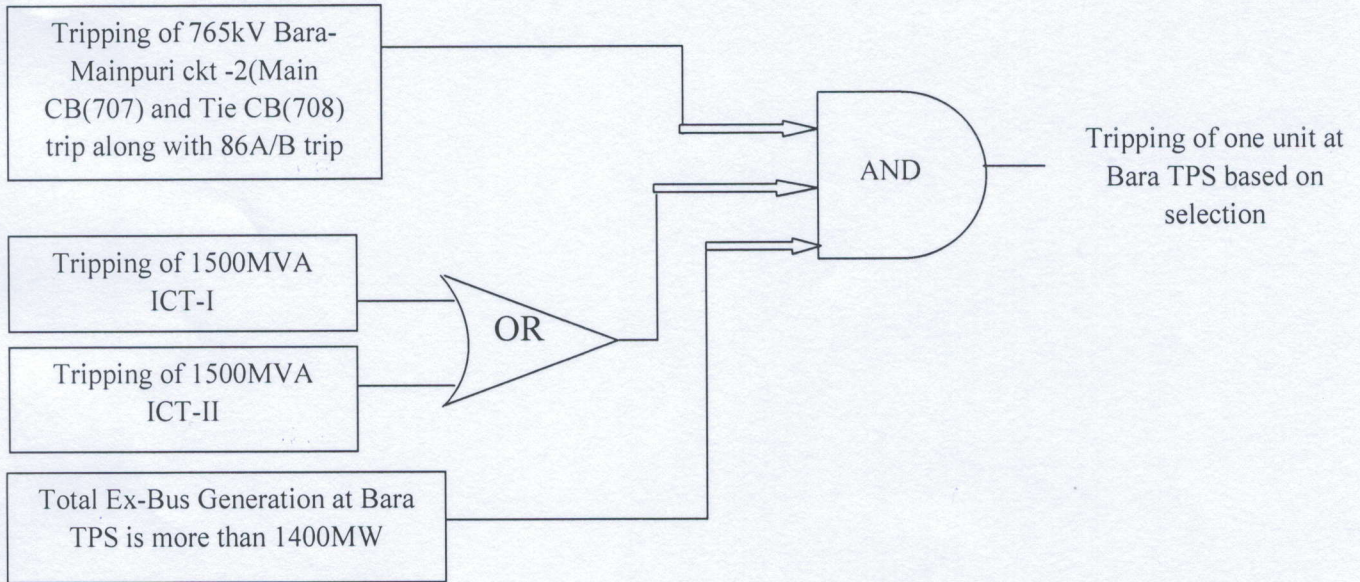
### Logic-2



**Note-** As a SOP, Bara TPS shall ensure that selection of Unit for tripping is done in such a way that Unit with highest generation gets tripped.



### Logic-3







**पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड**  
(भारत सरकार का उद्यम)  
**POWER GRID CORPORATION OF INDIA LIMITED**  
(A Government of India Enterprises)

REF:NR-3/AM/SS//ICT/N-1Compliant

Dt.20.04.23

To,

The Member Secretary,  
Northern Regional Power Committee  
18-A, Saheed Jeet Singh Marg,  
Katwaria Sarai, New Delhi-110016

**Subject: Non compliance of N-1 contingency in ICTs at Allahabad and Mainpuri Sub-Stations of POWERGRID NR-3.**

Dear Sir,

This is to inform that loading on 400/200 KV ,315 MVA ICTs at Allahabad and Mainpuri sub-stations have increased substantially in past few years and margins for increase in further load has also reduced. It is also observed that in case of peak load conditions , tripping / shutdown of one ICT will lead to violation of N-1 contingency. This situation has been faced at Allahabad S/S during recent shutdown of one 315 MVA ICT.

This is also to inform that matter of increasing capacity of ICTs at Allahabad S/S alongwith few other S/S was deliberated in 3rd NRPCTP held on 19.2.2021. ( copy of relevant page attached).

ICTs at Allahabad & Mainpuri S/S under the peak loading will not comply N-1 contingency criteria. In view of above it is requested that loading conditions of past one or two years may be reviewed by RLDC and necessary measures may be advised. M/S UPSLDC has also expressed their concern about these two sub-stations (Letter attached).

In view of the above, it is requested to take up the matter with CTU to do the system studies based on present and future forecasted load to review the need for additional transformation capacity at above two substations to make ICTs N- I compliant. Further, for immediate prevention of overloading of ICTs contingency, System Protection Scheme (SPS) may also be considered and advised till implementation of capacity augmentation.

*21/04/23*  
*Rakesh Kumar*  
(RAKESH KUMAR)

Chief General Manager-AM

Copy to:

1. CEO,CTU
2. Executive Director, NRLDC
3. Executive Director, NR3

क्षेत्रीय मुख्यालय : उत्तरी क्षेत्र-III, प्लॉट नंबर -2ए/आइएनएस2, अवध विहार योजना, अमर शाहीन पथ लखनऊ- 226002 (उ.प्र.), दूरभाष : 0522-2205100  
Regional Head Quarter : NR-III, Plot No. 2A/INS2, Awadh Vihar Yojna, Amer Shaheed Path, Lucknow - 226002(U.P.), Tel : 0522-2205100

केन्द्रीय कार्यालय : "सौभागिनी", प्लॉट नं. 2, सेक्टर-29, गुरुग्राम-122001 (हरियाणा) दूरभाष : 0124-2571700-719  
Corporate Office : "Saubhagini", Plot No. 2, Sector-29, Gurgaon-122001, (Haryana) Tel : 0124-2571700-719

पंजीकृत कार्यालय : बी-9, कतुब इस्लामिक कम्प्लेक्स, कतुवारीया सराय, नई दिल्ली-110016 दूरभाष : 011-26560112,26560121,26564812,26564892 सीआईएन: L40101DL1989GOI038121  
Registered Office : B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016, Tel: 011-26560112,26560121,26564812,26564892, CIN : L40101DL1989GOI038121  
Website : www.powergrid.in

I/15489/2021

02	2x1500 MVA 765/400kV ICT at Obra "C"	2x1000 MVA 765/400kV ICT at Obra "C"
03	LILO of Anpara "D"-Unnao 765kV SC line at Obra "C"- 15km and shifting of 330 MVAR line reactor from Anpara "D" to Obra "C" TPS	-No Change-
04	LILO of one ckt of 400kV DC line Obra "B"-Obra "C" at Jaunpur(400)-190 km	LILO of one ckt of 400kV DC Obra "B"-Obra "C" line at Jaunpur(400 kV)-190 km with Line Reactor of 63 MVAR for each ckt at Obra "C" end.
05	400kV DC line Obra "B"-Obra "C" – 1.5km (for Startup Power)	-No Change-
06	Bus Reactor 330 MVAR , 765kV at Obra "C"	Bus Reactor 189 MVAR, 765kV at Obra "C"
07	--	Bus Reactor 125 MVA, 400kV at Obra "C"
08	--	Station Transformer 400/11.5 kV, 2x100 MVA

26.2

Members note the same.

**27.0 Augmentation at 400kV S/S Muradnagar-I (1x500+2x315 MVA to 2x500+1x315 MVA)**

27.1 UPPTCL stated that presently at Muradnagar-I substation, 1x500+1x315 MVA transformers are in working condition against the installed capacity 1x500+2x315 MVA. Other 1x315 MVA transformer had got damaged on 13.03.2020 and is likely to take time in repair & restoration. Further, maximum loading observed in the sub-station in September, 2020 was 522 MVA. As such, to meet out the N-1 criteria and anticipated load growth in Ghaziabad area, augmentation at 400kV Muradnagar-I S/S from 1x500+2x315 MVA to 2x500+1x315 MVA has been proposed by UPPTCL.

27.2 Members agreed to the above proposal of augmentation of 400kV Muradnagar-I S/s from 1x500+2x315 MVA to 2x500+1x315 MVA as intra-State transmission works of UPPTCL.

**28.0 Increasing capacity of 400kV Agra PG, Allahabad PG, Kanpur PG, Lucknow PG and Meerut PG Substations**

28.1 Director (PSPA-I), CEA, stated that UPPTCL has informed that at following PGCIL substations, ICT's have been observed to be 'N-1' non-compliant under peak load conditions:

S. No	Name of S/s	Voltage level (in kV)	ICT's	Capacity of ICT's (in MVA)	*Peak Load of ICT's (in MVA)	% Loading of individual ICT's	Average Loading of S/s ICT's (%)
01	Agra (PG)	765kV	ICT-I	315	250	79	84
			ICT-II	315	277	88	
02	Sohawal (PG)	400kV	ICT-I	315	276	88	87
			ICT-II	315	274	87	
03	Allahabad (PG)	400kV	ICT-I	315	213	68	66
			ICT-II	315	213	68	
			ICT-III	315	201	64	
04	Kanpur (PG)	400kV	ICT-I	315	213	68	67
			ICT-II	315	211	67	
05	Lucknow (PG)	400kV	ICT-I	500	329	66	67
			ICT-II	500	341	68	
06	Meerut (PG)	400kV	ICT-I	500	317	63	67
			ICT-II	315	217	69	
			ICT-III	315	218	69	
			ICT-IV	315	218	69	

\* As observed in September ' 2020

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Therefore, UPPTCL has proposed for increasing transformation capacity at 400 kV Agra (PG) & Sohawal (PG) immediately and for other substations, namely Allahabad (PG), Kanpur (PG), Lucknow (PG), Meerut (PG) substations, the same shall be proposed subsequently, commensurate with load growth under Intra-State system.

28.2 Director (PSPA-I), CEA, further stated that UPPTCL vide letter dated 04.01.21 has requested Powergrid to explore space availability for augmentation of 400/220kV transformation capacity at Agra, Allahabad, Kanpur, Lucknow and Meerut POWERGRID substations due to high loading on existing transformers. Powergrid vide email dated 15.01.2021 has informed following in regard of space availability at above substations:

S. No.	Substation	Space Availability
1	Agra PG	Not Available
2	Sohawal PG	Available
3	Allahabad PG	Space for 400 & 220kV Bays Available. However, for interconnection, 220kV Cables required.
4	Kanpur PG	Space for 400 & 220kV Bays Available. However, for interconnection, 220kV Cables required.
5	Lucknow PG	Not Available
6	Meerut PG	Available

28.3 UPPTCL stated that immediate requirement is at Agra (PG) and Sohawal (PG) substations where average loading of transformers is around 85%. For rest of the substations mentioned in the table, loading is around 70%. Therefore, requirement and timeline for augmentation of ICTs at these substations can be deliberated.

28.4 CTU informed that there is no space available in Agra (PG) substation, therefore some alternative arrangement has to be explored to relieve the loading of the ICTs at Agra (PG).

28.5 Regarding new ICT at Agra (PG), POSOCO informed that a new substation at Ferozabad near Agra (PG) has recently been commissioned and UPPTCL may explore option of feeding some loads from Ferozabad S/s. UPPTCL agreed for the same.

