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/106/01/2023/405-466 दिनांक: 13.01.2023

विषय: प्रचालन समन्वय उप-समिति की 203वीं बैठक की कार्यसूची।

Subject: Agenda of 203th OCC meeting.

प्रचालन समन्वय उप-समिति की **203वीं** बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक **18.01.2023** को **10:30** बजे से किया जायेगा। उक्त बैठक की कार्यसूची उत्तर क्षेत्रीय विद्युत् 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।

203rd meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **18.01.2023** 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.

13/01/23

(संतोष कुमार)
अधीक्षण अभियंता (प्रचालन)

सेवा में : प्रचालन समन्वय उप समिति के सभी सदस्य।
To : All Members of OCC

18-ए, शहीद जीत सिंह मार्ग, कटवारिया सराय, नई दिल्ली- 110016 फोन:011-26513265 ई-मेल: seo-nrpc@nic.in वेबसाईट: www.nrpc.gov.in
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1. Confirmation of Minutes

The minutes of the 202nd OCC meeting were issued vide letter of even number dated 06.01.2023.

Sub-committee may deliberate and kindly confirm the Minutes.

2. Review of Grid operations

2.1 Power Supply Position (Provisional) for December 2022

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of December-2022 is as under:

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	120	113	-6.1%	270	282	4.4%
	(Req)	120	113	-6.1%	270	282	4.4%
DELHI	(Avl)	3108	2184	-29.7%	5450	4964	-8.9%
	(Req)	2300	2185	-5.0%	5450	4964	-8.9%
HARYANA	(Avl)	4390	4289	-2.3%	10640	8137	-23.5%
	(Req)	5404	4302	-20.4%	8011	8137	1.6%
HIMACHAL PRADESH	(Avl)	1114	1077	-3.4%	2000	2004	0.2%
	(Req)	1104	1081	-2.1%	1995	2004	0.5%
J&K and LADAKH	(Avl)	910	1730	90.1%	3270	2831	-13.4%
	(Req)	1980	1740	-12.1%	2980	2831	-5.0%
PUNJAB	(Avl)	5160	4323	-16.2%	11390	8008	-29.7%
	(Req)	3970	4351	9.6%	7450	8008	7.5%
RAJASTHAN	(Avl)	8390	9471	12.9%	18970	16612	-12.4%
	(Req)	9210	9610	4.3%	16500	16777	1.7%
UTTAR PRADESH	(Avl)	9920	9772	-1.5%	19500	19970	2.4%
	(Req)	9765	9793	0.3%	19500	19970	2.4%
UTTARAKHAND	(Avl)	1215	1216	0.1%	2250	2141	-4.8%
	(Req)	1237	1232	-0.4%	2350	2141	-8.9%
NORTHERN REGION	(Avl)	34327	34175	-0.4%	74300	59000	-20.6%
	(Req)	35090	34407	-1.9%	57700	60000	4.0%

As per above, negative / significant variation (≥5%) in Actual Power Supply Position(Provisional) vis-à-vis Anticipated figures is observed for the month of December-2022 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, UTs of J&K and Ladakh, Punjab, and Uttarakhand and in terms of Peak Demand similar variation is noted for Delhi, UTs of J&K and Ladakh, Punjab, 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 2nd and 15th 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 February-2023 is scheduled on 17-January-2023 via Video Conferencing

3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of February-2023 is scheduled on 17-January-2023 via Video conferencing.

4. Planning of Grid Operation

4.1. Anticipated Power Supply Position in Northern Region for February 2023

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

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	110	290	No Revision submitted
	Requirement	120	240	
	Surplus / Shortfall	-10	50	
	% Surplus / Shortfall	-8.3%	20.8%	
DELHI	Availability	2120	5980	No Revision submitted
	Requirement	2000	4970	
	Surplus / Shortfall	120	1010	
	% Surplus / Shortfall	6.0%	20.3%	
HARYANA	Availability	4270	11270	No Revision submitted
	Requirement	3960	8470	
	Surplus / Shortfall	310	2800	
	% Surplus / Shortfall	7.8%	33.1%	
HIMACHAL PRADESH	Availability	979	2050	10-Jan-22
	Requirement	998	2047	
	Surplus / Shortfall	-19	3	
	% Surplus / Shortfall	-1.9%	0.1%	
J&K and LADAKH	Availability	1250	1750	26-Dec-22
	Requirement	1750	2900	
	Surplus / Shortfall	-500	-1150	
	% Surplus / Shortfall	-28.6%	-39.7%	
PUNJAB	Availability	4860	11380	No Revision submitted
	Requirement	3780	7490	
	Surplus / Shortfall	1080	3890	
	% Surplus / Shortfall	28.6%	51.9%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
RAJASTHAN	Availability	7510	18770	No Revision submitted
	Requirement	8190	15780	
	Surplus / Shortfall	-680	2990	
	% Surplus / Shortfall	-8.3%	18.9%	
UTTAR PRADESH	Availability	10380	25380	No Revision submitted
	Requirement	9210	19600	
	Surplus / Shortfall	1170	5780	
	% Surplus / Shortfall	12.7%	29.5%	
UTTARAKHAND	Availability	1109	2310	06-Jan-22
	Requirement	1134	2350	
	Surplus / Shortfall	-25	-40	
	% Surplus / Shortfall	-2.2%	-1.7%	
NORTHERN REGION	Availability	32588	73800	
	Requirement	31142	59500	
	Surplus / Shortfall	1446	14300	
	% Surplus / Shortfall	4.6%	24.0%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of February-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	Oct-2022
HARYANA	Apr-2018	Nov-2022
HIMACHAL PRADESH	Apr-2018	Nov-2022
PUNJAB	Apr-2018	Oct-2022
RAJASTHAN	Apr-2018	Sep-2022
UTTAR PRADESH	Apr-2018	Oct-2022
UTTARAKHAND	Apr-2018	Sep-2022

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 In 202nd OCC, EE (P&SS), NRPC apprised that Unchahar Islanding Scheme has been approved in 59th NRPC Meeting (held on 31st Oct'22).

7.2 Further, he also intimated that in 60th NRPC Meeting (held on 30th Nov 2022), following islanding schemes have also been approved:

Rajasthan	Suratgarh STPS Islanding Scheme
	Jodhpur-Barmer-Rajwest LTPS Islanding Scheme
Himachal Pradesh	Shimal Solan Islanding schemes
	Kullu Mandi and Manali Islanding Scheme
Punjab	NPL Rajpura Islanding scheme
	Ranjit Sagar Dam Islanding scheme

7.3 UP representative apprised members that a committee to review the progress of implementation of Unchahar and Agra Islanding scheme has been constituted by Director(Operations), UPPTCL. Further, he intimated that the first meeting of the committee was held on 03.12.2022 and in the said meeting, it was decided that it would be appropriate that UFR's to be installed at NTPC Unchahar and PGCIL end be installed and maintained by respective entity.

7.4 UP representative also informed forum that around 40 sub-stations are covered in both the islanding scheme of UP and procurement for UFR's for 20 sub-station has already being done and for rest 20 sub-station it is under progress. Further, he highlighted that there are total 4 to 5 sub-stations of NTPC and PGCIL covered under UP islanding scheme and opined that UFR's at these sub-stations shall be installed and maintained by respective entity.

7.5 MS, NRPC opined that there shall be single ownership for the activity of installation and maintenance of UFR's and UP may take the responsibility for the said work as UP is the beneficiary for the cited islanding scheme. However, if UP desires it may have a meeting with both NTPC and Powergrid and deliberate on the aforesaid matter and thereafter communicate the discussion of the meeting to NRPC Sectt..

7.6 EE (P&SS), NRPC apprised forum that UP has communicated that CPRI has completed the steady state study for Agra islanding scheme and the draft for dynamic study would be shared by CPRI with them by 25.12.2022

7.7 With regard to Delhi islanding scheme, EE (P&SS), NRPC intimated that revised scheme was received on 15.12.2022 and after scrutiny by NRPC Sectt.. a separate meeting will be held amongst officials of NRPC, NRLDC and Delhi SLDC.

7.8 HPSLDC intimated that OEM has informed that Malana-I HEP Under frequency setting cannot be set below 48.5 Hz.

7.9 EE (P&SS), NRPC stated that as per SOP issued by NPC Division, CEA, islanding frequency shall be 47.9 Hz, therefore, NPC Division, CEA may be asked for reviewing the frequency.

7.10 MS, NRPC stated that a separate meeting may be called with HP for resolution of the issue.

7.11 A VC meeting was held on 11.01.2023 with Delhi for discussion on load under consideration in island and with Himachal Pradesh for discussion on island frequency.

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 186th 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 10th January 2023) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	72.86	16	12.5
ANPARA TPS	2630	73.08	16	22.4
BARKHERA TPS	90	0.65	24	21.6
DADRI (NCTPP)	1820	52.59	24	7.9
GH TPS (LEH.MOH.)	920	44.76	24	6.9
GOINDWAL SAHIB TPP	540	35.29	24	8.8
HARDUAGANJ TPS	1265	34.51	24	19.2
INDIRA GANDHI STPP	1500	28.73	24	8.2
KAWAI TPS	1320	93.46	24	9.0
KHAMBARKHERA TPS	90	0.00	24	29.0
KOTA TPS	1240	71.97	24	**2.9**
KUNDARKI TPS	90	0.94	24	25.9
LALITPUR TPS	1980	50.07	24	19.0
MAHATMA GANDHI TPS	1320	70.83	24	16.4
MAQSOODPUR TPS	90	0.62	24	22.8
MEJA STPP	1320	85.72	24	9.4
OBRA TPS	1094	73.67	24	4.8
PANIPAT TPS	710	82.83	24	7.8
PARICHHA TPS	1140	41.73	24	7.2
PRAYAGRAJ TPP	1980	73.05	24	5.2
RAJIV GANDHI TPS	1200	64.76	24	14.8
RAJPURA TPP	1400	63.78	24	28.2
RIHAND STPS	3000	81.03	16	22.9
ROPAR TPS	840	36.54	24	6.9
ROSA TPP Ph-I	1200	83.48	24	6.7
SINGRAULI STPS	2000	89.90	16	14.7
SURATGARH TPS	1500	47.33	24	**2.7**

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
TALWANDI SABO TPP	1980	71.15	24	**3.6**
TANDA TPS	1760	37.72	24	15.2
UNCHAHAR TPS	1550	22.04	24	15.9
UTRAULA TPS	90	0.00	24	35.1
YAMUNA NAGAR TPS	600	58.98	24	19.6
CHHABRA-I PH-1 TPP	500	77.60	24	**1.4**
KALISINDH TPS	1200	34.96	24	**1.8**
SURATGARH STPS	1320	0.00	24	**3.9**
CHHABRA-I PH-2 TPP	500	61.65	24	**1.0**
CHHABRA-II TPP	1320	48.10	24	**1.3**

9. Planned Annual Outage of Jhajjar Power Limited Unit#1 in the year 2023 (Agenda by Jhajjar Power Limited)

9.1 Jhajjar Power Limited vide letter dated 21.12.2022 (copy attached as **Annexure-A.III**) has intimated that HPPC vide their latter dated 20.07.2022 consented to JPL's planned major outage of Unit-1 for 35 days beginning March 3, 2023 and ending on April 7, 2023.

9.2 Based on Grid Controller of India's forecast of India's forecast of very high electricity demand in April-May 2023, MoP has directed all TPP's for zero planned maintenance schedule from April 1 to May 15, 2023.

9.3 In this regard, as per the discussion held in 28th LGBR sub-committee meeting of NRPC the planned outage of Jhajjar Power Limited was revised from March 03, 2023 to March 31, 2023 for 29 days.

9.4 Jhajjar Power Limited has mentioned in the aforesaid letter that revised outage duration of 29 days will not be sufficient to complete the major overhauling and instead 45 days are required owing to critical activities in FGD overhauling and related issues such as Chimney Flue can titanium lining repair. Henceforth, they have requested for the major overhauling of Unit#1 from May 15, 2023 to June 30, 2023 for 45 days.

Members may kindly deliberate.

10. No plant should be allowed planned outage during the peak demand period i.e. crunch period in April-May 2023 (Agenda by NRPC Sectt..)

10.1 In the review meeting taken by Secretary (Power) on Coal Supply on 08.12.2022 (copy of MoM attached as **Annexure-A.IV**) it was directed that to ensure uninterrupted power supply, No plant should be allowed planned outage during the peak demand period i.e. crunch period in April-May 2023.

10.2 In this regard, it is highlighted that list of outages of NR generating units falling in month of April-May 2023 is attached as **Annexure-V** and same needs to be reviewed in compliance of directions from Ministry**.**

Members may kindly deliberate.

11. Frequent tripping of MEJA-BARA lines due to FOG (Agenda by Meja Thermal Power Station)

11.1. Meja TPS vide mail dated 12.01.2022 has intimated that frequent tripping of MEJA-BARA lines in the month of January'22, led to long outage of MEJA unit-1 and fluctuation in unit-2 load. This has caused severe relibility issues and threat to system stability.

11.2. Description of events is as follows:

- MEJA-BARA LINE -2 TRIPPED 4: 34 HRS ON 1-1-23, ZONE-1 fault AT BARA END AND ZONE-2 FAULT AT MEJA END. CAUSED HEAVY VOLTAGE JERK AT MEJA END LEADING TO MEJA UNIT-1 TRIP. HUGE LOAD HUNTING IN UNIT-2 ALSO.
- SAME EVENET AGAIN APPEARED AT 7:49 HRS ON 3-01-23 AGAIN LEADING TO TRIP OF UNIT-1 AND HEAVY DAMAGE IN PT-R PHASE. RESORATION WORK STILL IN PROGRESS.IN ABOVE EVENTS, CARRIER NOT NOT RECIEVED AT MEJA END, LEADING TO DELAYED TRIPPING OF BREAKAR AT MEJA.
- SAME EVENT REPEATED TODAY, 6.1.23 AT 6:36 HRS IN LINE-2 AND 3:48 HRS IN LINE-1 ON ZONE-2. CAUSED LOAD HUNTING IN UNIT-2 FROM 490 MW TO 597 MW AND TRIP OF SOME AUXILARIES.
- On 11.01.2023 also, MEJA-BARA LINE-1 &2 TRIPPED AT 03:04 & 03:48 HRS RESPECTIVELY. At Meja end, line-2 both breakars tripped, while only tie breakar of line-1 opened. Carrier did not receive in line-2.

Members may kindly deliberate.

12. Approval of utilization of 2x50 MVAR Reactors and 4 nos. associated line bays at Meerut (Agenda by Powergrid, NR-1)

12.1. Powergrid, NR-1 vide letter dated 12.01.2023 (copy attached as **Annexure-A.VI**) mentioned that following 4 nos. of 400 kV line bays are spared at Meerut substation **(Under Tehri HEP Scheme)** during upgradation of 400 D/C kV Meerut-Koteshwar TL to 765 kV under **"Tehri PSP"** Scheme

i) 400 kV Line bay-1
ii) 400kV Line bay-2
iii) 400 kV Switchable line reactor bay along with 50 MVAR switchable line reactor
iv) 400 kV Switchable line reactor bay along with 50 MVAR switchable line reactor

12.2. Out of above bays, one is utilized for 125 MVAR Bus reactor at Meerut (DOCO-13.12.2021) under NRSS-XL scheme and another bay is utilized for connecting 2 nos. 50 MVAR reactor in parallel for using them as bus reactor which was already agreed

in 4th Meeting of NCT, para- 14.1 (page 35 & 36). However, following points to be discussed and clarified:

a) The approval of utilizing one no. 400kV line bay to connect one no. 125 MVAR bus reactor at Meerut under NRSS-XL.
b) Under which scheme 2nos. of 50 MVAR reactors and one no. 400kV line bay may be used as a bus reactor.
c) Utilization of balance 2 nos. switchable line reactor 400kV bays or keeping them as a regional spare.

12.3. The matter was also been discussed in 198th OCC meeting on 17.08.2022 and it was deliberated by Member Secretary, NRPC on page-14 that:

Quote
"MS, NRPC opined that the CTU may be asked to deliberate on this agenda in their upcoming 'consultation meeting for evolving transmission schemes' and thereafter CTU's views may be discussed in subsequent OCC meeting".
Unquote

NOTE: The 50 MVAR reactor along with one no. 400 kV bays yet to be charged at Meerut substation.

Members may kindly deliberate.

13. Energization of bays & reactors without commissioning of elements at 765/400/220kV Bhadla-2 S/s to achieve system redundancy (Agenda by Powergrid, NR-1)

13.1. Powergrid, NR-1 vide letter dated 12.01.2023 (copy attached as **Annexure-A.VI**) mentioned that 765/400/220KV Bhadla-2 substation is connected to many solar generators and very critical substation for evacuation of solar power since July'21. As per the existing scheme, 765kV & 400kV systems are of 1½ breaker scheme and 220kV system is with DMT scheme.

13.2. The transmission elements at Bhadla-2 substation have been added in phased manner through different projects/transmission schemes, which led to involvement of various agencies over different time periods. Some of them are with future bays (i.e. isolator only). Therefore, these bays alongwith line reactor have planned to be commissioned on priority (though their elements are delayed due to various reasons) for system reliability & voltage control for trouble free evacuation of solar power:

Sl. No.	Description	Presently in service with	Planned for commissioning without commissioning element	Expected energization
i)	765/400KV ICT-III	765KV Main Bay (721) 765KV Tie Bay (720) 765KV Future Bay (719)	i) 719th Future bay earmarked for 765KV Sikar2 Ckt -I ii) 240MVAR switchable Line Reactor of 765KV Sikar-2 Ckt-I	March'2023
ii)	765/400KV ICT-IV	i) 765KV Main Bay (724)	i) 722nd Future bay earmarked for 765KV Sikar2 Ckt-II	March'2023

		765KV Tie Bay (723) 765KV Future Bay (722)	ii) 240MVAR switchable Line Reactor of 765KV Sikar-2 Ckt-II	
iii)	765/400KV ICT-I	i) 765KV Main Bay (715) ii) 765KV Tie Bay (714) iii) 765KV Future Bay (713)	i) 713th Future bay earmarked for 765KV Fatehgarh2 Ckt-I ii) 240MVAR switchable Line Reactor of 2nd ckt of 765KV Fatehgarh2 Ckt-I	March'2023
iv)	765/400KV ICT-II	i) 765KV Main Bay (718) ii) 765KV Tie Bay (717) iii) 765KV Future Bay (716)	i) 716th Future bay earmarked for 765KV Fatehgarh2 Ckt-II ii) 240MVAR switchable Line Reactor of 2nd ckt of 765KV Fatehgarh2 Ckt-II	March'2023

13.3. Though commissioning of 765KV D/C Bhadla-II – Sikar-II line and 2nd circuit of 765KV D/C Bhadla-II – Fatehgarh2 lines are delayed due to various reasons beyond control of POWERGRID, the following are recommended for consideration in the OCC:

i) Energization of 719th, 722nd , 713th , 716th Bays for system redundancy
ii) Energization of 4 x 240MVAR line reactors earmarked with aforesaid elements for better voltage control as Bhadla Region is witnessing severe voltage variation issues during day and night resulting into nos. of Reactors switching operations in morning and evening/night hours to control the system voltage.
iii) Commercial operation of these elements subsequent upon commissioning.

14. LC-oscillations/resonance in over-compensated 765kV transmission lines in Northern Region-1 (Agenda by Powergrid, NR-1)

14.1. Powergrid, NR-1 vide letter dated 12.01.2023 (copy attached as **Annexure-A.VI**) mentioned that the agenda for overvoltage issues observed in over-compensated 765kV transmission lines in POWERGRID NR-I was brought in 198th OCC and following was recorded in the minutes:

"NRLDC representative submitted that the matter was discussed in previous OCC meeting and requested CTUIL to carry out studies for LC oscillation/resonance for the overcompensated lines".

14.2. In view of issues observed due to occurrence of resonance in transmission lines, CTU may kindly update on the progress of studies and advise for long/short term measures to be taken to avoid such conditions and associated over voltages.

Members may kindly deliberate.

15. Frequent switching of transmission line to control system voltage (Agenda by Powergrid, NR-1)

15.1 Powergrid, NR-1 vide letter dated 12.01.2023 (copy attached as **Annexure-A.VII**) forwarded herewith a communication from ED(AM), CC, wherein concern regarding frequent opening of transmission lines has been raised to control the system voltage.

15.2 It is highlighted in the aforesaid letter that these frequent opening of transmission lines on regular basis at high voltage condition is unnecessarily stressing the switchyard equipment's, which may result in failure also specially circuit breakers.

Members may kindly deliberate.

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

16. NR Grid Highlights for December 2022

- Maximum energy consumption of Northern Region was **1165 Mus** on 30th December'22 and it was 7.0 % higher than December' 2021 (1088 Mus 22th December'21)

- Average energy consumption per day of Northern Region was **1106 Mus** and it was 8.4 % higher than December'21 (1020 Mus per day)

- Maximum Demand met of Northern Region was **59004 MW** on 28th December'22 @12:00 hours (*based on data submitted by Constituents)* as compared to 55546 MW on 20th December'21 @11:00 hours

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

States	Max. Demand Met during the day (MW)		As per SCADA instantaneous data	Energy Consumption (MU)	
	As per hourly data Submitted by States (MW)/Format 28	As on date		As per PSP (Mus)	As on date
Rajasthan	16612	27-12-2022 10:30 hrs	16725 10:20 hrs	-	-
J&K(UT) and Ladakh (UT	-	- -	- -	62.54	28.12.22

- **Comparison of Average Energy Consumption (MUs/Day) of NR States for the December'21 vs December'22**

क्षेत्र/राज्य	दिसंबर - 2021	दिसंबर- 2022	% अंतर

चंडीगढ़	3.5	3.8	6.2
दिल्ली	66.6	70.2	5.4
हिमाचल प्रदेश	34.0	34.3	1.1
हरियाणा	128.4	139.4	8.5
जम्मू और कश्मीर	54.0	57.7	6.8
पंजाब	132.0	139.5	5.7
राजस्थान	265.1	305.8	15.4
उत्तराखंड	39.4	39.9	1.4
उत्तर प्रदेश	297.5	315.6	6.1
उत्तरी क्षेत्र	**1020.5**	**1106.1**	**8.4**

Frequency Data

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
Dec'22	50.00	50.55	49.41	12.8	57.4	29.8
Dec'21	50.00	50.34	49.62	6.9	73.1	19.9

Detailed presentation on grid highlights of Dec'2022 will be shared by NRLDC in OCC meeting

17. Grid Operation related issues

a) Detailed Procedure For Estimation of the Requirement of SRAS and TRAS at Regional Level

The objective of Ancillary Services in Indian power system is to maintain the grid frequency close to 50 Hz, restoration of the grid frequency within the allowable band as specified in the IEGC and for relieving congestion in the transmission network, to ensure smooth operation of the power system, and safety and security of the grid.

Adequate reserves are required to be maintained in a distributed manner with both the regional entities at the regional level and at the State level for each state control area as per the IEGC or the State Grid Code as the case may be.

The Nodal Agency i.e. National Load Despatch Centre (NLDC) shall, in coordination with Regional Load Despatch Centres (RLDCs) and State Load Despatch Centres (SLDCs), estimate the quantum of requirement of Secondary Reserves for SRAS and Tertiary Reserves for TRAS at the regional level after factoring in the reserves for each state control area, for such period and based on such methodology as specified in the IEGC and publish the same on its website

There would be assessment of reserves on year ahead basis, quarter ahead basis week-ahead basis, day ahead basis and intra-day basis.

Hon'ble Commission approved procedure provides an interim methodology for estimation of reserves in accordance with Regulation 6(1) of the Central Electricity Regulatory Commission (CERC) (Ancillary Services) Regulations, 2022, hereinafter referred to as the "AS Regulations".
Detailed procedure as approved by Hon'ble Commission is available @ https://posoco.in/download/detailed-procedure-for-estimation-of-the-requirement-of-secondary-reserve-ancillary-service-sras-and-tertiary-reserve-ancillary-service-tras-at-regional-level/?wpdmdl=49385.

In line with the procedure, data as per the formats RAS1 and RAS2 have to be submitted by all the SLDCs. The last date for submission of Format-RAS1 & Format-RAS2 is 15th January 2023.

Members may kindly discuss.

b) Issues related to Rajasthan state control area

As discussed in 59 and 60 NRPC meeting, RVPN was asked to submit pointwise reply to following issues:

- Action plan to meet the 16000-17000MW peak demand during winter
- **Establishing additional connectivity of 400 kV Alwar from Bhiwadi / Bassi / Phagi. Gas generation at Dholpur may also help till connectivity established**
- Minimising planned/ forced outage of intrastate thermal generating units
- Operating intrastate RE generators in voltage control mode
- **Load MVAR drawl management including identification of nodes at 220kV and 132kV level which are drawing huge MVAR from the grid**
- Expediting upgradation of 400kV Jodhpur (Kankani) to 765kV along with associated 765kV lines
- Additional reactive power support devices for maintaining grid voltages within IEGC prescribed limits

In 202 OCC meeting, Rajasthan SLDC informed that they are awaiting response from STU for some points.

NRLDC representative asked Rajasthan SLDC to submit reply for points that have been compiled at their end and for other points reply may be submitted after receipt of same from STU. Rajasthan SLDC agreed for the same.

From, the available data of last one month it can be seen that loading of 400/220kV ICTs is remaining very high since last two weeks (under import of 6500-7000MW), therefore, it is requested that loading of 400/220kV ICTs may be kept below their N-1 contingency limits and at places where SPS is installed, loading needs to be such that SPS relief is able to manage loading within safe limits in case of N-1 contingency. Plots showing loading of highly loaded 400/220kV ICTs such as Jodhpur, Merta, Ajmer, Chittorgarh, Bikaner, Bhilwara, Bhinmal along with their N-1 contingency limits is attached as Annexure-III. It is to be noted that as per information available with NRLDC, there is no SPS implemented at 400/220kV Bikaner, Bhinmal and Bhilwara ICTs and therefore loading of these ICTs needs to be below their N-1 contingency limits.