28.6 Regarding new ICT at Sohawal (PG), POSOCO stated that the loading of 2x315 MVA, 400/220 kV ICTs at Sohawal (PG) were observed to be 'N-1' non-compliant for most of the time during last year. In this regard, a new station in vicinity (at Gonda) is under construction and commissioning of the same may be expedited. To this, UPPTCL stated that due to certain issues, there is uncertainty in completion of the transmission lines of Gonda in next 2 years. Therefore, augmentation of ICTs at Sohawal (PG) is needed.

28.7 For new ICTs at other sub-stations, POSOCO representative stated that there is currently slight margin in ICTs at these sub-stations and need for new ICTs may be studied depending on projected load growth in respective areas.

28.8 After deliberations, members agreed for 1x500 MVA, 400/220 kV ICT augmentation (3<sup>rd</sup>) at Sohawal (PG) under system strengthening.

## 29.0 Upcoming 765kV, 400kV & 220 kV substations and lines of UPPTCL:

29.1 CEA stated that UPPTCL has forwarded the list of upcoming 765kV, 400kV and 220kV substations and their associated lines which are under construction/planned as Intra-state network and deliberated in different SCM meeting of CEA are enclosed as **Annexure-C**.

29.2 Members noted the same.



उत्तर प्रदेश राज्य भार प्रषण कन्द्र

उ०प्र०पॉवर ट्रांसमिशन कारपोरेशन लि०

(उत्तर प्रदेश सरकार का उपक्रम)

यू०पी०एस०एल०डी०सी० परिसर, विभूति खण्ड- II

गोमती नगर, लखनऊ-226010

ई-मेल : cepso@upslc.org

sera@upslc.org



U.P. State Load Despatch Centre

U.P. Power Transmission Corporation Ltd.

(A U.P. Govt. Undertaking)

UPSLDC Complex, Vibhuti Khand – II

Gomti Nagar, Lucknow- 226010

E-mail: cepso@upslc.org

sera@upslc.org

No 720 / CE (PSO) /SE(R&A) /EE-II /Critical Elements

Date: - 2/4/2023

Chief General Manager,

NR-3, PGCIL, Awadh Vihar Yojana,

Sector-2 B, Roberts Lines,

Lucknw, Uttar Prades-226002.

**Subject: Regarding N-1 non-compliant ICTs at Allahabad (PG) and Mainpuri (PG).**

Estimated demand of UP Control Area in the forthcoming summer season is to be around 28000MW. As per load flow analysis at 28000 MW load, 400/220 KV ICTs at 400 kV substation Allahabad (PG) and Mainpuri (PG) are not N-1 compliant.

It is therefore requested to take necessary action by planning System Protection Scheme (SPS) at aforementioned substation as short term measures. You are also requested to plan capacity augmentation of ICTs at above two substations to make ICTs N-1 compliant as per the provisions of CEA manual on Transmission Planning Criteria 2023.

(Amarendu)  
Chief Engineer (PSO)

No 720 / CE (PSO) /SE(R&A) /EE-II /Critical Elements

Date: - 2/4/2023

Copy forwarded to following via email for information and necessary action:-

1. Director, UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow.
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.
3. Superintending Engineer (R&A), UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow (Via E-mail).

(Amarendu)  
Chief Engineer (PSO)



## Generating Unit Outage Report 15-05-2023

### A. Planned Outages

S.No	Station	Location	Owner	Unit No	Capacity MW	Reason(s)	Outage		Expected Revival Date
							Date	Time	
Central Sector (CS)									
1	RAPS-A	RAJASTHAN	NPCIL	1	100	Subject to regulatory clearance. Unit is to be decommissioned.	09-10-2004	22:58	-
2	Bhakra HPS	PUNJAB	BBMB	1	108	Renovation Modernization and upgradation of capacity to 126MW	15-12-2021	12:05	22-05-2023
3	RAPS-B	RAJASTHAN	NPCIL	1	220	For Mandatory Replacement of Reactor Components	27-10-2022	22:30	28-05-2024
4	Dehar HPS	HP	BBMB	6	165	Annual maintenance.	11-03-2023	20:00	17-06-2023
5	TEHRI HPS	UTTARAKHAND	THDC	2	250	Annual Maintenance	01-05-2023	08:00	26-05-2023
6	Koteshwar HPS	UTTARAKHAND	THDC	2	100	Annual maintenance	01-05-2023	10:00	30-05-2023
Sub Total (CS)					3287				
State Sector (SS)									
1	Gamma (UK)	UTTARAKHAND	PTCUL	2	75	Commercial Issue(High gas prices).Capacity 75 MW.	28-09-2021	00:25	-
2	SEPL GPS	UTTARAKHAND	PTCUL	3	75	Commercial Issue(High gas prices).Capacity 75 MW.	30-09-2021	05:40	-
3	SEPL GPS	UTTARAKHAND	PTCUL	1	75	Commercial Issue(High gas prices).Capacity 75 MW.	30-09-2021	05:40	-
4	SEPL GPS	UTTARAKHAND	PTCUL	2	75	Commercial Issue(High gas prices).Capacity 75 MW.	30-09-2021	05:40	-
5	Bawana GPS	DELHI	DTL/Pragati	2	216	Reserve Shutdown	04-05-2022	19:10	-
6	Guru Hargobind Singh TPS (Lehra Mo)	PUNJAB	PSPCL	2	210	ESP breakdown. Rectification works under progress as confirmed by SLDC-PS.	13-05-2022	21:36	01-01-2024
7	Bawana GPS	DELHI	DTL/Pragati	1	216	Reserve Shutdown	18-04-2023	01:02	-
8	Barsingsar (NLC)	RAJASTHAN	RRVNL	2	125	MAINTENANCE & OVERHAUL WORK	29-04-2023	19:57	29-05-2023
9	Guru Gobind Singh TPS (Ropar)	PUNJAB	PSPCL	4	210	Reserve Shutdown	30-04-2023	10:00	-
Sub Total (SS)					1890				
Total Planned Outage (CS+SS)					5177				

### B. Forced Outages

S.No	Station	Location	Owner	Unit No	Capacity MW	Reason(s)	Outage		Expected Revival Date
							Date	Time	
Central Sector (CS)									
1	Kishenganga	J&K	NHPC	2	110	Turbine Problem (nozzle problem)	30-04-2023	22:01	01-06-2023
2	ISTPP (Jhajjar)	HARYANA	APCPL	1	500	Under RSD till 18:14hrs dated 10.05.2023. Out due to Transmission constraint from 18:1	01-05-2023	01:11	25-05-2023
3	Dadri-II TPS	DELHI	NTPC	1	490	H2 leakage from Generator	13-05-2023	14:54	16-05-2023
Sub Total (CS)					1100				
State Sector (SS)									
1	Giral (IPP) LTPS	RAJASTHAN	RRVNL	1	125	Unit was out on bed material leakage and it is likely to be scrapped.	11-07-2014	08:20	-
2	Giral (IPP) LTPS	RAJASTHAN	RRVNL	2	125	Unit was out on bed material leakage and it is likely to be scrapped.	27-01-2016	15:27	-
3	Delhi Gas Turbines	DELHI	DTL	9	34	STG Governor oil leakage	12-02-2022	20:00	-
4	Delhi Gas Turbines	DELHI	DTL	5	30	due to tripping of associated STG at 20:00 hrs	12-02-2022	21:04	-
5	Ramgarh GPS	RAJASTHAN	RRVNL	2	38	due to fire accident in GT - 2	04-06-2022	01:17	31-07-2023
6	Obra TPS	UP	UPPTCL	10	200	Tripped DUE TO TURBINE PROBLEM . Turbine is under hauling	29-01-2023	21:00	01-06-2023
7	Bawana GPS	DELHI	DTL/Pragati	5	253	overhauling	09-02-2023	16:00	01-06-2023
8	Rajwest (IPP) LTPS	RAJASTHAN	RRVNL	2	135	Differential relay tripped. (Fault is in stator core zone.rectification)	17-03-2023	17:19	25-05-2023
9	Panipat TPS	HARYANA	HPGCL	8	250	tripped due to fire in Generator Transformer.	12-04-2023	14:56	17-05-2023
10	Obra TPS	UP	UPPTCL	13	200	due to Condenser vacuum Low	16-04-2023	14:08	22-05-2023
11	Anpara TPS	UP	UPPTCL	1	210	GT bushing burned	18-04-2023	08:49	15-06-2023
12	Kawai TPS	RAJASTHAN	RRVNL,APL	1	660	Due to Generator Transformer fault (Y phase).	01-05-2023	22:46	15-05-2023
13	Rajwest (IPP) LTPS	RAJASTHAN	RRVNL	5	135	Stator earth fault	07-05-2023	07:33	20-05-2023
14	VSLPP (IPP)	RAJASTHAN	RRVNL	1	135	Boiler loop seal bellow damage	10-05-2023	00:06	17-05-2023
15	Bara PPGCL TPS	UP	UPPTCL,JPV	2	660	Boiler Tube Leakage.	11-05-2023	12:05	15-05-2023
16	RGTTPP (Khedar)	HARYANA	HVPNL	1	600	Tripped on Generator Transformer Protection.	12-05-2023	11:34	15-05-2023
17	Kota TPS	RAJASTHAN	RRVNL	2	110	Due to suspected BTL.	13-05-2023	12:11	15-05-2023
18	Guru Hargobind Singh TPS (Lehra Mo)	PUNJAB	PSPCL	4	250	Boiler tube leakage	13-05-2023	14:55	16-05-2023
19	Suratgarh TPS	RAJASTHAN	RRVNL	4	250	Due to suspected tube leakage in Reheater area	14-05-2023	12:15	17-05-2023
Sub Total (SS)					4400				
Total Forced Outage (CS+SS)					5500				

### C. Outages of Nuclear based Generating Units

S.No	Station	Location	Owner	Unit No	Capacity MW	Reason(s)	Outage		Expected Revival Date
							Date	Time	
Central Sector (CS)									
1	RAPS-A	RAJASTHAN	NPCIL	1	100	Subject to regulatory clearance. Unit is to be decommissioned.	09-10-2004	22:58	-
2	RAPS-B	RAJASTHAN	NPCIL	1	220	For Mandatory Replacement of Reactor Components	27-10-2022	22:30	28-05-2024
Sub Total (CS)					320				
State Sector (SS)									
--No Outages--									
Sub Total (SS)					0				
Total (CS+SS)					320				