Huge MVAR drawl at 400/220kV RVPN substations:

During solar generation period of 10:00-14:00hrs, with Rajasthan demand of 15000-

ICTs MW drawl, MVAr drawl, Power factor and S/s voltage for Solar hours (10:00-14:00hrs) for Rajasthan Control area (30.12.2022-03.01.2023)					
400/220 Sub-Station_ICTs	ICTs Capacity (MVA)	MW Drawl	MVAr Drawl	Power factor	Voltage(kV)
Jodhpur	2*315	300-320	250-280	0.73-0.75	375-385
Kankani	(315+500)	400-450	200-250	0.87-0.90	360-370
Merta	2*315	450-500	200-240	0.90-0.92	380-390
Bhinmal(PG)	2*315	430-450	300-320	0.82-0.85	365-370
Bikaner(RS)	2*315	280-320	250-350	0.70-0.75	370-375

16500MW, significant MVAr drawls have been observed at 400kV Jodhpur (RS), 400kV Kankani(RS), 400kV Bhinmal, 400kV Bikaner(RS) and 400kV Merta. It is to be noted that such huge MVAR drawl is leading to low voltages in Rajasthan state control area and also aggravating the low voltage scenario in the RE evacuation pockets.

Detailed plots of MW Vs MVAr drawl of ICTs and Voltage Vs Power factor profile of ICTs at above mentioned Sub-stations are attached as **Annexure-B.I**:

Apart from above mentioned sub-stations, 400kV Ramgarh, 400kV Akal, 400kV Barmer, 400kV Hindaun and 400kV Alwar also suffer from significant low voltage issues.

Frequent voltage oscillation events have also been observed during solar generation period 10:00hrs-14:00hrs in Rajasthan control area as well as in ISTS RE pooling stations. In this situation, Rajasthan need to take following actions on immediate basis:

1. Improve the power factor and reduce the MVAr drawls at above mentioned sub-stations.
2. Quantum of load and time block wise breakup being connected in Jodhpur-Kankani and Merta load center area may be reviewed.
3. Check whether oscillation is getting initiated on connecting load during Solar/Wind ramping period and when Rajasthan demand exceeds 14500MW.
4. Explore the possibilities of installing PMU at Kankani, Ramgarh, Akal,Bhadla (RS) and Bikaner (RS) substations to locate the exact source of oscillation and analyse Rajasthan Intra-state RE plants behavior during any event of fault.

Apart from above, it is requested that POWERGRID may expedite commissioning of STATCOMs in ISTS-RE Pooling substations. During commissioning of STATCOMs, it may be ensured that POD (power oscillation damping) functionality is enabled and study report of POD may be shared with NRLDC before first time charging for any comments/ observations.

Multiple events related to tripping of 400/220kV Hindaun ICTs have also occurred in December 2022. It is to be noted that there are telemetry related issues also at 400/220kV Hindaun S/s due to which NRLDC is not able to monitor ICT loadings at 400/220kV Hindaun.

Following instances have been observed related to overload tripping of 400/220kV Hindaun ICTs:

S. No.	400/220 kV 315 MVA ICT Name	Outage Date	Time	Revival Date	Time
1	ICT 2 at Hindaun(RS)	17-11-2022	13:06	17-11-2022	13:33
2	ICT 1 at Hindaun(RS)	17-11-2022	13:06	17-11-2022	13:30
3	ICT 2 at Hindaun(RS)	17-11-2022	14:43	17-11-2022	15:13
4	ICT 1 at Hindaun(RS)	17-11-2022	14:43	17-11-2022	15:09
5	ICT 2 at Hindaun(RS)	29-11-2022	02:10	29-11-2022	03:28
6	ICT 1 at Hindaun(RS)	27-12-2022	11:12	27-12-2022	11:36
7	ICT 2 at Hindaun(RS)	27-12-2022	11:12	27-12-2022	11:41
8	ICT 2 at Hindaun(RS)	05-01-2023	13:22	05-01-2023	13:57
9	ICT 1 at Hindaun(RS)	05-01-2023	13:22	05-01-2023	13:56

It is suggested that RVPN plans a SPS for 400/220kV Hindaun ICTs and ensures to make sure that 400/220kV ICT loading remains within N-1 contingency limits.

Rajasthan SLDC to provide update.

c) Low CUF and large deviations by ISTS connected RE generators

As per clause (1)(r) of Regulation 2 of the Central Electricity Regulatory Commission regulation (Deviation Settlement Mechanism and related matters) (Second Amendment) Regulations, 2015 as quoted below:

Quote:

"(ii) After sub-clause (q) under clause (1) of Regulation 2, new sub-clause (r) shall be added as under:- (r) 'Available Capacity (AvC)' for wind or solar generators which are regional entities is the cumulative capacity rating of the wind turbines or solar inverters that are capable of generating power in a given time-block."

Un Quote.

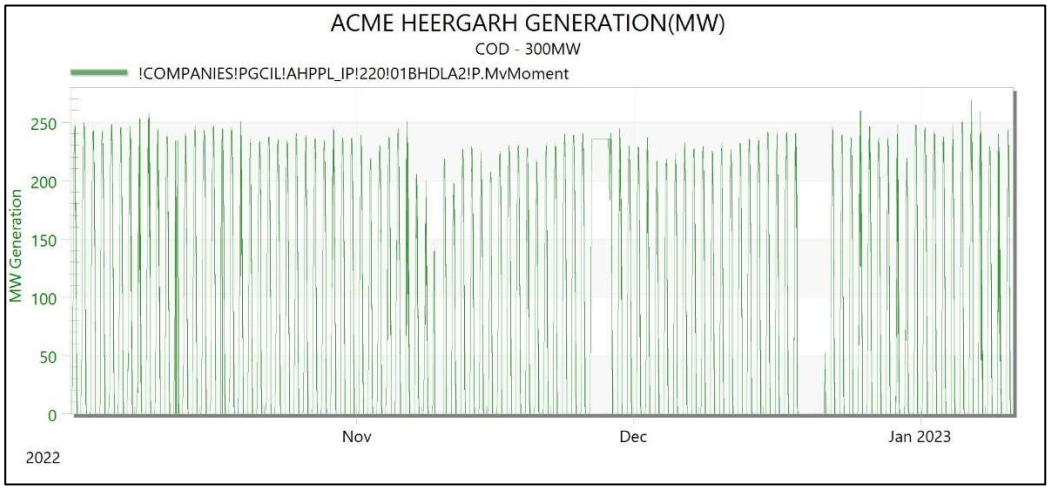
The Plant (ACME Heergarh) has already declared full COD for 300MW on 25.05.2022. Similarly, Azure Mapple also has declared full COD for 257MW on 31.03.2022.

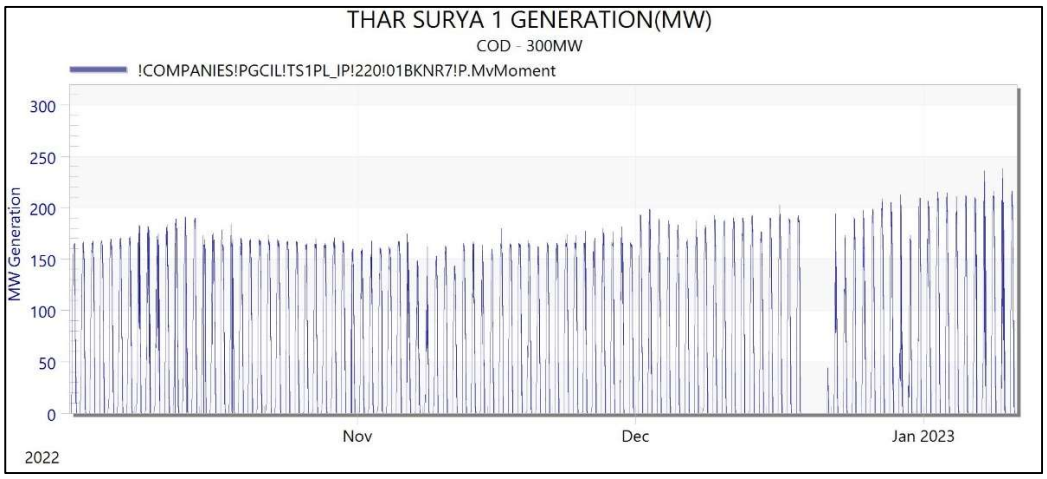
Since last few month it has been observed that max generation of ACME Heergarh plant is ~250MW and plant is not able to schedule/generate up to full COD for 300MW. Low CUF are observed in ACME Heergarh/AzureMapple and these plants are not generating up to Declared capacity/Available Capacity value on continuous basis. Communication regarding this have been sent by NRLDC but response is yet to be received.

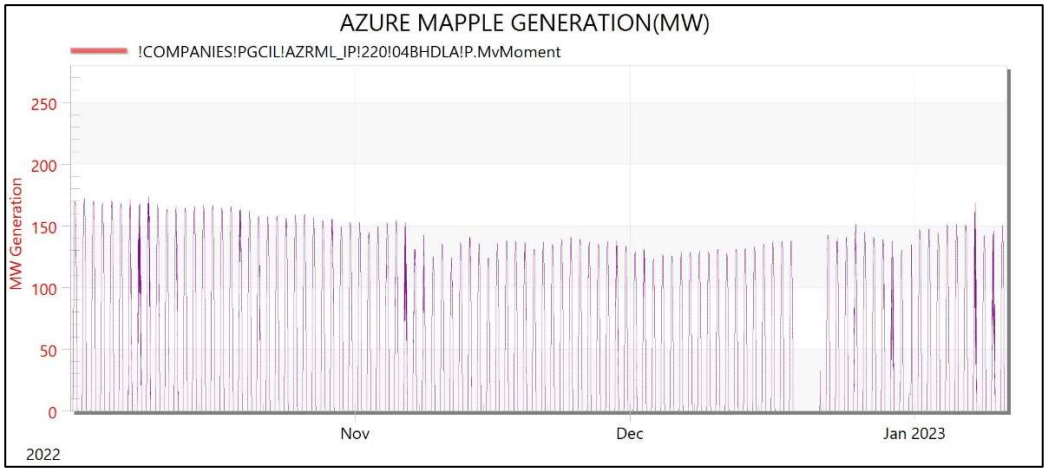
Recently same issue is observed in TharSuyra1.

Trend Graph for these plants is shown below for reference.

Plant Name	CoD quantum (MW)	Actual generation (MW)
ACME Heergarh	300	230-250
TharSuyra1	300	170-200
AzureMapple	257	140-170







Members may kindly discuss.

d) Numerous tripping of lines during fog hours

The importance of carrying out insulator cleaning and replacement of damaged insulators was discussed in the 199th – 202nd OCC meetings and 58th -60th NRPC meetings. In order to avoid/mitigate tripping of lines during foggy (smog) weather in winter season, preventive actions like cleaning/washing of insulators, replacement of conventional insulators with polymer insulators have been recommended and are being taken every year.

Even after insulator cleaning and replacement work carried out by utilities, number of tripping are also being observed in real-time especially during pre-dominant fog hours. Such frequent tripping are big challenge in ensuring safe and secure operation of grid and also reduce life of transmission lines due to frequent flashovers/ trippings. These line tripping are apart from

the lines already opened to manage high voltage. Since around 40-60 EHV lines are opened to control high voltage on daily basis and further 40-50 lines are tripping during fog timings, it becomes really challenging for the system operator to ensure safe and reliable grid operation.

Moreover, these figures are only for lines for which switching codes are issued by NRLDC. Apart from these lines, there are numerous other intrastate lines which are opened on high voltage or trip during fog conditions which are not monitored at RLDC level.

Following 400kV and above lines have tripped in Jan 2023 during fog hours timings:

Lines Tripping during Fog hours in Jan 2023 along with their pre-winter maintenance status as available with NRLDC					
S. No.	**Line**	**Owner**	**Tripping date**		**Prewinter maintenance**
1	400 KV Ajmer(RS)-Deedwana(MTS) (RS) Ckt-1	RRVPNL	13-01-2023	07:08	Not reported
2	400 KV Akal-Jodhpur (RS) Ckt-1	RRVPNL	13-01-2023	04:51	Not reported
3	400 KV Aligarh-Sikandrabad (UP) Ckt-1	UPPTCL	09-01-2023	03:09	Not reported
4		UPPTCL	10-01-2023	07:12	
5	400 KV Allahabad-Sasaram (PG) Ckt-1	POWERGRID	02-01-2023	00:40	21.11.2022 & 29.11.2022
6	400 KV Amargarh(NRSS XXIX)-Samba(PG) (NRSS XXIX) Ckt-2	NRSS XXIX	13-01-2023	00:32	21.10.2022
7		NRSS XXIX	13-01-2023	02:01	
8	400 KV Amritsar(PG)-Makhu(PS) (PSTCL) Ckt-2	PSTCL	05-01-2023	03:44	12.12.2022 & 14.12.2022
9	400 KV Anpara_B(UPUN)-Mau(UP) (UP) Ckt-1	UPPTCL	05-01-2023	03:20	16.10.2022-19.10.2022 (D)
10	400 KV Anpara_B(UPUN)-Sarnath(UP) (UP) Ckt-2	UPPTCL	11-01-2023	06:33	14.10.2022, 15.10.2022
11	400 KV Balia-Biharshariff (PG) Ckt-2	POWERGRID	02-01-2023	01:18	23.12.2022, 29.12.2022, 30.12.2022, 05.01.2023
12	400 KV Bara(UP)-Meja TPS(MUN) (UP) Ckt-1	UPPTCL	01-01-2023	05:17	Not reported
13		UPPTCL	05-01-2023	06:23	
14		UPPTCL	06-01-2023	03:48	
15		UPPTCL	12-01-2023	06:56	
16	400 KV Bara(UP)-Meja TPS(MUN) (UP) Ckt-2	UPPTCL	01-01-2023	04:33	Not reported
17		UPPTCL	05-01-2023	06:23	
18		UPPTCL	06-01-2023	06:28	
19		UPPTCL	12-01-2023	03:48	
20	400 KV Barmer(RS)-Rajwest(RW) (RS) Ckt-1	RRVPNL	13-01-2023	05:32	15.10.2022
21	400 KV Bawana CCGTB(DTL)-Bahadurgarh(PG) (PG) Ckt-1	POWERGRID	07-01-2023	07:01	Not reported
22	400 KV Bikaner-Merta (RS) Ckt-1	RRVPNL	07-01-2023	01:44	Not reported
23	400 KV Dadri(NT)-Panipat(BB) (PG) Ckt-1	POWERGRID	09-01-2023	07:02	28.11.2022
24	400 KV Gorakhpur(PG)-Muzaffarpur(PG) (POWERLINK) Ckt-1	POWERLINK	02-01-2023	00:43	12.01.2023
25	400 KV Hindaun(RS)-Chhabra(RVUN) (RS) Ckt-1	RRVPNL	01-01-2023	01:55	Not reported
26	400 KV Jodhpur-Kankani (RS) Ckt-2	RRVPNL	10-01-2023	08:27	15.12.2022
27	400 KV Koldam(NT)-Ludhiana(PG) (PKTCL) Ckt-2	PKTCL	12-01-2023	23:49	9.12.2022-10.12.2022
28	400 KV Muktsar-Makhu (PS) Ckt-1	PSTCL	11-01-2023	00:59	3.10.2022, 29.10.2022, 20.12.2022
29	400 KV Muktsar-Makhu (PS) Ckt-2	PSTCL	08-01-2023	03:21	8.12.2022, 10.12.2022
30		PSTCL	10-01-2023	07:51	
31	400 KV Muradnagar_2-Mathura (UP) Ckt-1	UPPTCL	05-01-2023	02:45	8.11.2022, 21-11.2022-24.11.2022
32	400 KV Obra_B-Rewa Road (UP) Ckt-1	UPPTCL	08-01-2023	05:00	Not reported
33		UPPTCL	12-01-2023	06:11	
34	400 KV Rajwest(RW)-Jodhpur (RS) Ckt-1	RRVPNL,RRVPNL	13-01-2023	04:51	Not reported
35	400 KV Rajwest(RW)-Kankani (RS) Ckt-1	RRVPNL	13-01-2023	04:24	13.10.2022, 19.12.2022
36	400 KV Sultanpur(UP)-Lucknow_1(PG) (PG) Ckt-1	POWERGRID,UPPTCL,UPPTCL	07-01-2023	04:31	Not reported
37	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	RRVPNL	11-01-2023	00:12	Not reported
38	400 KV Varanasi-Biharshariff (PG) Ckt-1	POWERGRID	02-01-2023	00:46	03.01.2023

39		POWERGRID	07-01-2023	04:21	
40		POWERGRID	09-01-2023	06:13	
41		POWERGRID	10-01-2023	01:56	
42	400 KV Varanasi-Bihartshariff (PG) Ckt-2	POWERGRID	01-01-2023	06:26	Not reported
43		POWERGRID	01-01-2023	23:25	
44		POWERGRID	10-01-2023	00:24	
45	765 KV Anpara_C(LAN)-Unnao(UP) (UP) Ckt-1	UPPTCL	01-01-2023	04:52	27.11.2022-01.12.2022 (D)
46		UPPTCL	11-01-2023	00:40	
47	765 KV Anta-Phagi (RS) Ckt-1	RRVPNL	03-01-2023	04:56	Not reported
48	765 KV Anta-Phagi (RS) Ckt-2	RRVPNL	01-01-2023	05:39	Not reported
49	765 KV Bara-Mainpuri (UP) Ckt-2	UPPTCL,UPPTCL	12-01-2023	05:53	Not reported
50	765 KV Varanasi-Gaya (PG) Ckt-2	POWERGRID	11-01-2023	04:31	17.11.2022

Although fog related tripping have reduced from mid-December, all concerned transmission licensees are once again requested to review insulator cleaning/ washing activities and replacement of porcelain insulators by polymer insulators at their end and further plan for such activities on priority in the lines reportedly tripping during fog hours.

e) **Participation of hydro stations in Automatic Generation Control**

Frequency profile of Indian grid for last few weeks has been poor and frequency has been outside the IEGC band for significant amount of time. One of the tool which is helpful in maintaining the frequency with in the IEGC band is Automatic Generation Control (AGC) which has been implemented across number of plants in the country including Northern region. For AGC control to be effective for the wired machines, it is desirable that generating stations keep their units in AGC remote mode whenever they are generating.

However, recently it is being observed that some of the hydro stations in Northern region are not keeping their units in AGC remote mode for all the time. For 03 Jan 2023, it was reported that despite availability of communication, the time for which the hydro stations participated in secondary frequency control was low as shown below:

Plant Name	% time Communication Link Availability	% time On bar	% AGC Remote when station was on bar and communication available
DHAULIGANGA	100	36	0
CHAMERA2	100	42	0
CHAMERA1	100	20	0
SEWA2	91	18	7
NJPC	100	37	14
CHAMERA3	100	45	38
TEHRI	100	56	54

NLDC/NRLDC are pursuing with the stations to operate in AGC-remote mode whenever units are brought on bar. However, it is requested that the generating station control room personnel may be advised to keep their units in AGC remote mode whenever they are generating. This would enhance the quantum of regulating reserve in the grid for frequency control.

Members may kindly discuss.

f) Long outage of transmission elements

Following important grid elements are out since long time:

S. No.	Element Name	**Owner**	Outage Date	Reason	**Update as received in 202 OCC meeting**
1	400/220 kV 500 MVA ICT 1 at Bhiwani(BB)	**BBMB**	31-07-2022	Tripped due to tripping of 220 KV Bhiwani-Hissar ckt-2. ICT under inspection.	Transformer being diverted from Panipat(BBMB). Timeline to be intimated separately.
2	400/220 kV 315 MVA ICT 3 at Mundka(DV)	**DTL**	05-09-2022	Fire observed on both sides bushing of 315 MVA ICT-3.	Works on borrowing Transformer from POWERGRID. Would be charged before summer season.
3	400KV Bus 1 at Vishnuprayag (JP)	**JPVL**	02-12-2021	Bus bar protection operated at Vishnuprayag. Sparking in Bus Coupler CB.	–
4	400KV Bus 2 at Parbati_3(NH)	**NHPC**	14-09-2022	Rectification work in Generator GIS Bay CB.	–
5	400KV Bus 2 at Parbati_2(NH)	**NHPC**	29-07-2020	Fire incident took place in Generating unit, control cables of Bus coupler CB damaged.	–
6	220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1	**PDD JK**	19-02-2022	Tower no. 170 collapsed.	–
7	FSC(40%) of 400 KV Kala Amb(PKTL)-Sorang(Greenko) (Greenko) Ckt-1 at Kala Amb(PKTL)	**POWERGRID**	26-09-2022	To attend Unbalance current that is rapidly increasing in B phase.	Not in service due to low current
8	50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-2		27-11-2021	Requirement of reactor being studied by CTUIL. Update to be provided by POWERGRID	–

	@Allahabad(PG)				
9	50 MVAR Non-Switchable LR on Allahabad-Fatehpur (PG) Ckt-1 @Allahabad(PG)		27-11-2021		–
10	FSC(40%) of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri(PG)		24-10-2021	VME protection system was blocking the FSC back to in service	–
11	FSC(40%) of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri(PG)		29-01-2022		–
12	50 MVAR LR ON 400 KV AKAL-RAMGARH (RS) CKT-1 @RAMGARH (RS)	**RRV PNL**	23-04-2018	Reactor is out as line is yet to be commissioned. Shifted to Bhadla line.	–
13	50 MVAR Non-Switchable LR on Akal-Jodhpur (RS) Ckt-1 @Jodhpur(RS)		07-07-2022	To take-out Line Reactor out of service due to high DGA violation; for internal inspection by OEM.	–
14	50 MVAR LR on Akal-Jodhpur (RS) Ckt-1 @Akal(RS)		17-08-2021	NA	–
15	125 MVAR Bus Reactor No 1 at 400 KV Jaisalmer(RS)		01-11-2022	To replace the burnt TB in the M.K Box and wiring to be done in M.K box.	–
16	125 MVAR Bus Reactor No 1 at 400 KV Akal(RS)		30-11-2022	Buchholz relay trip as conservator tank is empty.	–

17	50 MVAR BUS REACTOR NO 1 AT 400KV PANKI(UP)		29-01-2022	Replacement of 50 MVAR Bus reactor by new 125 MVAR Bus Reactor.	Erection work completed except one bus Isolator of Bay, 30 Jan 2023
18	220 KV Gazipur(DTL) -Noida Sec62(UP) (UP) Ckt-1		30-04-2022	Tower tilted on one side at tower no 10 from Gazipur (DTL) end.	Line under break down , no further status till now . Fund not provided by MCD, Delhi.
19	400/220 kV 315 MVA ICT 1 at Muradnagar_ 1(UP)		13-03-2020	Buccholz relay alarm and Local Breaker Backup protection operated.	TWC approved on 09.12.2021 for replacement with 500MVA new ICT . November 2023
20	400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)		19-08-2020	ICT tripped on REF protection. Transformer caught fire and got damaged.	ICT received from BHEL , December 2022
21	50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP)	**UPPTCL**	28-10-2021	R and Y phase bushing damaged at Agra(UP).	Testing done by OEM, Report awaited. BHEL submitted report that it is irreparable Now further Design unit UPPTCL will decide. Design Unit advised to propose 63 MVAR line reactor, Dec 2023
22	50 MVAR Bus Reactor No 1 at 400KV Moradabad(UP)		03-12-2021	R-phase bushing damaged.	Alloted from 400 kV design , Jan 2023
23	400KV Bus 3 at Gorakhpur(UP)		21-02-2022	Disc insulator of B phase 400 kV transfer Bus coupler damaged	Bus healthy
24	220 KV Gazipur(DTL) - Shahibabad(UP) (UP) Ckt-2		30-04-2022	Line remains charge at No load from UP end. Manually open at 19:30 on 30/04/22 due bending of tower no. 4	Line under break down , no further status till now . Fund not provided by MCD, Delhi.
25	400/220 kV 240 MVA ICT 2 at Orai(UP)		24-09-2022	Differential protection Trip, REF protection Trip.	Testing from outside agency was done. Result sent to higher authority. New ICT will be planned.

It is requested to expedite restoration of the above-mentioned Grid elements at the earliest and also provide an update regarding their expected restoration date/time.

Member may like to discuss.

18. TTC/ATC of state control areas for winter 2022

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 February 2023 (**Annexure-B.II**) 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.

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

UP

UP SLDC to provide update on:

- ATC/TTC limits for low demand period i.e. winter months based on anticipated state generation scenario.
- Status of Obra and Sohawal SPS

In 201 OCC meeting, UP representative stated that testing of SPS of Sohawal is completed and will be operational in 2-3 days. Regarding SPS of Obra, order been placed to Siemens and work will be completed within 30 days.

In 202 OCC meeting, UP representative stated that Obra SPS is likely to be commissioned by end of Jan 2023. For Sohawal SPS, some work regarding SCADA is pending and would be commissioned shortly.

NRLDC representative stated that UP needs to make sure that both SPS are implemented well before the high demand season during 2023.

UP SLDC to provide update.

Haryana

Haryana SLDC to provide update on:

- Plan to manage loading of 400/220kV Deepalpur and Panipat ICTs during summer.

J&K

Loading of 400/220kV Amagarh 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.

In 202 OCC meeting, it was discussed that proposal for capacity augmentation was discussed in OCC/ NRPC meeting but could not be finalised. Therefore, till capacity is

augmented at 400/220kV Amargarh, any N-1 contingency is likely to lead to tripping of both ICTs as they are loaded beyond their N-1 contingency limit and there would be load loss in valley area.

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 47th TCC and 49th NRPC meeting that they would be sharing ATC/TTC assessment with NRLDC from October 2021, however the same is still awaited.

J&K and Ladakh U/Ts 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. ***J&K officers may also take online/ offline assistance from NRLDC officers if required.***
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.

Members may like to discuss.