### D. Outages of Lignite based Generating Units

S.No	Station	Location	Owner	Unit No	Capacity MW	Reason(s)	Outage		Expected Revival Date
							Date	Time	
Central Sector (CS)									
--No Outages--									
Sub Total (CS)					0				
State Sector (SS)									
1	Giral (IPP) LTPS	RAJASTHAN	RRVNL	1	125	Unit was out on bed material leakage and it is likely to be scrapped.	11-07-2014	08:20	-
2	Giral (IPP) LTPS	RAJASTHAN	RRVNL	2	125	Unit was out on bed material leakage and it is likely to be scrapped.	27-01-2016	15:27	-
3	Rajwest (IPP) LTPS	RAJASTHAN	RRVNL	2	135	Differential relay tripped. (Fault is in stator core zone.rectification)	17-03-2023	17:19	25-05-2023
4	Barsingsar (NLC)	RAJASTHAN	RRVNL	2	125	MAINTENANCE & OVERHAUL WORK	29-04-2023	19:57	29-05-2023
5	Rajwest (IPP) LTPS	RAJASTHAN	RRVNL	5	135	Stator earth fault	07-05-2023	07:33	20-05-2023
Sub Total (SS)					645				
Total (CS+SS)					645				



Sr No	Element Name	Outage Date	Outage Time	Reason
1	220 KV Dasuya(PS)-Jalandhar(BB) (BBMB) Ckt-2	10-Apr-23	04:30	Phase to earth fault B-N. As per PMU, B-N fault occurred, no auto-reclosing is observed.
		15-Apr-23	17:15	Phase to phase fault R-B. As per PMU, R-B fault with delayed clearance of 720ms is observed.
		19-Apr-23	02:44	Phase to earth fault R-N. As per PMU, multiple faults are observed.
		29-Apr-23	06:52	Phase to earth fault B-N. As per PMU, B-N fault occurred, no auto-reclosing is observed.
2	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	01-Apr-23	14:50	B-N fault, Zone-1, Dist. 184.2km, Fault current 0.8047kA from RAPS_A & Zone-1, Dist. 18.3km, Fault current 1.43kA from Debari. As per PMU, no fault is observed.
		08-Apr-23	16:58	Phase to Earth fault B-N. As per PMU, no fault is observed.
		09-Apr-23	14:10	B-N fault, Dist. 78.0km, Fault current 1.02kA from Debari(RS). As per PMU, no fault is observed.
		10-Apr-23	13:48	Debari End :- M-I - B-ph, Dist. 123.3Km Carrier received; M-II B-ph, Dist. 121.2 Km, Carrier Send; RAPP End :- M-I, B-Ph, Z-I, Dist. 114.2KM, If=1.653KA; M-II, B-Ph, Z-I, Dist. 104.1KM, If=1.557KA. As per PMU, no fault is observed.
		18-Apr-23	15:52	B-N fault, Dist. 55.9km, Fault current 1.14kA from Debari(RS).As per PMU, no fault is observed.
		28-Apr-23	10:04	Phase to Earth fault B-N. As per PMU, no fault is observed.
3	220 KV Khara(UP)-Saharanpur(PG) (UP) Ckt-1	13-Apr-23	12:52	M1: phase to phase R-Y Fault; fault current in R-phase 2.858 kA, Y-phase 2.868 kA; M2: phase to phase R-Y Fault; fault current in R-phase 2.431kA, Y-phase 2.371kA Dist. 81.39km; Z-3 operated. As per PMU, R-Y fault with delayed clearance of 920ms is observed.
		15-Apr-23	12:12	R-Y fault, Fault current Ir 2.791kA, Iy 2.836kA, Dist. 79.24km from Saharanpur. As per PMU, R-Y fault with delayed clearance of 920ms is observed.
		19-Apr-23	05:23	R-N fault, Dist. 63.2km, Fault current 3.032kA from Khara(UP). As per PMU, R-Y fault with delayed clearance of 400ms is observed.
4	220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1	01-Apr-23	07:41	B-N fault, Zone-1, Dist. 11.26km, Fault current 4.3kA from Narela. As per PMU, no fault is observed.
		05-Apr-23	08:48	R-N fault. Tripped from Panipat end only. As per PMU, no fault is observed.
		15-Apr-23	14:15	Phase to earth fault R-N. As per PMU, no fault is observed.
		27-Apr-23	19:47	Line A/R from Narela end, but tripped from Panipat(BBMB) end. As per PMU, no fault is observed.
		07-Apr-23	14:23	Tripped on R-N fault. Tughlakabad end-Dist. 34KM, Fault current 2.9kA. As per PMU, no fault is observed.

5	400 KV Ballabgarh(PG)-Tughlakabad(PG) (DTL) Ckt-2	11-Apr-23	15:09	Tughlakabad: R -N Fault ,2.4 kA, 28.30km. As per PMU, multiple R-N faults are observed.
		12-Apr-23	12:02	R-N fault, Fault current 2.36kA, Dist. 23.60km from Tughlakabad; Dist. 13.9km, Fault current 9.6kA from Ballabgarh. As per PMU, multiple R-N faults are observed.
6	400 KV Bareilly-Unnao (UP) Ckt-1	02-Apr-23	11:45	B-N fault, Zone-1, Dist. 189.0km, Fault current 2.36kA from Unnao(UP). As per PMU, B-N fault and unsuccessful auto-reclosing observed at both ends.
		03-Apr-23	23:54	R-N fault, Zone-1, Dist. 37.8km, Fault current 8.0kA from Bareilly. As per PMU, R-N fault and successful auto-reclosing observed at Unnao end and no auto-recosing observed at Bareilly end.
		12-Apr-23	18:53	Y-N fault, Zone-1, Dist. 36.9km, Fault current 7.78kA from Unnao (UP). As per PMU, Y-N fault and successful auto-reclosing observed at Unnao end and no auto-recosing observed at Bareilly end.
		14-Apr-23	21:10	Y-N Fault, Zone-1, Dist. 36.3km, Fault current 8.129kA from Bareilly end. As per PMU, Y-N fault and successful auto-reclosing observed at Unnao end and no auto-recosing observed at Bareilly end.
		15-Apr-23	13:32	Y-N fault, Zone-1, Dist. 127.6km, Fault current 2.78kA from Unnao end. As per PMU, line tripped after 6 sec of successful A/R on Y-N fault in reclaim time.
		16-Apr-23	13:36	R-N fault, Dist. 257.28km, Fault current 1.38kA from Bareilly ; Zone-1, Dist. 16.4km, Fault current 13.82kA from Unnao. As per PMU, R-N fault and unsuccessful auto-reclosing observed at both ends.
		23-Apr-23	04:31	Rph, Yph,Stage I/II Overvoltage(R/Y/B) , f/c: 0.25 kA( R ph) , 0.24 kA( Y ph) ,0.26 kA( B ph),pre fault Voltage:422 kV. as per SCADA voltage was 428 KV. As per PMU, no fault is observed.
		24-Apr-23	03:42	Y-N fault, Zone-1, Dist. 41.6km, Fault current 7.674kA from Bareilly. As per PMU, Y-N fault and successful auto-reclosing observed at Unnao end and no auto-recosing observed at Bareilly end.
		27-Apr-23	04:16	Phase to earth fault B-N. As per PMU, line tripped after 6 sec of successful A/R operation on B-N fault.