19. MVAR support from generators

During winter season, demand of Northern region is low and high voltages are a common phenomenon predominantly in Punjab, Haryana and Delhi area. Even after several actions being taken by control centers, it is seen that there is persistent high voltage in Northern region. The reactive power absorption by generators becomes an important resource that helps in managing high voltages in the grid. However, even after continuous follow up in OCC meetings, it is seen that MVAR data telemetry is poor/ inaccurate from most of the generating stations. For some of the generators it is seen that there is inadequate reactive power absorption based on their capability curve especially during night hours. The performance of generators in absorption of reactive power for last 30 days (10 Dec 2022 – 10 Jan 2023) is shown below:

S.No.	Station	Unit No.	Capacity	Geographical location	MVAR capacity as per capability curve (on LV side)	MVAR performance (-) Absorption (+) Generation (HV side data)	Voltage absorption above (in KV)
1	Dadri NTPC	1	490	Delhi-NCR	-147 to 294	-160 to 100	415
		2	490		-147 to 294	-150 to 60	410
2	Singrauli NTPC	1	200	UP	-60 to 120	-25 to 10	405
		2	200		-60 to 120	-20 to 10	405

		3	200		-60 to 120	-30 to 5	404
		4	200		-60 to 120	-30 to 0	404
		5	200		-60 to 120	-30 to 20	405
		6	500		-150 to 300	-60 to 30	405
		7	500		-150 to 300	-70 to 20	404
3	Rihand NTPC	1	500	UP	-150 to 300	-40 to 40	405
		2	500		-150 to 300	-30 to 60	405
		3	500		-150 to 300	-80 to 10	400
		4	500		-150 to 300	-60 to 50	404
4	Kalisindh RS	1	600	Rajasthan	-180 to 360	-130 to 120	Not clear
		2	600		-180 to 360	-130 to 50	Not clear
5	Anpara C UP	1	600	UP	-180 to 360	-40 to 80	770
		2	600		-180 to 360	-50 to 80	768
6	Talwandi Saboo PB	1	660	Punjab	-198 to 396	-220 to 0	410
		2	660		-198 to 396	-210 to 0	410
		3	660		-198 to 396	-	-
7	Kawai RS	1	660	Rajasthan	-198 to 396	-60 to 90	406
		2	660		-198 to 396	-60 to 60	406
8	IGSTPP Jhajjar	1	500	Haryana	-150 to 300	-90 to 100	415
		2	500		-150 to 300	-80 to 100	415
		3	500		-150 to 300	-	-
9	Rajpura (NPL)	1	700	Punjab	-210 to 420	-220 to 0	405
		2	700		-210 to 420	-220 to 0	405
10	MGTPS	1	660	Haryana	-198 to 396	-140 to 80	412
		2	660		-198 to 396	-150 to 70	412
11	Bawana	1	216	Delhi-NCR	-65 to 130	-60 to 20	415
		2	216		-65 to 130	-	-
		3	216		-65 to 130	-60 to 30	415
		4	216		-65 to 130	-	-
		5	253		-65 to 130	-50 to 50	415

		6	253		-65 to 130	-40 to 40	415
12	Bara PPGCL	1	660	UP	-198 to 396	-50 to 150	780
		2	660		-198 to 396	-70 to 100	780
		3	660		-198 to 396	-30 to 150	780
13	Lalitpur TPS	1	660	UP	-198 to 396	-50 to 80	765
		2	660		-198 to 396	-60 to 40	765
		3	660		-198 to 396	-80 to 90	760
14	Anpara D UP	1	500	UP	-150 to 300	-70 to 30	760
		2	500		-150 to 300	-50 to 50	765
15	Chhabra TPS	1	250	Rajasthan	-75 to 150	-50 to 20	405
		2	250		-75 to 150	-50 to 20	405
		3	250		-75 to 150	-	-
		4	250		-75 to 150	-	-
		5	660		-198 to 396	-70 to 100	408
		6	660		-198 to 396	-60 to 100	408

All generating stations are requested to resolve any issues related to telemetry and make sure that MVAr absorption is as per grid requirement and capability curve of machine.

Some of the generating units such as Dadri, Bawana, IGSTPP Jhajjar and Bara need to explore possibility of further MVAR absorption. Generators may also set their Vsch (voltage set point) such that units are absorbing MVAR as per their capability and grid requirement. Plots for concerned units are attached as Annexure-B.IV.

Members may like to discuss.

20. Frequent forced outages of transmission elements in the month of December'22:

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Ganguwal-Jagadhari (BB) Ckt-1	4	BBMB
2	220 KV Hissar(BB)-Chirawa(RS) (BB) Ckt-1	4	BBMB
3	220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-1	4	Delhi
4	400 KV Aligarh-Sikandrabad (UP) Ckt-1	5	UP
5	400 KV Harduaganj -Sikandrabad (UP) Ckt-1	4	UP

6	400 KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-2	4	Haryana
7	400 KV Muktsar-Makhu (PS) Ckt-2	4	Punjab
8	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	4	Rajasthan
9	400 KV Talwandi Saboo(PSG)-Muktsar(PS) (PS) Ckt-1	4	Punjab

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

21. Multiple element tripping events in Northern region in the month of December '22:

A total of 16 grid events occurred in the month of December '22 of which **13** are of GD-1 category, **02** are of GI-2 Category & 01 is of GI-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.VI.**

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 1240 msec in the event of multiple element tripping at 400kV Jhajjar(APCPL) at 06:49hrs on 20th Dec22. During this event, all four (04) evacuating lines tripped on multiple phase to earth fault and due to which generation loss of approx. 1400MW occurred at Jhajjar(APCPL).

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 6 events out of **15** grid events occurred in the month. The events with delayed clearance of faults are as follows:

1. Multiple elements tripping at 220/66kV Hiranagar(J&K) at 20:57hrs on 04th Dec22, fault clearance time: 680ms
2. Multiple elements tripping at 220/66kV Pong(BB) at 15:03hrs on 06th Dec22, fault clearance time: 480ms
3. Multiple elements tripping at 220/132kV Dehar(BB) at 11:52hrs on 13th Dec22, fault clearance time: 640ms
4. Multiple elements tripping at 400/220/kV Panipat(BBMB) at 00:29hrs on 20th Dec22, fault clearance time: 1080ms
5. Multiple elements tripping at 400/220/kV Auraiya(NTPC) at 06:57hrs on 26th Dec22, fault clearance time: 920ms

Multiple incidents of load loss at Hinduan(Raj) is observed during recent past due to tripping of 400/220kV 315MVA ICT-1&2 at Hinduan(Raj) on overloading. Considering large demand in Rajasthan control are and increased frequency of tripping of ICTs at Hinduan, expeditious commissioning of network is need of an hour.

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

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.

22. Operation of UFR & df/dt relay and SPS in NR Region

On 20th & 25th Dec 2022, tripping of feeders on UFR operation is reported from Rajasthan, Haryana, BBMB & UP control area. As per PMU, frequency didn't drop below 49.41Hz. As frequency for triggering UFR relay is 49.4Hz, tripping of feeders on UFR operation at 49.41Hz may be reviewed. Rest of the constituents are also requested to share the details of tripping on UFR if occurred in their control area.

On 11th Jan 2023 at 00:40hrs, 765kV Anpara_C-Unnao(UP) ckt tripped on R-N phase to earth fault. As per SCADA, MW loading of line during antecedent condition was ~1268MW. As per SPS scheme implemented at Anpara_C & D generation complex, case-2 of SPS would have triggered. However, as per SCADA, no tripping and back down of generation observed. SLDC-UP is requested to share the details of SPS operation and any observation regarding the same.

Members may like to discuss.

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

A total of 9 inter-regional lines tripping occurred in the month of December'22. The list is attached at **Annexure-B.VII.** 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.

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

The status of receipt of DR/EL and tripping report of utilities for the month of September'2022 is attached at **Annexure-B.VIII**. 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, CPCC2, Delhi, Haryana Uttarakhand and Uttar Pradesh in September'2022 compared to the previous month.

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

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

In last 20 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.IX.**

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

Members may please discuss.

26. Frequency response characteristic:

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

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	20-Dec-22	06:48hrs	At 06:47hrs on 20th Dec'22, 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-1 tripped on Y-N phase to earth fault, fault distance was ~25km from Jhajjar end. At the same time, 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-2 also tripped from Jhajjar end in Z-3 (~102km) along with 400/220kV 315MVA ICT-4 at Daulatabad(HV). With the tripping of Mundka-2 (tripped at 02:32hrs) & Daulatabad-1&2 lines, only one line i.e., 400KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-1 was available for power evacuation and its MW loading increased to ~1400MW. Further at 06:49hrs, 400KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-1 also tripped on R-N phase to earth fault, fault occurred due to snapping of jumper at tower location no 119. With the tripping of all four (04) lines at Jhajjar(APCPL), all three 500MW running units at Jhajjar(APCPL) carrying total ~1400MW tripped due to loss of evacuation path.	50.09	50.05	0.04

Status of Data received till date:

Data has been received from NTPC Singrauli, NTPC Tanda, Kawai TPS, TSPL, NHPC, UP, Delhi & HPGCL Yamuna Nagar.

Members are requested to share the data.

27. Mock black start exercises in NR:

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

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

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

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

Hydro Power Stations:

Name of stations	**Last conducted exercise date**	**Remark**
Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	–	
Dhauliganga	28th Dec 2021	Exercise carried out successfully
Bairasiul	04th Dec 2020	
Sewa-2	29th May 2022	
N. Jhakri and Rampur	17th Dec 2019	
Karcham and Baspa	29th Dec 2021	Exercise was partially successful
Budhil	–	
Parbati-3 and Sainj	22nd Dec 2020	Black start of only Parbati-3 was carried out successfully. Sainj to explore blackstart capability.
Salal	-	
Chamera-3	-	
Kishenganga	-	
Koteshwar	19th Jan 2022	Exercise carried out successfully
Chamera-1 and Chamera-2	08th Dec 2020	
Malana-2, AD Hydro and Phozal	08th Jan 2021	
Tehri	12th Jan 2022	
Koldam	22nd Jan 2021	Partially successful.

Gas Power Stations:

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

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

Hydro Power Stations:

Name of stations	Tentative Date for Mock Black start exercise (proposed by power plants)
*Uri-I, II HEP, Lower Jhelum HEP, Upper Sindh and Kishenganga	31st Jan 2023
Dhauliganga	28th Feb 2023
*Bairasiul	**Conducted successfully on 30th Nov 2022**
Sewa-2	12th Jan 2023
*N. Jhakri and Rampur	**Conducted successfully on 09th Dec 2022**
Karcham and Baspa	
*Budhil	
*Parbati-3 and Sainj	09th Nov 2022(to be rescheduled)
*Salal	15th Dec 2022
*Chamera-3	27th Jan 2023
*Kishenganga	
Koteshwar	**Conducted successfully on 07th Dec 2022**
*Chamera-1 and Chamera-2	**Conducted successfully on 02nd Dec 2022**
*Malana-2, AD Hydro and Phozal	16th Jan 2022
Tehri	**Conducted successfully on 14th Dec 2022**
*Koldam	**Conducted successfully on 11th Nov 2022**

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

Gas Power Stations:

Name of stations	Tentative Date for Mock Black start exercise (proposed by power plants)
Anta GPS	23rd Jan 2023
*Auraiya GPS	Mar 2023
Dadri GPS	Jan 2023

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

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

S. NO.	Utility	Hydro Power Station	Installed Capacity(MW)
1	J&K	Baglihar	3x150
2		Baglihar stage-2	3x150
3		Lower Jhelum	3x35
4		Upper Sindh	2x11+3x35
5		Larji	3x42
6		Bhabha	3x40
7		Malana -I	2x43
8		Baspa	3x100
9	Punjab	Ranjit Sagar	4x150
11	Rajasthan	Mahi-I&II	2x25+2x45
12		Rana Pratap Sagar	4x43
13		Jawahar Sagar	3x33
14		Gandhi Sagar	5x23
15		Dholpur GPS	3x110
16		Ramgarh GPS	1x35.5+2x37.5+1x110
17	UP	Rihand	6x50
18		Obra	3x33
19		Vishnuprayag	4x100
20 21		Srinagar (Alaknanda)	4x82.5
	Uttarakhand	Gamma Infra	2x76+1x73
22		Shravanti	6x75
23		Ramganga	3x66
24		Chibro	4x60
25		Khodri	4x30
26		Chilla	4x36
27		Maneri Bhali-I&II	3x30+4x76
28	Delhi	IP Extn GTs	6x30+3x30
29		Pragati GPS	2x104.6+1x121.2
30		Rithala	3x36
31	Haryana	Faridabad GPS	2x137.75+1x156.07

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

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

Reactive Power Management document for Northern region have been revised and shared with all the constituents on 31st Dec 2022. Document is available at NRLDC website with following link:

https://nrldc.in/download/nr-reactive-power-management-2023/?wpdmdl=11903

Document is password protected and password has already been shared with all the NR constituents through letter dated 30st Dec 2022.

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

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

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

Constituents are requested to provide the feedback, suggestion and updated information by 15st Jan 2023.

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

Follow up issues from previous OCC meetings

Annexure-A.I

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

			BBMB was requested to submit the updated self certification report indicating increase of 0.2 Hz in AUFR settings, within one week. J&K and LADAKH were requested to update status for increasing settings of UFRs.
4	Status of FGD installation vis-à-vis installation plan at identified TPS	List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed. Further, progress of FGD installation work on monthly basis is monitored in OCC meetings.	Status of the information submission (month) from states / utilities is as under: ◎ HARYANA — Sep-2022 ◎ PUNJAB — Sep-2022 ◎ RAJASTHAN — Nov-2022 ◎ UP — Sep-2022 ◎ NTPC — Feb-2022 FGD status details are enclosed as **Annexure-A.I.II.** All States/utilities are requested to update status of FGD installation progress on monthly basis.
5	Information about variable charges of all generating units in the Region	The variable charges detail for different generating units are available on the MERIT Order Portal.	All states/UTs are requested to submit daily data on MERIT Order Portal timely.
6	Status of Automatic Demand Management Sysytem in NR states/UT's	The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:	Status: ◎ DELHI — Fully implemented ◎ HARYANA — Scheme not implemented ◎ HP — Scheme not implemented ◎ PUNJAB — Scheme not implemented ◎ RAJASTHAN — Under implementation. Likely completion schedule is 31.03.2023. ◎ UP — Scheme implemented by NPCIL only

7	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Testintg is under progress and Anticipated commissioning: Dec'22
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Price bid has been opened and is under evaluation
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd.
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 &work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd.

Annexure-A-I.I

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

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	-	PDD, J&K to update the status.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	-	PDD, J&K to update the status.
				• 220 kV New Wanpoh - Mattan D/c Line	-	PDD, J&K to update the status.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 6 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	-	PDD, J&K to update the status.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	-	HVPNL to update the status.
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	Feb'23	Updated in 201st 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	Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 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: 0 Unutilized: 6	• 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.HVPNL to update the status.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0 Approved:4	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Updated in 197th OCC by HVPNL
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.
				• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Mar'23	Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur	Commissioned: 8	Utilized: 0	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Mar'23	Updated in 197th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
13	Sub-station	Total: 8	Unutilized: 8	• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	May'23	Updated in 197th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status
				• 220kV D/C for Sector78, Faridabad	02.03.2023	Updated in 198th OCC by HVPNL
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Under Implementation (Mar'24). Updated in 198th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 2 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	-	HVPNL to update the status.
				• Sonepat - HSIISC Rai 220kV D/c line	Mar'23	Line work is complete howere substation work is under progress. Updated in 201st OCC by HVPNL
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	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	• Kotputli - Pathreda 220kV D/c line	-	Bid documents under approval as updated in 195th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	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	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line comiisioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Jan'23	• Lucknow -Kanduni, 220 kV D/C line expected energization date Jan'23 updated by UPPTCL in 201st OCC _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Feb'23	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date Feb'23 updated by UPPCL in 202nd OCC
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• 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). _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Oct'22	Updated in 198th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Sept'23	Updated in 194th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Unutilized: 1 Approved in 50th NRPC- 1 no.	• Amritsar – Patti 220kV S/c line	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (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 Bahardurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24 and July'24	Updated in 198th OCC by HVPNL
29	400/220kV Jaipur (South) S/s	Commissioned: 4 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	-	One bay 220 kV Manesar (PG)-Panchgaon ckt commissioned on 05.09.2022
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	Jan'23	Saharanpur(PG)-Devband D/c line expected energization date Jan'23 updated by UPPTCL in 202nd 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	Mar'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by March 2023.Updated in 198th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 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		• 220kV Almora-Jauljibi line • 220kV Brammah-Jauljibi line PTCUL to update the status of lines.

FGD Status

Updated status of FGD related data submission

NTPC (25.02.2022)
MEJA Stage-I (Updated by UP on 18.06.2022)
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (14.11.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (14.11.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (11.01.2023)
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)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
APCPL	INDIRA GANDHI STPP U#1 (Target: 30-09-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2022), INDIRA GANDHI STPP U#3 (Target: 30-09-2022)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
HGPCL	PANIPAT TPS U#6 (Target: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021)

NTPC	DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-06-2022), DADRI (NCTPP) U#6 (Target: 30-06-2022), RIHAND STPS U#1 (Target: 30-06-2024), RIHAND STPS U#2 (Target: 30-06-2024), RIHAND STPS U#3 (Target: 31-12-2023), RIHAND STPS U#4 (Target: 31-12-2023), RIHAND STPS U#5 (Target: 30-06-2023), RIHAND STPS U#6 (Target: 30-06-2023), SINGRAULI STPS U#1 (Target: 30-06-2024), SINGRAULI STPS U#2 (Target: 30-06-2024), SINGRAULI STPS U#3 (Target: 30-06-2024), SINGRAULI STPS U#4 (Target: 30-06-2024), SINGRAULI STPS U#5 (Target: 30-06-2024), SINGRAULI STPS U#6 (Target: 31-03-2023), SINGRAULI STPS U#7 (Target: 31-03-2023), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-06-2024), UNCHAHAR TPS U#4 (Target: 30-06-2024), UNCHAHAR TPS U#5 (Target: 30-06-2024), UNCHAHAR TPS U#6 (Target: 30-06-2022), MEJA Stage-I U#1 (Target: 31-12-2022), MEJA Stage-I U#2 (Target: 31-03-2023), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022)

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2022), KOTA TPS U#6 (Target: 31-08-2022), KOTA TPS U#7 (Target: 31-08-2022), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)

MIS Report for Status of Islanding Schemes

Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healitheness	SOP	SCADA Display Page	Remarks
1	Delhi IS	Delhi	Implemented	Yes (Sept - 2021)	No	Yes	List of officials in-charge and relays in Delhi IS submitted by DTL on 16.08.2021. Revision of island is under discussion.
2	NAPS IS	UP	Implemented	Yes (08-10-2021)	Yes	Yes	-
3	RAPS IS	Rajasthan	Implemented	16-Aug-21	Yes	Yes	List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP IS submitted by RVPN on 04.12.2021.

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding (Required /	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	Scheme has been approved in 59th NRPC meeting held on 31.10.2022.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Under Study	UP has placed offer to CPRI for dynamic study in July, 2022. The estimated time of study is 5 months from date of acceptance.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Scheme implementation timeline: July,2023	-	-		-	-	-	-	-	-	-	-
4	Suratgarh IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. SCADA display implementation timeline: Dec, 2022; Scheme implementation timeline: July,2023	-	-		-	-	-	-	-	-	-	-
5	Patiala-Nabha Power Rajpura IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. SCADA display implementation timeline: Dec, 2022; Scheme implementation timeline: July,2023		-		-	-	-	-	-	-	-	-
6	Pathankot-RSD IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022.. SCADA display as well as scheme implementation timeline: Dec, 2022		-		-	-	-	-	-	-	-	-
7	Kullu-Manali-Mandi IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Timeline to be intimated by HPSLDC											
8	Shimla-Solan IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Timeline to be intimated by HPSLDC											

APRAAVA ENERGY

Our Ref : JPL/HPPC/FD/012577
Date : December 21, 2022

Chief Engineer
Haryana Power Purchase Centre (HPPC)
Uttar Haryana Bijli Vitran Nigam Limited Office
Plot No. IP-3&4, Sector-14,
Panchkula, Haryana
Email: cehppc@gmail.com

Subject: **Planned Annual Outage of Jhajjar Power Limited Unit-1 in the year 2023**

Ref:

i. JPL letter no. JPL/HPPC/TS/012011 dated June 14, 2022
ii. HPPC Letter no. Ch-191/HPPC/STP/G-111 dated July 20, 2022.
iii. Minutes of 28th LGBR Sub-Committee meeting of NRPC dated December 07, 2022
iv. HVPNL Letter no. 11/SO/PNP/PCP-240 dated December 08, 2022
v. CEA letter no. CEA-GO-11-24/1/2022-OPM Division/595-602 dated December 20, 2022

Dear Sir,

This is in reference to the Minutes of the 28th LGBR subcommittee meeting of the NRPC, dated December 07, 2022, and the HVPNL letter dated December 08, 2022, on the revised schedule of annual overhauling for JPL Unit-1 in the months of March-23, as well as the CEA letter dated December 20,2022 for Zero planned maintenance schedule by TPPs during the peak demand period from April 1 to May 15, 2023 (letter attached as annexure-1).

JPL would like to apprise that, in letter dated July 20, 2022, HPPC consented to JPL's planned major outage of Unit-1 for 35 days beginning March 3, 2023 and ending on April 7, 2023. However, based on Grid Controller of India's forecast of very high electricity demand in April-May 2023, Ministry of Power (MoP) through CEA has advised all TPP's for zero planned maintenance schedules from April 1 to May 15, 2023. NRPC on ministry advisory has revised the planned outage of JPL Unit-1 from March 03, 2023 to March 31, 2023 for only 29 days.

JPL would like to emphasise that upcoming Unit#1 overhauling is primarily planned for Boiler pressure parts, Chimney Flue can titanium lining repair (Critical Activity), FGD Equipment overhauling, Rotatory equipment overhauling, and other related items. The revised outage duration of 29 days will not be sufficient to complete major overhauling jobs; rather, based on recent forced outage analysis, we will require 45 days to complete the outage rather than the previously approved 35-day period, owing to critical activities in FGD overhauling and related issues such as Chimney Flue can titanium lining repair.

As you are aware, most of the original equipment manufacturers are from the People Republic of China (PRC). PRC is grapping with sudden surge of Corona Virus (COVID-19) cases, which is causing delays in the delivery of materials and services. As a result, the supply of some critical spares required for carrying out our planned jobs during the outage of Unit # 1 has been delayed, and JPL will not be able to begin overhauling before March 2023.

Unit-1 was last overhauled in March-April 2021, and it will be more than two years before the next scheduled maintenance job, which must be completed as soon as possible. Based on the MoP advisory, JPL plans to start the major overhaul from May 15, 2023 to June 30, 2023 for 45 days.

We would like to request for your consent for the major overhauling of Unit-1 from May 15, 2023 to June 30, 2023 for 45 days.

Thanking You,

Yours Sincerely,

For Jhajjar Power Limited

Bhaskar Bhattacharjee
Senior Vice President and Whole time Director

Copy to:

- **Member secretary, NRPC**
- **Chief Engineer, (I/C), CEA**
- **XEN/LD&PC, HVPNL, Panipat**

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
प्रचालन निष्पादन प्रबोधन प्रभाग प्रभाग
Operation Performance Monitoring Division

CEA-GO-11-24/1/2022-OPM Division/595-602 Dated: 20/12/2022

To,

CMDs, Thermal Power Generating Stations (As per list attached)

Subject: Zero planned maintenance schedule by all TPPs(Central/State/IPPs) during the Peak demand period during 1st April, 2023-15th May 2023.

Sir,

This is in reference to above cited subject, the Grid Controller of India (POSOCO) has forecasted very high electricity demand of 230 GW in the month of April-May, 2023 in the country. In order to meet the power demand in above mentioned period, the generation from all sources needs to be maximized.

In this regard it is to inform that a review meeting was taken by Secretary (Power) on 08.12.2022 at MoP to discuss the coal & power supply, wherein Secretary(P) had informed that no plant should be allowed planned maintenance during the peak demand period i.e for the crunch period 1st April, 2023 to 15th May, 2023 in order to meet peak demand and to ensure uninterrupted power supply to all consumers in the country as directed by Hon'ble Minister of Power to ensure uninterrupted power supply during crunch period.

Further as per action plan identified for crunch period at item no 6 in the Minutes of Meeting (MoM) held on 14.12.2022 on subject review of coal and power supply (copy of minutes attached), it is instructed to adhere the **Zero planned maintenance schedule by all TPPs (Central/State Gencos/IPPs) between 1st April 2023 to 15th May 2023 i.e. crunch period.**

In view of above, all **TPPs (Central/State Gencos/IPPs)** are requested to take necessary action for zero planned maintenance outage during above mentioned crunch period and the compliance in coordination with RPCs.

The action taken and compliance to be sent to OPM Division CEA before 21st December 2022.

This issues with the approval of Chairperson, CEA.

Your's Sincerely

20/12/22

(K.B. JAGTAP)
Chief Engineer(I/C)
Tel.: 011 26732633

Copy to: Member Secretary (NRPC/WRPC/ERPC/SRPC/NERPC) for necessary action and compliance please.

Copy for information:

1. SA to Chairperson, CEA
2. SA to Member(Go&D), CEA

File No. FU-33/2022-FSC
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg,
New Delhi, dated 19.12.2022

OFFICE MEMORANDUM

Subject: Minutes of the "Review Meeting on Coal Supply" held under the Chairmanship of Secretary (Power) on 14.12.2022 at 2 PM in Shram Shakti Bhawan, New Delhi

The undersigned is directed to forward herewith the Minutes of the "Review Meeting on Coal Supply" held under the Chairmanship of Secretary (Power) on 14.12.2022 at Shram Shakti Bhawan, New Delhi, for information and necessary action.

Encl: as above

(Subhash Chand)
Under Secretary to Govt. of India
Email: s.chand72@gov.in

To,

1. Chairperson, CEA
2. CMD, NTPC
3. CMD, PFC
4. CMD, Grid Controller of India Ltd.

of 0.04 paise/unit to 0.14 paise / unit. After discussions, **Secretary (P) directed CEA to do a detailed analysis and submit report in one week, by considering the following factors to identify the cost saving on this account:**

a. GCV increase benefit due to coal washing.

b. Coal washing cost and Washing losses (CIL Vs other Vendor)

c. Quality of coal used for washed coal (May be different quality of coal used by different Gencos)

d. Distance travelled by washed coal (difference in freight cost of washed and unwashed coal)

e. Electricity generated by 1 Metric Tonne of washed coal and unwashed coal needs to be compared (Genco wise) and also examine why Gujarat and Rajasthan has incurred losses, while NTPC has showed clear gains.