Grid Event summary for April 2023

S.No.	Category of Grid Disturbance (GD-1 to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unreserved due to Generation loss (MU)	Energy Unreserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Preliminary Report receipt status			DR/EL receipt status			Detailed Report receipt status		Fault Clearance time (in ms)								
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	within 24hrs	after 24hrs	Not Received	within 24hrs	after 24hrs	Not Received	Received	Not Received									
																												Received	Not Received						
1	GI-2	1) 400/220 KV 315 MVA CT-4 at Daulatabad(HV) 2) 400 KV Dhanonda-Daulatabad (HV) Ckt-1	Haryana	HYPNL	1-Apr-23	17:53	1-Apr-23	22:55	05:02	i) 400/220KV Daulatabad(HV) S/S has one and half breaker bus scheme. ii) As reported, at 17:53hrs, B-N phase to earth fault occurred on 400 KV Dhanonda-Daulatabad (HV) Ckt-1 due to LA blast at Daulatabad end. At the same time, all the Main CBs in other dis which were connected at 400KV Bus-1 also opened. iii) As per PMU, B-N phase to phase fault with the delayed clearance of 360msec is observed. iv) As per SCADA SOE, 400/220KV ICT-4 at Daulatabad and The CB at Daulatabad end of 400 KV Dhanonda-Daulatabad (HV) Ckt-1 opened at around 17:53:52:075 hrs followed by opening of all the main breakers in other dis further after approx. ~200msec. v) It seems that either bus bar protection or LBB of main CB of 400 KV Dhanonda-Daulatabad (HV) Ckt-1 operated. However, reason of opening of LV side CB of 400/220KV ICT-4 at Daulatabad is not clear. vi) As per SCADA, change in demand of approx. 130MW in Haryana control area is observed.	0	0.65	0	130	0.000	0.343	34226	37899											360						
2	GI-2	1) 400/220 KV 315 MVA ICT-1 at Kota(PG) 2) 220KV Bus-1 at Kota(PG) 3) 220 KV Duni(PS)-Kota(PG) (RS) Ckt-1 4) 220 KV Kota(PS)-KTPS(RVUN) (RS) Ckt-1 5) 220/77 KV 50 MVA ST-1 at KTPS(RS)	Rajasthan	RVPNL, PGCL	1-Apr-23	21:41	2-Apr-23	00:06	02:25	i) 220 KV Kota(PG) has double main transfer bus scheme. During antecedent condition, 400/220 KV 315 MVA ICT 1, 220 KV Duni(PS)-Kota(PG) Ckt and 220 KV Kota(PG)-KTPS Ckt-1 were connected at 220 KV Bus-1 at Kota(PG). ii) As reported, Y-ph jumper of 400/220 KV ICT-01 (bushing) to 220 KV CT terminal connector snapped and terminal connector of CT at 220KV side for 400/220 KV ICT-01 melted. On this fault, bus bar protection of 220KV Bus-1 at Kota(PG) operated and all the elements connected to Bus-1 tripped. 220 KV Kota(PG)-KTPS Ckt-1 tripped only from Kota(PG) end. iii) As per DR, 400/220KV 315MVA ICT-1 tripped due to differential protection operation and other elements tripped due to bus bar protection of 220KV Bus-1 at Kota(PG). In addition, 220 KV Kota(PS)-KTPS Ckt-1 tripped only from Kota(PG) end, no DT command was sent from Kota(PG) end. iv) As per SOE, 220/77KV 50 MVA Station Transformer-1 at KTPS(RS) also tripped at the same time. Bus coupler at 220KV Kota(PG) also got opened hence Bus-2 at 220KV Kota(PG) did not trip. v) As per PMU at 400KV Kota(PG), B-N phase to ground fault is observed with fault clearance time of 80 ms. vi) As per SCADA, change in demand of approx. 125MW is observed in Rajasthan control area.	0	0.30	0	125	0.000	0.313	32056	39892													80				
3	GI-2	1) 400KV Bus 2 at Suratgarh SCTPS(RVUN) 2) 400 KV Suratgarh SCTPS(RVUN)-Suratgarh(RS) (RS) Ckt-1 3) 400 KV Suratgarh SCTPS(RVUN)-Suratgarh(RS) (RS) Ckt-2 4) 125 MVAR Bus Reactor No 2 at 400 KV Suratgarh SCTPS(RVUN)	Rajasthan	RVPNL, RVUNL	1-Apr-23	12:52	1-Apr-23	15:39	02:47	i) 400KV Suratgarh SCTPS had one and half breaker bus scheme. 400KV Suratgarh SCTPS-Suratgarh ckt-1&2 acts as interconnector between Suratgarh SCTPS and Suratgarh S/S, having line CB only. 400KV Suratgarh SCTPS-Babal ckt-1&2 are not charged yet lines are under commissioning stage. ii) During antecedent condition, 660MW Suratgarh SCTPS Unit-1&2 were carrying approx. 432MW & 397MW respectively and 400KV Suratgarh SCTPS-Suratgarh ckt-1&2 were carrying approx. 482MW & 485MW respectively. iii) As reported, at 12:52hrs, malfunction of LBB of 400KV Suratgarh SCTPS-Babal ckt-2 occurred at Suratgarh SCTPS end which led to the tripping of all the CBs connected to 400KV Bus-2. It resulted into tripping of 400KV Suratgarh SCTPS-Suratgarh ckt-2 and 125MVAR Bus reactor at Suratgarh SCTPS (The CB of bus reactor was already in open condition). iv) Further after approx. 1.5sec (as per SOE), 400KV Suratgarh SCTPS-Suratgarh ckt-1 also tripped due to overloading. v) As per telephonic communication with Suratgarh SCTPS, malfunction of LBB of 400KV Suratgarh SCTPS-Babal ckt-2 occurred during panel cleaning work. vi) Due to tripping of 400KV Suratgarh SCTPS-Suratgarh ckt-1&2, loading of 400KV Suratgarh SCTPS-Bikaner D/C changed from ~70MW each to 415MW each. vii) As per PMU, no fault in system is observed. viii) As per SCADA, no change in demand of Rajasthan control area observed.	0	0.00	0	0	0.000	0.000	42863	38557															NA		
4	GD-1	1) 220 KV Mogal(PG)-Ajitwal(PS) (PSTCL) Ckt-1 2) 220KV Bus-1 at Ajitwal(PS) 3) 220KV Bus-2 at Ajitwal(PS) 4) 220KV Himmatur(PS)-Ajitwal(PS) ckt 5) 220KV Jagraon(PS)-Ajitwal(PS) ckt-1 6) 220KV Jagraon(PS)-Ajitwal(PS) ckt-2 7) 220/66KV 100MVA ICT-3 at Ajitwal(PS) 8) 220/66KV 100MVA ICT-4 at Ajitwal(PS)	Punjab	PSTCL, PGCL	3-Apr-23	02:28	3-Apr-23	06:32	04:04	i) 220 KV Ajitwal(PS) has double main bus scheme. ii) As reported, at 02:28 hrs, bus bar protection operated at 220KV Ajitwal(PS) due to which all the 220KV lines connected to Bus-1&2 and 220/66KV 100MVA ICT-3&4 tripped. As a result 220/66KV Ajitwal(PS) substation became dead. iii) As per SOE, at first, bus coupler at 220KV Ajitwal(PS) opened. After that, 220/66KV 100MVA ICT-4, 220KV Mogal(PG)-Ajitwal(PS) (PSTCL) ckt, 220KV Himmatur(PS)-Ajitwal(PS) ckt and 220KV Jagraon(PS)-Ajitwal(PS) ckt-2 tripped. iv) As per PMU at 400KV Mogal(PG), R-N phase to ground fault is observed with fault clearance time of 80 ms. v) As per SCADA, change in demand of approx. 30MW is observed in Punjab control area.	0	0.12	0	30	0.000	0.092	29217	32664														80			
5	GI-1	1) 220 KV Bhiwad(PG)-Bhiwad(RS) (RS) Ckt-1 2) 220 KV Bhiwad(PG)-Bhiwad(RS) (RS) Ckt-2	Rajasthan	RVPNL, PGCL	8-Apr-23	16:32	8-Apr-23	19:25	02:53	i) As reported, at 16:32 hrs, B phase jumper of Wave trap of 220 KV Bhiwad(PG)-Bhiwad(RS) (RS) Ckt-1 snapped out at yard of 220KV Bhiwad(PG)-Bhiwad(RS) (RS) Ckt-2 tripped on directional earth fault protection after experiencing unbalance in current for a certain time (as per IOMT settings) from POWERGRID end only. Further, loading of 220 KV Bhiwad(PG)-Bhiwad(RS) (RS) Ckt-1 increased and thus, it was manually opened from POWERGRID end. ii) As per SOE, 220/132KV 160 MVA ICT-1, 2 & 3 and 132/133KV 40/50 MVA ICT-2 at Bhiwad(RS) also tripped at the same time. iii) As per PMU at 400KV Bhiwad(PG), no fault is observed in the system. iv) As per DR of Bhiwad(PG) end of 220KV Bhiwad(PG)-Bhiwad(RS) Ckt-1, broken conductor alarm is observed. v) As per SCADA, change in demand of approx. 350MW is observed in Rajasthan control area.	0	1.01	0	350	0.000	0.858	43022	40813																NA	
6	GI-2	1) 400/220 KV 500MVA ICT-6 at Bhadia2(PG)	Rajasthan	PGCL	11-Apr-23	17:20	11-Apr-23	18:40	01:20	i) During antecedent condition, total generation of 220KV Avadaa Sunrays (ASEPL) was feeding through 400/220KV 500MVA ICT-6 at Bhadia2(PG) only. ii) As reported, at 17:20 hrs, 400/220 KV 500 MVA ICT-6 at Bhadia2(PG) tripped due to mal-operation of differential relay. Hence tripping of ICT-6 resulted in generation loss of 220KV Avadaa Sunrays (ASEPL) through 220 KV Bhadia2(PG)-ASEPL ckt. iii) As per PMU at 400KV Bhadia2(PG), no fault is observed in the system. iv) As per SCADA, no change in demand is observed in Rajasthan control area. Generation loss of approx. 45MW is observed at 220KV Avadaa Sunrays.	0.06	0.00	45	0	0.105	0.000	42724	42635														NA			
7	GD-1	1) 220KV Bus-1 at Safidon(HS) 2) 220KV Bus-2 at Safidon(HS) 3) 220/132KV ICT-1 at Safidon(HS) 4) 220/132KV ICT-2 at Safidon(HS) 5) 220KV Panipat TPS(HS)-Safidon(HS) ckt-1 6) 220KV Panipat TPS(HS)-Safidon(HS) ckt-2 7) 220KV Panipat TPS(HS)-Safidon(HS) ckt-3 8) 150 MW Unit-6 at Panipat TPS(HS) 9) 150 MW Unit-7 at Panipat TPS(HS) 10) 150 MW Unit-8 at Panipat TPS(HS)	Haryana	HYPNL, PGCL	11-Apr-23	18:32	11-Apr-23	20:25	01:53	i) As reported, at 18:32 hrs, CTs of 220/132KV ICT-1 & 2 blasted at 220KV Safidon(HS) which resulted in busbar protection operation. Hence, all elements connected to bus-1 & 2 at 220KV Safidon(HS) tripped and S/S became dead. ii) Due to tripping of 220KV Panipat TPS(HS)-Safidon(HS) ckt-1, 2 & 3 fault transferred to 220KV Panipat TPS(HS) which resulted in tripping of 250MW unit-6, 7 & 8 at Panipat TPS(HS) due to heavy jerk. iii) As per DR, 220/132KV ICT-1 at Safidon(HS) tripped on differential protection operation with differential current of approx. 25A in R & Y phase and 50A in B phase. 220KV Safidon(HS)-Mund(HS) ckt-2 tripped on zone-1 distance protection operation. iv) As per PMU at 400KV Panipat(HS), multiple faults are observed in the system (R-N fault followed by B-N fault followed by R-Y-B-3 phase fault with delayed fault clearance time of 440 ms). v) As per SCADA, generation loss of approx. 610MW is observed in Haryana control area.	0	1.15	0	610	0.000	1.274	43762	47874															440		
8	GI-1	1) 220/33 KV 180MVA ICT-1 at AREPRL(IP)	Rajasthan	AREPRL	12-Apr-23	13:43	13-Apr-23	05:05	15:22	i) During antecedent condition, active power flow of 220/33 KV 180MVA ICT-1 at AREPRL(IP) was 118 MW. All 33KV feeders-1 of Renew Power, Azura Plot 6,7,8 and 9 and Auxiliary 7/7-1 were connected to 33KV side of 220/33 KV 180MVA ICT-1 at AREPRL(IP) and all 33KV feeders-2 of Renew Power, Azura Plot 6,7,8 and 9 and Auxiliary 7/7-2 were connected to 33KV side of 220/33 KV 180MVA ICT-2 at AREPRL(IP). ii) As reported, at 13:43hrs, 33KV AREPRL(IP) Azura Plot 6,7,8 and 9 tripped due to cable fault. This led to tripping of 220/33 KV 180MVA ICT-1 at AREPRL(IP) on Oil Surge Relay (OSR) protection operation. Hence power flow through all 33KV feeders connected at ICT-1 became zero. iii) As per PMU at 400KV Bhadia(PG), no fault is observed in the system. iv) As per SCADA, NR Solar generation loss of approx. 190MW is observed.	2.92	0.00	190	0	0.412	0.000	46115	41888																NA	
9	GD-1	1) 220 KV Jauiwi (PG)-Dhauliga(NH) (PG) Ckt-1 2) 220 KV Jauiwi (PG)-Dhauliga(NH) (PG) Ckt-2 3) 70 MW Unit-1 at Dhauliga(NH)	Uttarakhand	NHPC, PGCL	12-Apr-23	18:53	12-Apr-23	19:30	00:37	i) During antecedent condition, only 70 MW Unit-1 at Dhauliga(NH) was running and generating approx. 67MW (as reported, SCADA data not available). Unit-2, 3 & 4 were under shutdown. ii) As reported, at 18:53hrs, DC supply to protection circuit of 220 KV Jauiwi (PG)-Dhauliga(NH) (PG) Ckt-1 & 2 lost due to fault in inverter-1. This led to tripping of 220 KV Jauiwi (PG)-Dhauliga(NH) (PG) Ckt-1 & 2. iii) Along with the same, 70 MW Unit-1 at Dhauliga(NH) also tripped due to loss of evacuation path. Hence 220KV Dhauliga(NH) S/S became dead. iv) As per PMU at 400KV Bareilly(PG), Y-N phase to ground fault is observed in the system with fault clearance time of 120ms. v) As per SCADA, no change in NR hydro generation is observed. vi) As reported by Dhauliga, SCADA system was not available at the time of event. Generation loss of 67MW was reported at Dhauliga(NH).	0.041	0.00	67	0	0.149	0.000	45076	52193																120	
10	GD-1	1) 220 KV Mansar(PG)-Mau(HV) (HYPNL) Ckt-1 2) 220 KV Mansar(PG)-Mau(HV) (HYPNL) Ckt-2 3) 220 KV Bhiwad(PG)-Mau(HV) (HYPNL) Ckt 4) 220 KV Bus-1 at Mau(HS) 5) 220 KV Bus-2 at Mau(HS) 6) 220 KV Daulatabad(Mau)(HS) Ckt 7) 220 KV MSL-Mau(HS) Ckt 8) 220 KV HS Bawal-Mau(HS) Ckt	Haryana	HYPNL, PGCL	14-Apr-23	01:43	14-Apr-23	03:24	01:41	i) As reported, at 01:43 hrs, B phase CT of 220 KV Bhiwad(PG)-Mau(HV) (HYPNL) Ckt blasted at Mau end. 220 KV Bhiwad(PG)-Mau(HV) (HYPNL) Ckt tripped on B-N fault, (Zone-2 distance protection operated) with fault current of 13.18kA and fault distance of 13.68km from Bhiwad(HS). ii) Rest of the 220KV lines connected at Mau S/S tripped on Zone-2 from remote end only. Hence, Mau S/S became dead. iii) As per DR at Bhiwad(PG) end of 220KV Bhiwad(PG)-Mau(HV) Ckt, earth fault protection relay operated. iv) As per DR at Mansar(PG) end of 220KV Mansar(PG)-Mau(HS) Ckt-2, line tripped on zone-1 from Mansar(PG) end only. v) As per PMU at 400KV Bhiwad(PG), B-N phase to ground fault converted to 3-phase fault is observed in the system with delayed fault clearance time of 1280ms. vi) As per SCADA, No change in demand is observed in Haryana control area (as per SCADA). Approx. 128 MW load loss occurred as per communication with SLDC-Haryana.	0	0.22	0	128	0.000	0.267	39373	48022																1280	
11	GI-1	1) 220 KV Mir Bazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-2	J&K	PDD JK, BNB, PGCL	14-Apr-23	13:19	14-Apr-23	16:39	03:20	i) During antecedent condition, active power loading of 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-1 & 2 were 183MW and 181MW respectively. ii) As reported, at 13:19hrs, 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-2 tripped on R-N phase to ground fault with distance of 2.6 km and fault current 1.7KA from Mirbazar(J&K) end. Line clearance was less between the bottom conductor of the line and OPGW of 132KV MirBazar(PDD)-Tethar ckt. iii) Due to tripping of 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-2, loading on 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-1 increased and line CB at 220KV MirBazar(PDD) end of 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-1 opened due to over-loading, but line remain charged from NewWanoh(PG) end. iv) As per PMU at Kishampur(PG), R-N phase to ground fault is observed in system with fault clearance time of 120 ms. v) As per SCADA, load loss of approx. 325MW occurred in J&K control area.	0	1.08	0	325	0.000	0.718	48820	45267																	120
12	GI-1	1) 220 KV Bhadia(PG)-CS_Jodhpur SL_BHD_PG (Cleansolar_Jodhpur) Ckt-1	Rajasthan	PGCL, CSPP	15-Apr-23	16:41	15-Apr-23	17:25	00:44	i) During antecedent condition, total generation of 220KV Clean Solar Power Jodhpur (CSPPI) (IP) was feeding through 220 KV Bhadia(PG)-CS_Jodhpur SL_BHD_PG (Cleansolar_Jodhpur) Ckt-1 at Bhadia(PG). ii) As reported, at 16:41 hrs, 220 KV Bhadia(PG)-CS_Jodhpur SL_BHD_PG (Cleansolar_Jodhpur) Ckt-1 tripped due to mal-operation of PLCC at 220KV Clean Solar Power Jodhpur (CSPPI) (IP). This resulted in generation loss of 220KV Clean Solar Power Jodhpur (CSPPI) (IP) due to loss of evacuation path. iii) As per DR, Bhadia(PG) end of 220 KV Bhadia(PG)-CS_Jodhpur SL_BHD_PG (Cleansolar_Jodhpur) Ckt-1, DT was received at Bhadia(PG) end, but no relay indication is observed. Hence, this resulted in a mal-operation of PLCC at 220KV Clean Solar Power Jodhpur (CSPPI) (IP). iv) As per PMU at 400KV Bhadia(PG), no fault is observed in the system. v) As per SCADA, no change in demand is observed in Rajasthan control area. Generation loss of approx. 130MW is observed at 220KV Clean Solar Power Jodhpur (CSPPI) (IP).	0.095	0.00	130	0	0.271	0.000	47917	46974																NA	
13	GD-1	1) 220 KV Dasuya(PS)-Jalandhar(BB) (BBMB) Ckt 2) 220 KV Dasuya(PS)-Jalandhar(PG) (PG) Ckt-1 3) 220 KV Dasuya(PS)-Jalandhar(PG) (PG) Ckt-2 4) 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-1 5) 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-2 6) 220 KV Dasuya-Alawalpur (PS) Ckt	Punjab	PSTCL, BNB, PGCL	15-Apr-23	17:15	15-Apr-23	18:57	01:42	i) As per the information received and communication with 220KV Dasuya S/S, brief of the event are as follows: a) 220KV Dasuya(PS) S/S has double bus scheme. b) At 17:15hrs on 15th April/23, Y-ph CVT at Railway end of 220KV Dasuya-Railway ckt (~2km) damaged. c) On this fault, Railway ckt didn't trip from Dasuya end and thus adjacent feeders tripped on back up protection. d) 220 KV Dasuya(PS)-Jalandhar(PG) (PG) Ckt-1 & 2 tripped from Jalandhar(PG) end only, fault was in 2-2 (B4-23km) from Jalandhar(PG) end. e) 220 KV Dasuya(PS)-Jalandhar(BB) (BBMB) Ckt tripped from Jalandhar(BB) end in 2-2 (76.8km). f) 220 KV Dasuya-Alawalpur (PS) Ckt and 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-1 tripped from Dasuya end only and 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-2 tripped from Pong end in 2-3 (~70km). g) As per PMU at 400KV Jalandhar(PG), B-N phase to earth fault with delayed clearance of fault in 680 ms is observed. iii) As reported by SLDC-Punjab, load loss of approx. 60MW occurred in Punjab control area.	0	0.10	0	60	0.000	0.129	46678	46534																680	
14	GI-1	1) 220 KV Mir Bazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-2	J&K	PDD JK, PGCL	15-Apr-23	13:11	15-Apr-23	15:40	02:29	i) During antecedent condition, active power loading of 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-1 & 2 were 157MW and 156MW respectively. ii) As reported, at 13:11hrs, 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-2 tripped on R-N phase to ground fault with distance of 2.5 km and fault current 1kA from Mirbazar(J&K) end. Line clearance was less between the bottom conductor of the line and OPGW of another 132KV MirBazar(PDD)-Tethar ckt. iii) Due to tripping of 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-2, loading on 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-1 increased and line CB at 220KV MirBazar(PDD) end of 220 KV MirBazar(PDD)-NewWanoh(PG) (PDD JK) Ckt-1 opened due to over-loading, but line remain charged from NewWanoh(PG) end and was eventually restored within 3 mins. iv) As per PMU at Kishampur(PG), R-N phase to ground fault is observed in system with fault clearance time of 120 ms. v) As per SCADA, load loss of approx. 325MW occurred in J&K control area. vi) As informed by SLDC J&K, the problem has been rectified by lowering the OPGW of 132KV line.	0	0.81	0	325	0.000	0.721	49395	45081																120	
15	GI-1	1) 220KV Bannauli-Najafgarh Ckt-2 2) 220KV Bannauli-Najafgarh Ckt-1	Delhi	DTL, SLDC, Delhi	15-Apr-23	11:14	15-Apr-23	14:30	03:16	i) During antecedent condition, active power loading of 220KV Bannauli-Najafgarh Ckt-1 & 2 were 124MW and 122MW respectively. ii) As reported, at 11:14 Hrs, 220 KV Bannauli-Najafgarh Ckt-2 tripped due to jumper flashover near Najafgarh Gantry followed by tripping of Ckt-1 due to overloading. This resulted in load loss of approx. 245 MW at Najafgarh & Karolbagh. iii) Load at both the stations was changing by charging 220 KV Mundka Najafgarh Ckt-1 at 11:22 Hrs. iv) As per PMU at Bannauli(DV), B-N phase to ground fault with unsuccessful A/R operation followed by R-Y phase to phase fault is observed in system with fault clearance time of 80 ms. v) As per SCADA, load loss of approx. 245MW occurred in Delhi control area.	0	0.80	0	245	0.000	0.495	53158	49453															80		
16	GI-1	1) 220KV Dwarika-Pappankala Ckt-2	Delhi	DTL, SLDC, Delhi	15-Apr-23	12:12	15-Apr-23	17:44	05:32	i) During antecedent condition, Bus-1 & 2 at 220 KV Pappankala were kept in split condition (bus coupler was open). Active power loading of 220KV Dwarika-Pappankala Ckt-2 was 82MW. ii) As reported, at 12:11 hrs, 220 KV Dwarika Pappankala Ckt-2 tripped due to B-N phase to ground fault near Dwarika station resulting in load loss of approx. 100 MW at 220 KV Pappankala. iii) After tripping, load was restored by charging Bus coupler & later by charging 220 KV Bannauli-Najafgarh Ckt-2. iv) As per PMU at Bannauli(DV), B-N phase to ground fault with unsuccessful A/R operation is observed in system with fault clearance time of 80 ms. v) As per SCADA, load loss of approx. 100MW occurred in Delhi control area.	0	0.55	0	100	0.000	0.210	51151	47117															80		
17	GI-2	1) 400KV Bus 2 at Barmer(RS) 2) 400 KV Jasalmer-Barmer (RS) Ckt-1 3) 220/400 KV Rajest(RW) (RS) Ckt	Rajasthan	RVPNL	16-Apr-23	09:06	16-Apr-23	12:44	03:38	i) 400KV Barmer(Raj) has one and half breaker bus scheme. During antecedent condition, 125MVAR bus reactor at Barmer(Raj) was connected at 400KV Bus-2. ii) As reported, at 09:06hrs, while opening of 125MVAR bus reactor at Barmer(Raj) on voltage regulation, Y-ph pole of Main CB of Bus reactor damaged and created bus fault. iii) On this fault, bus bar protection of 400KV Bus-2 operated and all the CB connected at 400KV Bus-2 opened. iv) Other bus connected at bus-1 (RS) Ckt of Jasalmer-Barmer (RS) Ckt-1 was already in out condition, thus line tripped with the opening of CB connected at Bus-2. v) 400 KV Barmer(RS)-Rajest(RW) (RS) Ckt remained charged from Barmer(Raj) end via tie bus. However, line tripped from Rajest end. As per the verbal communication with Rajest S/S, distance protection sensed the fault in 2-1 and both main and tie CB at Rajest end tripped. It seems that due to small length (~15km) of the line, 2-1 over reach occurred. vi) As per PMU at 400KV Bhiwad(PG), B-N phase to earth fault which cleared within 100msec is observed. vii) Presently, main CB of 125MVAR bus reactor is out and reactor is charged via tie CB.	0	0.00	0	0	0.000	0.000	50291	48457																	