6. **Following 6 Action plans are identified for crunch period which shall be monitored regularly**:

Sl. No.	Action plan	Status
1.	Zero Planned Maintenance/ Outage to be maintained by all TPPs of all Central/State Gencos & IPPs between April to 15th May, 2023 i.e. (crunch period)	• CEA to ensure adherence to these instructions and to issue necessary orders to all Gencos regarding this and provide confirmation in next coal review meeting.
2.	Review of identified non-operational thermal capacity of approximately 5600 MW.	• CEA to conduct meeting with all the identified State/Central Gencos and submit the feasibility plan in next coal review meeting. • CEA should clearly identify the capacity which can be operationalized during crunch period.
3.	Availability of power from ICB plants.	• CEA to issue necessary orders to all the concerned State Gencos, having PPAs with ICB plants, to ensure necessary imported coal stocks at ICB Plants during crunch period. • For procurement of power from ICB Plants, during crunch period, using their

File No. FU-33/2022-FSC
Government of India
Ministry of Power

Shram Shakti Bhawan, Rafi Marg,
New Delhi, dated 12.12.2022

OFFICE MEMORANDUM

Subject: Minutes of the "Review Meeting on Coal Supply" held under the Chairmanship of Secretary (Power) on 08.12.2022 at Shram Shakti Bhawan, New Delhi-regarding.

The undersigned is directed to forward herewith the Minutes of the "Review Meeting on Coal Supply" held under the Chairmanship of Secretary (Power) on 08.12.2022 at Shram Shakti Bhawan, New Delhi, for information and necessary action.

Enclosed: as above

(Subhash Chand)
Under Secretary to Govt. of India
Email: s.chand72@gov.in

To,

1. Chairperson, CEA
2. CMD, NTPC
3. CMD, PFC
4. CMD, Grid Controller of India Ltd.

Minutes of the Review Meeting on Coal and Power Supply under the Chairmanship of Secretary (Power) held on 08.12.2022 at 10.00 p.m. at Shram Shakti Bhawan, New Delhi.

List of Participants is at Annexure.

At the outset, Secretary (P) welcomed all the participants and outlined the purpose of the meeting. Secretary (P) observed that the power demand was high in Nov'22 and it would go further up in April'23. Further, he mentioned that HMoP had directed to take the following steps to ensure uninterrupted power supply.

1. No plant should be allowed planned outage during the peak demand period i.e. crunch period in April-May 2023.

2. Plants commissioned and not in operation should be operationalised before the above mentioned crunch period.

3. Realistic assessment of domestic coal availability should be done by all State/Central Gencos & IPPs from all sources (CIL/SCCL and Captive) and accordingly requirement of imported coal for blending, as done in the previous years, should be planned and worked out.

4. All Central/ State Gencos should ensure availability of their Gas Based Power Plants during the above mentioned crunch period and accordingly arrangements of supply of gas to these gas based power plants should be ensured.

5. States should also ensure availability of their ICB plants during the above mentioned crunch period and accordingly assess the coal stock positions at these plants to meet their PPA obligations.

Secretary (P) accordingly directed to write a DO letter to all the Chief Secretaries of the States and CMDs of Central Gencos on the above mentioned points.

The deliberations of the meeting are as under:-

1. Secretary (P) observed that the Pit Head TPPs could not achieve 100% PLF (annual average) due to various factors such as demand pattern constraints, forced outages and planned 30 days yearly maintenance schedule. **Therefore, achievement of 88-90% PLF (annual average) in Pit Head plants should be considered as benchmark level.**

2. Chairperson, CEA informed that portal for selling unrequisitioned power would be operationalised by 15th of January '23 which would also facilitate in achieving higher PLF in Pit Head plants.

3. CEA informed that Anpara-C TPP, although having lower ECR, is generating at low PLF despite being a Pit Head station as UPRVUNL is scheduling less power from it and instead scheduling costly power from Non Pit Head plants which are running at higher PLF. **Secretary (P) directed CEA to further analyse and submit the details to Thermal Divison subsequent to which a DO letter shall be put for Chief Secretary, UP.**

4. CMD, NTPC stated that the PLF of pit head plants at Ramagundam, Kahalgaon, Farraka and Sipat Pit Head plant was low due to the fact that blending with the imported coal was done which increased the variable cost. Further, it was informed that the cost of the domestic coal from SCCL is nearly double the cost of coal from CIL. Hence, the variable cost of Ramagundam plant is high even without blending i.e. around Rs. 3.60 per unit. Also Farraka & Kahalgaon TPPs are getting less domestic coal from ECL and are forced to source domestic coal from SECL and Captive Mine-Pakri Barwadih which increases the landed cost of domestic coal in these plants. **Secretary (P) directed NTPC to submit a brief note in this regard. Thermal Division to put up a letter for MoC to request adequate domestic coal to pit head plants from nearby source, and a copy of which should be sent to Advisor to Hon'ble PM.**

5. Secretary (P) directed CEA to work out the cumulative coal requirement for B(viii)(a) plants upto March, 2023 on the basis of current consumption pattern so as to ensure proper stocking of coal in these plants before the crunch period i.e. March-May, 2023, and submit to MoP in 7 days. Accordingly MoP should write a letter to MoC for adequate provisioning of coal for it.

6. It was noted that during H-1, 74%, 18% and 8% of coal was lifted through Rail/RCR, MGR and Road mode respectively. During H-2, 73%, 19% and 8% of coal was planned to be lifted through Rail/RCR, MGR and Road mode respectively. **Secretary (P) observed that the rake plan as finalized by MoR should be closely monitored by CEA so as to ensure distributive loading with a view to achieve the target of 46 MT by March, 23.**

7. It was noted that energy demand was higher in the month of November which led to higher consumption of domestic as well as imported coal than planned for November, 23 in H2. Although the overall coal stock position ,on 30th November, in DCB was at 28.5 MT, which was as per the approved supply plan for H2, it was primarily due to higher imported use of already of coal rather than higher supply of domestic coal. It was stressed that efforts need to be made by TPPs to progressively reduce blending of imported coal in the month of January to March, 2023 and to ensure building of domestic coal stocks as planned in H2 supply plan.

8. NTPC informed that they received 2 to 3% more coal as compared to last year and they generated 12% more power as compared to the previous year.

Secretary (P) directed Sub-Group to maintain adequate coal stock over in TPPs of NTPC to meet the increased power demand during the crunch period.

9. JS (Thermal) apprised that CEA is working on estimated saving due to withdrawal of the mandatory requirement of washed coal and would submit the report by next week.

10. It was noted that the present trend in the growth of coal supply by CIL is at the rate of 5% as compared to last year whereas the growth of power demand is at the rate of 16%. **Secretary (P) directed CEA to revisit the overall energy requirement during the balance period of H-2 and accordingly coal requirement would be reviewed in the next meeting**.

11. Secretary (P), directed that review of planning for crunch period , as per the directions of HMOP, shall be taken up in weekly coal review meetings which shall include (i) Review of identified non operational 5600 MW TPPs of State Gencos (ii) Review of Gas requirement for additional 5000 MW gas based plants of Central/State Gencos. Accordingly O&M Division shall be regularly invited for weekly coal review meetings and CEA should submit the details in next weeks coal review.

12. CMD, NTPC pointed out that the pass through of imported coal for blending without consent of Discoms is going to expire in December, 2022 and sought extension till March, 2023. It was further pointed out that 10% variation in variable cost is not equivalent to 10% variation in coal quantity. **Secretary (P) directed that, CEA in consultation with NTPC to examine the issue in detail so that it can be taken up with CERC**.

The meeting ended with vote of thanks to the chair.

******

Annexure

List of Participants

Ministry of Power

1. Shri Alok Kumar, Secretary
2. Shri Piyush Singh, Joint Secretary (Thermal)
3. Shri G. Muthuraja, Director (FSC)
4. Shri Subhash Chand, Under Secretary (FSC)
5. Shri Shubham Kumar Verma, ASO (FSC)

CEA

1. Shri A.K. Rajput, Member (Power System)
2. Shri Pravin Gupta, Member (Thermal)
3. Shri M.P.Singh, CE (TPP&D)
4. Shri Chandra Prakash, CE(FM)
5. Shri Ishan Sharan, CE
6. Shri K.B. Jagtap, CE
7. Shri Nitin Prakash, Director
8. Shri Naresh Kumar, Director
9. Shri Alok Dwivedi, DD
10. Shri Anurag Tiwari, DD

NTPC

1. Shri Gurdeep Singh, CMD
2. Shri Ramesh Babu, Director (Operations)
3. Shri P.K. Mishra, ED
4. Shri Dileep Kumar, ED
5. Shri K.C. Muraleedharan, GM (CC-FM)
6. Shri V.Santosh Kumar, DGM

PFC

1. Shri Rahul Mani, Chief Manager

PFCCL

1. Shri Manoj Rana, CEO
2. Shri Neeraj Singh, CGM
3. Shri Anubhav Kansal, DGM

Grid Controller of India Limited

1. Shri Debasis De, ED
2. Shri Talluri Sudheer, Chief Manager

STATION NAME	UNIT NO.	CAPACITY	STATION TYPE	REGION	STATE	ORGANIZATION/UTILITY	From_Date	To_Date	Outage_Reason
CTPP CHHABRA	3	250	THERMAL	NR	RAJASTHAN	RVUNL	16-May-23	14-Jun-23	Annual Boiler Overhaul
SSCTPP SURATGARH	8	660	THERMAL	NR	RAJASTHAN	RVUNL	16-May-23	4-Jun-23	Annual Boiler Overhaul
RAPS-B	3	220	NUCLEAR	NR	RAJASTHAN	NPCIL	27-Oct-22	28-May-24	Enmasse Coolant Channel Replacement & Enmasse Feeder Replacement job as per regulatory requirement and will continue for 577 days.
CHILLA POWER HOUSE	2	36	HYDRO	NR	UTTARAKHAND	STATE	15-Jan-23	14-May-23	Capital Maintenance
Tehri ST-1 HPS	1	250	HYDRO	NR	UTTARAKHAND	THDC	20-Mar-23	3-May-23	Planned Outage
KOTESHWAR HPS	2	100	HYDRO	NR	UTTARAKHAND	THDC	1-Apr-23	15-May-23	Planned Outage
GANGUWAL HPS	1	27.99	HYDRO	NR	PUNJAB	BBMB	1-Apr-23	10-Apr-23	Annual Maintenace
KOTLA HPS	1	28.94	HYDRO	NR	PUNJAB	BBMB	1-Apr-23	10-Apr-23	Annual Maintenace
RIHAND HPS	1	50	HYDRO	NR	UTTAR PRADESH	STATE	1-Apr-23	30-Jun-23	Annual Maintance & Overhualing of intake gate
R P SAGAR HPS	2	43	HYDRO	NR	RAJASTHAN	STATE	1-Apr-23	31-Mar-24	UNIT#2 under breakdown due to submergence of RPSPS due to flood in chambal river dated 14/09/2019
R P SAGAR HPS	3	43	HYDRO	NR	RAJASTHAN	STATE	1-Apr-23	31-Mar-24	UNIT#3 under breakdown due to submergence of RPSPS due to flood in chambal river dated 14/09/2019
DHALIPUR POWER HOUSE	3	17	HYDRO	NR	UTTARAKHAND	STATE	1-Apr-23	23-May-23	RMU
R P SAGAR HPS	4	43	HYDRO	NR	RAJASTHAN	STATE	4-Apr-23	24-Apr-23	Annual checks and routine maintenance work
JAWAHAR SAGAR SPS	III	33	HYDRO	NR	RAJASTHAN	STATE	4-Apr-23	24-Apr-23	Annual checks and routine maintenance work
GANGUWAL HPS	2	24.2	HYDRO	NR	PUNJAB	BBMB	11-Apr-23	20-Apr-23	Annual Maintenace
KOTLA HPS	2	24.2	HYDRO	NR	PUNJAB	BBMB	11-Apr-23	20-Apr-23	Annual Maintenace
PONG HPS	1	66	HYDRO	NR	HIMACHAL PRADES	BBMB	15-Apr-23	4-May-23	Annual Maintenance
GIRI BATA HPS	1	30	HYDRO	NR	HIMACHAL PRADES	STATE	15-Apr-23	15-May-23	Annual Maintenance of M/Cs and associtad Equipment's
GANGUWAL HPS	3	24.2	HYDRO	NR	PUNJAB	BBMB	21-Apr-23	30-Apr-23	Annual Maintenace
KOTLA HPS	3	24.2	HYDRO	NR	PUNJAB	BBMB	21-Apr-23	30-Apr-23	Annual Maintenace
JAWAHAR SAGAR SPS	II	33	HYDRO	NR	RAJASTHAN	STATE	25-Apr-23	15-May-23	Annual checks and routine maintenance work
Tehri ST-1 HPS	2	250	HYDRO	NR	UTTARAKHAND	THDC	28-Apr-23	27-May-23	Planned Outage
MAHI-II HPS BANSWARA	2	45	HYDRO	NR	RAJASTHAN	RVUNL	1-May-23	30-May-23	Annual Maintenance
MAHI-I HPS BANSWARA	2	25	HYDRO	NR	RAJASTHAN	RVUNL	1-May-23	30-May-23	Annual Maintenance
PONG HPS	2	66	HYDRO	NR	HIMACHAL PRADES	BBMB	5-May-23	24-May-23	Annual Maintenance
KOTESHWAR HPS	3	100	HYDRO	NR	UTTARAKHAND	THDC	16-May-23	29-Jun-23	Planned Outage
R P SAGAR HPS	1	43	HYDRO	NR	RAJASTHAN	STATE	16-May-23	5-Jun-23	Annual checks and routine maintenance work
JAWAHAR SAGAR SPS	I	33	HYDRO	NR	RAJASTHAN	STATE	16-May-23	5-Jun-23	Annual checks and routine maintenance work
Tehri ST-1 HPS	3	250	HYDRO	NR	UTTARAKHAND	THDC	21-May-23	19-Jun-23	Planned Outage
PONG HPS	3	66	HYDRO	NR	HIMACHAL PRADES	BBMB	25-May-23	13-Jun-23	Annual Maintenance
KASHIPUR CCPP (SRAVANTHI ENEI	GT-1	71.5	GAS	NR	UTTARAKHAND	IPP	8-Apr-23	9-Apr-23	Oflline water wash
KASHIPUR CCPP (SRAVANTHI ENEI	GT-2	71.5	GAS	NR	UTTARAKHAND	IPP	6-May-23	7-May-23	Oflline water wash
DADRI CCPP	GT-4	130.19	GAS	NR	UTTAR PRADESH	NTPC	18-May-23	24-May-23	8000 EOH Inspection
PPS-III BAWANA	GT-III	216	GAS	NR	DELHI	PPCL	20-May-23	26-May-23	HMI Upgradation
PPS-III BAWANA	GT-IV	216	GAS	NR	DELHI	PPCL	20-May-23	26-May-23	HMI Upgradation
PPS-III BAWANA	GT-IV	216	GAS	NR	DELHI	PPCL	20-May-23	18-Jun-23	HMI Upgradation
ANTA CCPP	ST	153.2	GAS	NR	RAJASTHAN	NTPC	23-May-23	25-May-23	WHRB-1 Boiler license renewal, ST will be available partially
DADRI CCPP	GT-1	130.19	GAS	NR	UTTAR PRADESH	NTPC	23-May-23	29-May-23	Boiler license renewal+AI Filter replacement
DADRI CCPP	GT-3	130.19	GAS	NR	UTTAR PRADESH	NTPC	23-May-23	27-May-23	4000 EOH Inspection