S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Load Loss/ Gen. Loss	Brief Reason (As reported)	Category as per CEA Grid standards	# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Other Protection Issues and Non Compliance (Inference from PMU, utility details)	Suggestive Remedial Measures	Remarks
			Date	Time									
1	400 KV Balia-Biharshariff (PG) Ckt-2	POWERGRID	15-Apr-23	11:55	Nil	Phase to earth fault R-N. Fault distance: ~80km from Balia end, fault current: ~5kA. Fault distance from Biharshariff end was ~160km. Fault is under ER-1 jurisdiction.	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)		As per PMU at Sohawal(PG) & DR of Balia end, line tripped after unsuccessful A/R operation on permanent R-N fault. Fault distance: ~80km, fault current: ~5kA from Balia end.	
2	765 KV Orai-Gwalior (PG) Ckt-1	POWERGRID	21-Apr-23	16:07	Nil	Phase to earth fault R-N. Fault distance: ~9km from Orai end, fault current: ~13kA. Fault distance from Gwalior end was ~123km. Fault is under WR-2 jurisdiction.	NA	NA	yes	yes		As per PMU at Mainpuri(PG) & DR of Orai end, line tripped after unsuccessful A/R operation on permanent R-N fault. Fault distance: ~9km, fault current: ~13kA from Orai end.	
3	765 KV Fatehpur-Sasaram (PG) Ckt-1	POWERGRID	30-Apr-23	15:39	Nil	Line tripped from Fatehpur end only on receipt of DT at Fatehpur end. Dist. 144.6km, Fault current 2.159kA from Sasaram.	NA	NA	yes	yes	No fault in system	Reason of DT received (PLCC maloperation etc.) need to be looked into As per PMU, no fault in system is observed and as per DR of Fatehpur end, line tripped on DT received.	

# Fault Clearance time has been computed using PMU Data from nearest node available and/or DR provided by respective utilities ( Annexure- II)

\*Yes, if written Preliminary report furnished by constituent(s)

R-Y-B phase sequencing (Red, Yellow, Blue) is used in the list content. All information is as per Northern Region unless specified.

^^ tripping seems to be in order as per PMU data, reported information. However, further details may be awaited.

Reporting of Violation of Regulation for various issues for above tripping

1	Fault Clearance time(>100ms for 400kV and >160ms for 220kV)	1. CEA Grid Standard-3.e 2. CEA Transmission Planning Criteria
2	DR/EL Not provided in 24hrs	1. IEGC 5.2(r) 2. CEA Grid Standard 15.3
3	FIR Not Furnished	1. IEGC 5.9.6.a 2. CEA Grid Standard 12.2 (Applicable for SLDC, ALDC only)
4	Protection System Mal/Non Operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.A 2. CEA (Technical Standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)
5	A/R non operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.C 2. CEA Technical Planning Criteria

## Annexure-B.V

**Status of submission of FIR/DR/EL/Tripping Report  
on NR Tripping Portal**

**Time Period: 1st April 2023 - 30th April 2023**

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value	%	Value	%	Value	%	Value	%		
1	AD HYDRO	2	0	0	0	0	0	0	0	0	0	0	0	Details received
2	ADANI	3	3	100	3	0	100	3	0	100	3	0	100	DR, EL & Tripping report need to be submitted
3	AHEJ4L	2	1	50	1	0	50	1	0	50	1	0	50	
4	ANTA-NT	2	0	0	0	0	0	0	0	0	0	0	0	Details received
5	AREPRL	2	1	50	1	0	50	1	0	50	1	0	50	DR, EL & Tripping report need to be submitted
6	AURAIYA-NT	1	0	0	0	0	0	0	0	0	0	0	0	Details received
7	BBMB	43	11	26	13	13	43	12	13	40	11	4	28	DR, EL & Tripping report need to be submitted
8	CHAMERA-II-NH	1	0	0	0	0	0	0	0	0	0	0	0	
9	CHAMERA-I-NH	1	0	0	0	0	0	0	0	0	0	0	0	Details received
10	CLEANSOLAR_JODHPUR	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report need to be submitted
11	CPCC1	59	0	0	0	17	0	1	9	2	0	5	0	Details received
12	CPCC2	40	7	18	8	5	23	8	6	24	8	1	21	DR, EL & Tripping report need to be submitted
13	CPCC3	45	8	18	8	1	18	8	1	18	10	0	22	
14	DADRI-NT	2	0	0	0	0	0	0	0	0	0	0	0	Details received
15	DHAULIGANGA-NH	3	0	0	0	0	0	0	1	0	0	0	0	
16	DULHASTI-NH	3	0	0	0	0	0	0	0	0	0	0	0	
17	JHAJJAR	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report need to be submitted
18	KARCHAM	2	0	0	0	0	0	0	0	0	2	0	100	
19	KOLDAM-NT	1	1	100	1	0	100	1	0	100	1	0	100	Details received
20	NAPP	1	0	0	0	1	0	0	1	0	0	0	0	
21	NJPC	11	0	0	0	2	0	0	2	0	0	0	0	
23	RAMPUR	2	0	0	0	0	0	0	0	0	2	0	100	DR, EL & Tripping report need to be submitted
24	RAPPA	6	1	17	5	0	83	6	0	100	6	0	100	
25	RENEW	2	2	100	2	0	100	2	0	100	2	0	100	
26	SALAL-NH	5	0	0	0	0	0	0	0	0	0	0	0	Details received
27	SAURYA	2	0	0	0	2	0	0	2	0	2	0	100	DR, EL & Tripping report need to be submitted
28	SEWA-2-NH	2	0	0	0	0	0	0	0	0	0	0	0	Details received



**Status of submission of FIR/DR/EL/Tripping Report  
on NR Tripping Portal**

**Time Period: 1st April 2023 - 30th April 2023**

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value	%	Value	%	Value	%	Value	%		
29	SINGOLI	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report need to be submitted
30	SINGRAULI-NT	3	0	0	0	1	0	0	1	0	1	0	33	
31	SLDC-DV	25	3	12	8	12	62	8	11	57	13	1	54	
32	SLDC-HP	11	0	0	6	0	55	6	0	55	0	0	0	Details received
33	SLDC-HR	34	11	32	11	5	38	11	4	37	11	0	32	DR, EL & Tripping report need to be submitted
34	SLDC-JK	8	0	0	7	0	88	8	0	100	4	0	50	
35	SLDC-PS	41	4	10	16	6	46	22	6	63	38	0	93	
36	SLDC-RS	86	0	0	4	0	5	4	0	5	30	0	35	Details received
37	SLDC-UK	9	0	0	0	5	0	0	5	0	0	2	0	
38	SLDC-UP	119	21	18	27	22	28	28	28	31	24	1	20	
39	STERLITE	2	0	0	0	0	0	0	0	0	0	1	0	Details received
40	TANDA-NT	2	0	0	0	2	0	0	1	0	0	1	0	DR, EL & Tripping report need to be submitted
41	TATAPOWER	1	1	100	1	0	100	1	0	100	1	0	100	
42	TPGEL_SL	1	0	0	1	0	100	0	0	0	1	0	100	
43	UNCHAHAR-NT	4	0	0	0	0	0	0	1	0	0	0	0	Details received
<b>Total in NR Region</b>		<b>594</b>	<b>80</b>	<b>13</b>	<b>128</b>	<b>94</b>	<b>26</b>	<b>136</b>	<b>92</b>	<b>27</b>	<b>177</b>	<b>16</b>	<b>31</b>	

*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*

S. No.	Name of the Generating Station (Capacity in MW)	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/NRPC (Yes/No)	Remarks (if any)	Tentative schedule for PSS tuning / re-tuning
<b>1 THDC</b>						
	TEHRI HPS( 4 * 250 )	15.12.2021 to 20.12.2021	15.12.2021 to 20.12.2021	Yes	(Report shared vide email dt.19.01.2019)	
	KOTESHWAR HPS( 4 * 100 )	17/03/2019 to 19/03/2019	17/03/2019 to 19/03/2019	Yes	(Report shared vide email dt.11.02.2021)	
<b>2 SJVNL</b>						
	NATHPA-JHAKRI HPS( Unit1 #250)	10.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS( Unit2 #250)	14.03.2013	-	No	The upgradation of old excitation system of Unit No.#2&4 will be carried out during Annual Plant Maintenance of FY 2022-23, therefore PSS tuning shall be carried out at the time of upgradation of unit. It is also submitted that step response test of other Units shall also be carried out during upgradation work of Unit # 2 & 4 by the OEM, being a system and software specific job.	
	NATHPA-JHAKRI HPS( Unit3 #250)	03.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS( Unit4 #250)	14.03.2013	-	NO	The upgradation of old excitation system of Unit No.#2&4 will be carried out during Annual Plant Maintenance of FY 2022-23, therefore PSS tuning shall be carried out at the time of upgradation of unit. It is also submitted that step response test of other Units shall also be carried out during upgradation work of Unit # 2 & 4 by the OEM, being a system and software specific job.	
	NATHPA-JHAKRI HPS( Unit5 #250)	14.05.2016	14.05.2016	NO	Excitation system upgraded in 2013	
	NATHPA-JHAKRI HPS( Unit6 #250)	14.05.2017	14.05.2017	NO	Excitation system upgraded in 2013	
	RAMPUR HEP( 6 * 68.67 )	29.11.2014	27.10.2020,10.02.2021	YES	PSS Response and Step Test response was checked in February, 2021 by Rampur HPS and report of the same was submitted to NRLDC. Now the work of PSS tuning and step response testing has been awarded to BHEL, Bengaluru. Testing shall be carried out in November, 2022.	
<b>3 HVPNL</b>						
	PANIPAT TPS( unit1# 250 )	29.03.2016	29.03.2016	YES	--	
	PANIPAT TPS( unit2# 250 )	15.01.2018	15.01.2018	YES	--	
	DCRTPP (YAMUNA NAGAR)( unit1#300 )	19-12-2018	19-12-2018	YES	(Report attached)	
	DCRTPP (YAMUNA NAGAR)( unit1#300 )	Will be carried out shortly				
	RGTPP( KHEDAR) (2*600)	5th to 6th July 2013	5th to 6th July 2013	Report attached. Previous record being looked into	No MW capacity addition after 2013 at RGTPP Khedar. No new line addition in vicinity of station	
	JHAJJAR(CLP) (2*660)	20-05-2017	20-05-2017	YES	--	
<b>4 NTPC</b>						
	Rihand ( Unit1#500 )	03-03-2017	03-03-2017	YES	Next test will be done during re-commissioning of unit after O/H	
	Rihand ( Unit2#500 )	02-07-2016	02-07-2016	YES	Next test will be done during re-commissioning of unit after O/H	
	Rihand ( Unit3#500 )	15-08-2015	15-08-2015	YES	Next test will be done during re-commissioning of unit after O/H	
	Rihand ( Unit4#500 )	25-05-2017	25-05-2017	YES	Next test will be done during re-commissioning of unit after O/H	
	Rihand ( Unit4#500 )	11-12-2014	11-12-2014	YES	Next test will be done during re-commissioning of unit after O/H	
	Rihand ( Unit5#500 )	11-12-2014	11-12-2014	YES	Next test will be done during re-commissioning of unit after O/H	
	SINGRAULI STPS( Unit1#200 )	-	-	-	Not done in last three years	
	SINGRAULI STPS( Unit2#200 )	-	-	-	Not done in last three years	
	SINGRAULI STPS( Unit3#200 )	-	-	-	Not done in last three years	
	SINGRAULI STPS( Unit4#200 )	-	-	-	Not done in last three years	
	SINGRAULI STPS( Unit5#200 )	-	-	-	Not done in last three years	
	SINGRAULI STPS( Unit6#500 )	02.05.2018	02.05.2018	NO	--	
	SINGRAULI STPS( Unit7#500 )	15.07.2018	15.07.2018	NO	--	

	UNCHAHAHAR I ( 2 * 210 )	29-03-2016	29-03-2016	YES	--	
	UNCHAHAHAR II TPS( unit1# 210 )	13-07-2019	13-07-2019	YES	--	
	UNCHAHAHAR II TPS( unit2# 210 )	10-08-2018	10-08-2018	YES	--	
	UNCHAHAHAR UNIT6#500	-	31.03.2017	YES	--	
	KOLDAM HPS( 4 * 200 )	01-07-2015	01-07-2015	YES	--	
	DADRI GPS( 2 * 154.51 ) (ST- Steam Turbine)	-	18-11-2015	YES	Next test will be done during re-commissioning of unit after O/H	
	DADRI GPS( 2 * 154.51 ) (GT- Steam Turbine)	2017-18	2017 & 2018	YES	Next test will be done during re-commissioning of unit after O/H	
	ANTA GPS GT-1 (88.71 )(GT- Gas Turbine)	10-10-2021	10-10-2021	YES		
	ANTA GPS GT-2 (88.71 )(GT- Gas Turbine)	10-10-2021	10-10-2021	YES		
	ANTA GPS GT-3 (88.71 )(GT- Gas Turbine)	08-08-2014	08-08-2014	YES	Next test will be done when Station will get opportunity to have shchedule to run on full load.	
	ANTA GPS( 1 * 153.2 )(ST- Steam Turbine)	08-08-2014	08-08-2014	YES	Next test will be done when Station will get opportunity to have shchedule to run on full load.	
<b>5</b>	<b>Aravali Power Company Private Ltd</b>					
	ISTPP (JHAJJAR)( 3 * 500 )	-	25-08-2015	YES	--	
<b>6</b>	<b>NHPC</b>					
	CHAMERA HPS( 3*180 )	06-08-2020	27-12-2019	YES	--	
	CHAMERA II HPS( 3 * 100 )	11-10-2015	11-10-2015	NO	Replacement of Excitation system in two units	
	CHAMERA III HPS( Unit1#77 )	29-10-2015	07-01-2012	YES	--	
	CHAMERA III HPS( Unit2,3#77 )	29-10-2015	19-06-2012	YES	--	
	PARBATI III HEP (Unit1# 130 )	21-01-2016	21-01-2016	YES	Have been done recetly. The report on PSS turning shall be submitted seperately.	
	DULHASTI HPS( Unit2#130 )	21-01-2020	21-01-2020	YES	--	
	DULHASTI HPS( Unit1#130 )	29-12-2019	29-12-2019	YES	--	
	URI HPS( Unit3# 120 )	10-01-2021	10-01-2021	YES	--	
	URI HPS( Unit4# 120 )	15-02-2021	15-02-2021	YES	--	
	URI HPS( Unit2# 120 )	07-03-2016	07-03-2016	YES	--	
	URI-II HPS( 4 * 60 )	Mar-14	Mar-14		2021-22	
	SALAL HPS (Unit-3,4,5,6 # 115 )	16-12-2014	16-12-2014	YES	--	
	KISHANGANGA( 3 * 110 )	18-05-2018	18-05-2018	YES	--	
	BAIRASIUL HPS( 3 * 60 )	30-07-2015	30-07-2016	YES	--	
	SEWA-II HPS( 3 * 40 )	09-07-2016	09-07-2016	YES	--	
	PARBATI III HEP( 4 * 130 )	16-12-2016	16-12-2016	YES	--	
	TANAKPUR HPS( Unit1# 31.42 )	09-01-2015	09-01-2015	YES	--	
	TANAKPUR HPS( Unit2,3#31.4 )	24-05-2014	24-05-2014	YES	--	
	DHAULIGANGA HPS(Unit1 ,2# 70 )	04-05-2014	17-04-2018	YES	--	
	DHAULIGANGA HPS(Unit3,4# 70 )	26-06-2014	17-04-2018	YES	--	
<b>7</b>	<b>PUNJAB</b>					
	RAJPURA(NPL) TPS( 2 * 700 )	22-04-2014	22-04-2014	YES	--	
<b>8</b>	<b>Rajasthan</b>					
	KAWAI TPS( Unt1# 660 )	03-02-2023	03-02-2023	YES	--	
	KAWAI TPS( Unt2# 660 )	03-02-2023	03-02-2023	YES	--	
	CHHABRA TPS( Unit 1#250 )	28-02-2023	28-02-2023	NO	--	
	CHHABRA TPS( Unit 2,3,4#250 )	28-02-2023	28-02-2023	NO	--	
	CHHABRA TPS( Unit5# 660 )	10-02-2016	10-02-2016	YES	--	
	CHHABRA TPS( Unit6# 660 )	7/28/2018	7/28/2018	YES	--	
	KALISINDH TPS( Unit1# 600 )	03-02-2023	03-02-2023	YES	--	
	KALISINDH TPS( Unit2# 600 )	03-02-2023	03-02-2023	YES	--	
	KOTA TPS( Unit1#110 )					
	KOTA TPS( Unit2#110 )				--	
	KOTA TPS( Unit3#195 )				--	
	KOTA TPS( Unit4#195 )				--	
	KOTA TPS( Unit6#110 )				--	
	KOTA TPS( Unit7#110 )				--	
	SURATGARH TPS ( Unit5#250)	14-03-2022	14-03-2022	Yes	--	
	SURATGARH TPS ( Unit2,4#250)	06-06-2022		Yes	--	
	SURATGARH TPS ( Unit1,3,,6#250)	05.02.22 & 06.02.22		Yes	--	
	SURATGARH SSCTPS ( Unit 7&8)	PSS tuning and step response test of Unit#7&8 were carried out on 28.11.20 & 30.03.21.				
	RAJWEST (IPP) LTPS( Unit1# 135 )	26-04-2016	26-04-2016	No	--	
	RAJWEST (IPP) LTPS( Unit2# 135 )	14-07-2016	14-07-2016	No	--	
	RAJWEST (IPP) LTPS( Unit3# 135 )	03-01-2014	03-01-2014	No	--	
	RAJWEST (IPP) LTPS( Unit4# 135 )	03-11-2015	03-11-2015	No	--	
	RAJWEST (IPP) LTPS( Unit5# 135 )	21-09-2014	21-09-2014	No	--	
	RAJWEST (IPP) LTPS( Unit6# 135 )	14-08-2014	14-08-2014	No	--	
	RAJWEST (IPP) LTPS( Unit7# 135 )	20-02-2016	20-02-2016	No	--	
	RAJWEST (IPP) LTPS( Unit8# 135 )	11-06-2014	11-06-2014	No	--	
<b>9</b>	<b>UTTAR PRADESH</b>					
	ANPARA-C TPS( Unit1# 600 )	22-08-2015	22-08-2015	Yes	--	

	ANPARA-C TPS( Unit2# 600 )	08-03-2016	08-03-2016	Yes	--	
	ROSA TPS( Unit1 #300 )	05-10-2021	05-10-2021	Yes	--	
	ROSA TPS( Unit2# 300 )	15-01-2022	15-01-2022	Yes	--	
	ROSA TPS( Unit3 # 300 )	03-02-2017	03-02-2017	Yes	--	
	ROSA TPS( Unit4# 300 )	05-10-2021	05-10-2021	Yes	--	
	Anpara-A (Unit1#210)	27.09.2021	27.09.2021	Yes	--	
	Anpara-A(Unit2#210)	27.09.2021	27.09.2021	Yes	--	
	Anpara-A(Unit3#210)	25.09.2020	25.09.2020	Yes	--	
	Anpara-B(Unit4#500)	07.12.2014	07.12.2014	Yes	--	
	Anpara-B (Unit5#500)	17.08.2014	Dec., 2019	Yes	--	
	Anpara-D(Unit6#500)	15.11.2016	15.11.2016	No	--	
	Anpara-D (Unit7#500)	15.04.2017	15.04.2017	No	--	
	Obra-B(Unit9#200)	22.03.2016	22.03.2016	Yes	Report enclosed.	
	Obra-B(Unit10#200)	28.06.2016	20.06.2016	Yes	Report enclosed.	
	Obra-B (Unit11#200)	21.01.2017	21.01.2017	Yes	Report enclosed.	
	Obra-B (Unit12#200)	Unit taken on load after R&M on 22		-	PSS tuning and SRT scheduled in April, 2021.	
	Obra-B(Unit13#200)	Unit closed under R&M.		-	PSS tuning and SRT scheduled in April, 2021.	
	Parichha-B(Unit3#210)	08.01.2016	08.01.2016	Yes	--	
	Parichha-B (Unit4#210)	08.01.2016	08.01.2016	Yes	--	
	Parichha-C (Unit5#250)	08.02.2020	08.02.2020	No	--	
	Parichha-C(Unit3#250)	09.01.2016	09.01.2016	No	--	
	Harduaganj (Unit8#250)	20.08.2015	20.08.2015	No	--	
	Harduaganj (Unit3#250)	13.04.2016	13.04.2016	No	--	
	Harduaganj(Unit7#105)	16.07.2021	16.07.2021	yes	--	
	Harduaganj(Unit9#250)	16.07.2021	16.07.2021	yes	--	
	LALITPUR TPS( Unit1# 660 )	23.02.2022	23.02.2022	yes	--	
	LALITPUR TPS( Unit2# 660 )	30.03.2021	30.03.2021	yes	--	
	LALITPUR TPS( Unit3# 660 )	15.01.2022	15.01.2022	yes	--	
	ALAKNANDA HEP(Unit1# 82.5 )	12.072017	12.072017	No	--	
	ALAKNANDA HEP(Unit2# 82.5 )	12.072017	12.072017	No	--	
	ALAKNANDA HEP(Unit3# 82.5 )	12.072017	12.072017	No	--	
	ALAKNANDA HEP(Unit4# 82.5 )	12.072017	12.072017	No	--	
	MEJA TPS( Unit1#660 )	16.10.2018	05.09.2017	yes	--	
	MEJA TPS( Unit2#660 )	16.01.2021	18.05.2020	yes	--	
	Bara Unit#1				Step test for PSS checking was not performed since commissioning by erstwhile owner as per information available. PSS tuning along with step test will be performed in next AOH (May 2022 or planned shutdown)	
	Bara Unit#2	01.02.2022	01.02.2022	Yes		
	Bara Unit#3				Step test for PSS checking was not performed since commissioning by erstwhile owner as per information available. PSS tuning along with step test will be performed in next AOH (May 2022 or planned shutdown)	
	Vishnuprayag Unit#1	06/02/2021	06/02/2021	Submitted in the prescribed format provided by NRLDC to SE (R&A)		
	Vishnuprayag Unit#2	06/04/2021	06/04/2021			
	Vishnuprayag Unit#3	06/04/2021	06/04/2021			
	Vishnuprayag Unit#4	05/02/2021	05/02/2021			
<b>10</b>	<b>BBMB</b>					
	BHAKRA HPS( Unit1#108 )	--	--	No	PSS is not provided ,shall be provided in ongoing RM&U	
	BHAKRA HPS( Unit1#108 )	24.07.2015	24.07.2015	No	--	
	BHAKRA HPS( Unit3#126 )	--	--	No	PSS is not provided ,shall be provided in ongoing RM&U	
	BHAKRA HPS( Unit4#126 )	--	--	No	--	
	BHAKRA HPS( Unit5#126 )	--	--	No	--	
	BHAKRA HPS( Unit6#157 )	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS( Unit7#157 )	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS( Unit7#157 )	--	--	No	The original Rusian excitation system is under replacement PO issued Hence,PSS not got tuned.	
	BHAKRA HPS( Unit7#157 )	18.02.2016	18.02.2016	No	--	
	BHAKRA HPS( Unit7#157 )	18.02.2017	18.02.2017	No	--	
	DEHAR HPS( Unit#1 165 )	08.08.2017	08.08.2017	No	--	
	DEHAR HPS( Unit#2 165 )	08.08.2018	08.08.2018	No	--	
	DEHAR HPS( Unit#3 165 )	08.08.2019	08.08.2019	No	--	
	DEHAR HPS( Unit#4 165 )	02.07.2017	02.07.2017	No	--	
	DEHAR HPS( Unit#5 165 )	08.08.2019	08.08.2019	No	--	
	DEHAR HPS( Unit#6 165 )	02.07.2017	02.07.2017	No	--	
	PONG HPS( 6 * 66 )	--	--	--	PSS not provided.RM&U agenda under considration.	

Status of Bus bar protection				
Constituent Name	Name of Station	Status of Bus bar protection(as reported)	Expected date of revival(as reported)	Remark
Uttarakhand	220 KV Substation, Ramnagar, Roorkee	Blocked due to more elements added at 220		
	220 KV Sub Station, SIDCUL, Haridwar	KV Voltage level.		
	220KV Jhajhra, Dehradun	Not commissioned yet		
	400KV Kashipur	Available but Non operational		
	220kv Haldwani	Not Available		
	220kv Pantnagar	Available but Non operational		
	220KV Rishikesh	Available but Non operational		
	220KV Chamba	Not commissioned yet		
Haryana	220KV S/Stn Badshahpur	Not Installed	15.01.2023	
	220KV S/Stn Sec-52A, Gurgaon	Not Installed	31.03.2023	
	220kv S/Stn Sec-1 Manesar	Installed, Non-Operational	31.01.2023	Additional 100MVA, 220/66kV TF T-4 is required to be added in the existing Bus Bar Protection scheme. Further, testing of the scheme is pending and will be done by 31.01.2023.
	220KV S/Stn Panchgaon	Not Installed	31.03.2023	The firm i.e., M/s ETA has left the work. Now the leftover work is being carried out departmentally. The matter has been taken up with the firm i.e. M/s Siemens for providing offer regarding commissioning of Bus-bar. Presently, one no. 220kV Busbar and 220kV Bus Coupler is not commissioned. So, the Bus Bar protection will be commissioned with all pending work.
	220KV S/Stn Rewari	Not Installed	31.08.2023	Estimate stands sanctioned. Bus Bar will be commissioned subject to the complete allocation of material.
	220KV S/Stn Narnaul	Not Installed	31.03.2023	Till date, busbar protection was not required as the substation is radially fed. However, a new transmission line viz. 220 kV D/C Deroli Ahir-Narnaul line is under construction on turnkey mode. Thus, the work of providing 220 kV take-in bays(02 no.) alongwith the work of providing the requisite busbar protection stands also awarded to other turnkey contractor
	220KV S/Stn Mohinder Garh	Not Installed	01.06.2023	Estimate stands sanctioned. Bus Bar will be commissioned subject to the complete allocation of material.
	220 KV S/Stn Palwal	Not Installed	30.06.2023	Earlier, the necessity of bus bar protection had not been comprehended, however, expanded transmission network with establishment of new substations/transmission elements in synchronism mode, there was call for introduction of Bus Bar Protection Scheme.
	220 KV S/Stn Rangala Rajpur	Installed but Non-Operational	31.03.2023	Defective. Work order has been issued for restoration of bus bar protection at the substation
	220 kV Unisapur	Installed but Non-Operational	Mar-23	Relay Mal-functioning
	220 kV Mund	Installed but Non-Operational	Feb-23	Isolator status Ambiguous
	220 kV Nissing	Installed but Non-Operational	May-23	New scheme is being installed at place of old Bus Bar Protection Scheme
	220KV Pehowa	Installed but Non-Operational	BBP will be commissioned within 2 Months after receiving of material	Old & Obsolete, Allocation of New BBP and allied Material awaited.
	220KV Kaithal	Not Installed	After Allocation of Bus-Bar Protection Panel	
	220 KV Sonapat	Not Installed	220 KV Bus Bar Protection Scheme will be installed within a month after the availability of the necessary material required for commissioning	
220 KV REGC, Sonapat	Not Installed	220 KV Bus Bar Protection Scheme will be installed within a month after the availability of the necessary material required for commissioning		

	220KV Jind	Installed but Non-Operational	31.01.2023	Existing Bus bar panel is of old and obsolete design. New Bus Bar protection scheme panel has been drawn from the store. New Panel will be commissioned at earliest.
	220 KV Fatehabad	Installed but Non-Operational		
	220 KV Bhuna	Installed but Non-Operational		
	220 KV Sirsa	Not Installed		
	220 KV Rania	Not Installed	31.03.2023	
	220 KV Bhiwani	Not Installed	likely to be completed in FY 2023- 24.	
	220kV Madanpur	Not Installed		The existing BBP was shifted to 220 kV S/Stn. Salempur. The requirement has been sent to CE/ PDF, vide this office letter no Ch-85/W-312/Vol-Vf dt- 28.12.2022
	220kV Tepla	Installed but Non-Operational		The existing BBP is out being old and obsolete. The requirement replacement of existing BBP has been sent to CE/PM, vide thjs office letter no Ch-85/W-3 12/Vol-VI dt- 28.12.2022
	220kV Rajokheri	Installed but Non-Operational		The substation is being constructed in turnkey, BBP has been installed. Commissioning is yet to be completed by me firm.
<b>BBMB</b>		Installed, under commissioning yet	15.01.2023	Old high impedance Charkhi Dadri (SAS) Bus Bar Protection has been replaced with low impedance Bus Bar Protection during SAS. Testing is under process and will be Commissioned shortly
	220kV Charkhi Dadri			
	220kV Samaypur	Installed but Non-Operational	30.04.2023	Failure of modules
	220kV Barnala	Not Installed		
	220kV Dhulkote	Not Installed		
	220kV Jagadhari	Not Installed		
<b>UP</b>		Installed but Non-Operational	30.06.2023	Due to 10 to 15% differential current error, busbar protection was not taken in srvice, an order has been placed to M/s Tirupati Industrial Agency authorized channel partner M/s AB for rectification and of same.
	220kV Parichha			
	220kV Partapur	Installed but Non-Operational	Jan-23	Busbar relya configuration problem to be rectified by firm engineer
	220kV Nirpura	Installed but Non-Operational	Jan-23	Bus bar protection has been made out of service by maintenance wing due to defective module for 220kV Baraut line
	220kV IITGNL	Installed but Non-Operational	Expected to be commissioned within 3 month	commissioning work pending
	220kV Rampur	Installed but Non-Operational		01 no. of 220kV feeder ( Rampur -CB Ganj) not configured
	220kV Chandausi	Not Installed		Bus bar protection pane I not allotted
	220kV Rampur	Installed but Non-Operational		01 no. of 220kV feeder ( Rampur -CB Ganj) not configured
	220kV Sec. - 148, Noida	Installed but Non-Operational	Jan-23	Communication card defective
	220kV sec. 38A, Botanicla Garden	Not Installed		Bus Bar protection panel not allotted
	220kV sec.-62, Noida	Not Installed	Feb-23	
	220kV Dadri	Not Installed	Sep-23	
	400kV S/S Agra	Installed but Non-Operational	2023	Old and out dated
	220kV S/S Bah	Not Installed		
	220kV Sirsaganj	Not Installed		
	220kV S/S Farrukhabad (New)	Not Installed		
	220kV Boner	Not Installed		
	220kV Kasganj (Soron)	Installed but Non-Operational		Error alarm in busbar
	220kV Khair	Installed but Non-Operational		New IIIrd 160MVA T/F is not configured with busbar protection
	220kV Kidwainagar	Installed but Non-Operational		
	220kV Chhata	Installed but Non-Operational		New IIIrd 160MVA T/F is not configured with busbar protection
	Harduaganj	Installed but Non-Operational	31.12.2023	Due to 4 to 7 % differential current error the busbar protection was not taken in srvice. O.E.M M/s Siemens is being pursued to rectify it.
	220kV Lalitpur	Not Installed	23-Apr	Due to non availability of pannel & cable
220kV Sarnath	Installed but Non-Operational	Approximate 03 months	Old & defective Electorstatic panel (ABB Make)	
220kV Sirathu, Kaushambi	Not Installed	Approximate 03 months	Relay Panel is not availabe	



	220kV substation Fatehpur	Installed but Non-Operational	Approximate 03 months	Brekaer status not available
	220kV S/S Raja Talab	Installed but Non-Operational	Approximate 03 months	relay defective
	220kV S/S Bhelupur	Not Installed		Not required due to radial substation
	20kV S/S Harahua	Installed but Non-Operational	Approximate 03 months	Not commissioned
	220kV S/S Sahupuri	Installed but Non-Operational	Approximate 03 months	Defective
	220kV S/S Mirzapur	Installed but Non-Operational	Approximate 03 months	
<b>HP</b>	220kV Chamba	Main-2 non operational	30.04.2023	Relay faulty
	220kV MattaSidh	Installed but Non-Operational		Relay faulty
	220kV kangoo	Installed but Non-Operational		Commissioning awaited from firm
	220kV Nangal	Installed but Non-Operational	Within 06 months	
	220kV Katha Baddi	Installed but Non-Operational	Within 06 months	