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

Ref:- N1/AM/ Date:- 12th January'2023

Member Secretary (NRPC),
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi - 110016

Subject:- **Agenda points for 203rd OCC Meeting – NR1 .**

Sir,

This has reference to forthcoming 203rd OCC meeting of Northern Region scheduled on 17th & 18th January'2023. In this regard, enclosed herewith please find the agenda points for aforesaid meeting w.r.t. POWERGRID, NR1 for kind consideration and discussion in the meeting.

Thanking your with reagrds,

12/01/2023
(A. K. Behera)
Chief GM(AM), NR1

Copy for kind information please :-

i) ED, NR1
ii) ED(AM), CC

Agenda points from POWERGRID NR-I to be discussed in 203rd OCC meeting of NRPC

1) **Approval of utilization of 2x50 MVAR Reactors and 4 nos. associated line bays at Meerut**

Following 4 nos. of 400 kV line bays are spared at Meerut substation **(Under Tehri HEP Scheme)** during upgradation of 400 D/C kV Meerut-Koteshwar TL to 765 kV under **"Tehri PSP"** Scheme

i) 400 kV Line bay-1
ii) 400kV Line bay-2
iii) 400 kV Switchable line reactor bay along with 50 MVAR switchable line reactor
iv) 400 kV Switchable line reactor bay along with 50 MVAR switchable line reactor

Out of above bays, one is utilized for 125 MVAR Bus reactor at Meerut (DOCO-13.12.2021) under NRSS-XL scheme and another bay is utilized for connecting 2 nos. 50 MVAR reactor in parallel for using them as bus reactor which was already agreed in 4th Meeting of NCT, para- 14.1 (page 35 & 36). However, following points to be discussed and clarified:

a) The approval of utilizing one no. 400kV line bay to connect one no. 125 MVAR bus reactor at Meerut under NRSS-XL.
b) Under which scheme 2nos. of 50 MVAR reactors and one no. 400kV line bay may be used as a bus reactor.
c) Utilization of balance 2 nos. switchable line reactor 400kV bays or keeping them as a regional spare.

The matter was also been discussed in 198th OCC meeting on 17.08.2022 and it was deliberated by Member Secretary, NRPC on page-14 that:

Quote
"MS, NRPC opined that the CTU may be asked to deliberate on this agenda in their upcoming 'consultation meeting for evolving transmission schemes' and thereafter CTU's views may be discussed in subsequent OCC meeting".
Unquote

NOTE: The 50 MVAR reactor along with one no. 400 kV bays yet to be charged at Meerut substation.

The matter needs to be discussed.

2) **Energization of bays & reactors without commissioning of elements at 765/400/220kV Bhadla-2 S/s to achieve system redundancy**

765/400/220KV Bhadla-2 substation is connected to many solar generators and very critical substation for evacuation of solar power since July'21. As per the existing scheme, 765kV & 400kV systems are of 1½ breaker scheme and 220kV system is with DMT scheme.

The transmission elements at Bhadla-2 substation have been added in phased manner through different projects/transmission schemes, which led to involvement of various agencies over different time periods. Some of them are with future bays (i.e. isolator only). Therefore, these bays alongwith line reactor have planned to be commissioned on priority (though their elements are delayed due to various reasons) for system reliability & voltage control for trouble free evacuation of solar power:

Sl. No.	Description	Presently in service with	Planned for commissioning without commissioning element	Expected energization
i)	765/400KV ICT-III	i) 765KV Main Bay (721) ii) 765KV Tie Bay (720) iii) 765KV Future Bay (719)	i) 719th Future bay earmarked for 765KV Sikar2 Ckt -I ii) 240MVAR switchable Line Reactor of 765KV Sikar-2 Ckt-I	March'2023
ii)	765/400KV ICT-IV	i) 765KV Main Bay (724) ii) 765KV Tie Bay (723) iii) 765KV Future Bay (722)	i) 722nd Future bay earmarked for 765KV Sikar2 Ckt-II ii) 240MVAR switchable Line Reactor of 765KV Sikar-2 Ckt-II	March'2023
iii)	765/400KV ICT-I	i) 765KV Main Bay (715) ii) 765KV Tie Bay (714) iii) 765KV Future Bay (713)	i) 713th Future bay earmarked for 765KV Fatehgarh2 Ckt-I ii) 240MVAR switchable Line Reactor of 2nd ckt of 765KV Fatehgarh2 Ckt-I	March'2023
iv)	765/400KV ICT-II	i) 765KV Main Bay (718) ii) 765KV Tie Bay (717) iii) 765KV Future Bay (716)	i) 716th Future bay earmarked for 765KV Fatehgarh2 Ckt-II ii) 240MVAR switchable Line Reactor of 2nd ckt of 765KV Fatehgarh2 Ckt-II	March'2023

Though commissioning of 765KV D/C Bhadla-II – Sikar-II line and 2nd circuit of 765KV D/C Bhadla-II – Fatehgarh2 lines are delayed due to various reasons beyond control of POWERGRID, the following are recommended for consideration in the OCC:

i) Energization of 719th, 722nd , 713th , 716th Bays for system redundancy
ii) Energization of 4 x 240MVAR line reactors earmarked with aforesaid elements for better voltage control as Bhadla Region is witnessing severe voltage variation issues during day and night resulting into nos. of Reactors switching operations in morning and evening/night hours to control the system voltage.
iii) Commercial operation of these elements subsequent upon commissioning.

Put-up for kind consideration

3) **LC-oscillations/resonance in over-compensated 765kV transmission lines in Northern Region-1**

The agenda for overvoltage issues observed in over-compensated 765kV transmission lines in POWERGRID NR-I was brought in 198th OCC and following was recorded in the minutes:

"NRLDC representative submitted that the matter was discussed in previous OCC meeting and requested CTUIL to carry out studies for LC oscillation/resonance for the overcompensated lines".

In view of issues observed due to occurrence of resonance in transmission lines, CTU may kindly update on the progress of studies and advise for long/short term measures to be taken to avoid such conditions and associated over voltages.

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(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref:- N1/AM/

Date:- 13th January'2023

Member Secretary (NRPC),
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi - 110016

Subject:- **Frequent switching of transmission line to control system voltage- Reg.**

Sir,

Enclosed herewith please find letter dt. 04/01/2023 from ED(AM), CC, wherein concern expressed regarding frequent opening of transmission lines and switching of reactors (line reactor as bus reactor).

These frequent switching of transmission lines and reactors on regular basis at high voltage condition is unnecessarily stressing the switchyard equipments, which may result in failure of reactors and circuit breakers.

The subject matter may kindly be included as additional agenda point in forthcoming 203rd OCC meeting for discussion / deliberation w.r.t. suitable corrective action.

Thanking your with reagrds,

13/01/2023

(A. K. Behera)
Chief GM(AM), NR1

Copy :-

i) **Executive Director (NRLDC)**
Grid Controller of India Limited
18-A, Shaheed Jeet Singh Sansanwal Marg,
Katwaria Sarai, New Delhi - 110016

Copy for kind information please :-

i) ED, NR1
ii) ED(AM), CC

पावरग्रिड
POWERGRID

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

Ref. : C/NTAMC/2023/2415

Date: 04.01.2023

To,

COO,
CTU India Ltd

Dear Sir,

Sub: Frequent switching of transmission lines to control system voltages-Reg.

This is in continuation to our previous communication dated 7th February 2022 on above mentioned subject. In this regard it is to inform that, a total of 42 transmission lines were opened in Northern Region for controlling system voltages in the month of December-2022. Some of these lines were opened up to 27 times (i.e. equivalent to 54 operations of CB connected to that line). The details of such switching (cumulative total=553) in the month of December-2022 is enclosed.

It is reiterated that the frequent switching of transmission lines for voltage control affect the transmission assets, especially GIS, where several equipment failed during switching operation and its impact has been already highlighted in RPC/RLDCs in various meetings.

In view of above, it is requested that matter may please be taken up for suitable corrective measures for long term mitigation of the over voltage in the Grid

(ए.पी. गंगाधरन)
कार्यपालक निदेशक
(ए.एम, एन.टी.ए.एम.सी & सेफ्टी)

Enclosed:
1) Abstract of line outages on voltage regulation for December-2022,
2) Equipment failure during switching of lines on voltage regulation- FY. 2022-23.

Copy for kind information to:
1) ED, NRLDC.
2) Member Secretary, NRPC.

केन्द्रीय कार्यालय : 'सौदामिनी', प्लॉट नं. 2, सेक्टर 29, गुड़गांव-122001 (हरियाणा) दूरभाष : 0124-2571700 - 719
Corporate Office : 'SAUDAMINI', Plot No. 2, Sector 29, Gurgaon-122001 (Haryana) Tel : 0124-2571700 - 719
पंजीकृत कार्यालय बी-9, कुतब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली 110016 दूरभाष. 011-26560112, 26560121, 26564892 सी.आई.एन. : L40101DL1989GOI038121
Regd.Office : B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016 Tel. : 011-26560112, 26560121, 26564892 CIN : L40101DL1989GOI038121
Website : www.powergridindia.com

ABSTRACT OF LINE OUTAGES ON VOLTAGE REGULATION FOR (DECEMBER-2022)

NORTHERN REGION

S. No.	Line	No of outages
	765kV Lines	
1	Bhiwani-Phagi(RRVPNL)-2	17
2	Orai-Aligarh-1	17
3	Meerut-Moga	17
4	Ajmer-Bhadla2-1	16
5	Bikaner-Moga-2	16
6	Bikaner-Moga-1	15
7	Fatehpur-Agra-2	15
8	Orai-Aligarh-2	15
9	Fatehpur-Agra-1	14
10	Ajmer-Bhadla2-2	14
11	Bhiwani-Phagi(RRVPNL)-1	13
12	Jhatikara-Khetri(TBCB)-1	12
13	Bhiwani-Meerut	6
14	Chittorgarh-Ajmer-1	4
	Total	191
	400kV Lines	
1	Kurukshetra-Nakodar(PSTCL)	27
2	Banala-Amritsar-1	26
3	Abdullapur-Depalpur(HVPNL)	25
4	Ratangarh(RRVPNL)-Sikar-1	19
5	Kurukshetra-Jalandhar	18
6	Agra-Jaipur South-1	17
7	Agra-Sikar-1	16
8	Kurukshetra-Jind-1	15
9	Dehradun-Abdullapur-2	15
10	Kala Amb-Abdullapur-1(LILO)	15
11	Agra-Sikar-2	14
12	Agra-Jaipur South-2	14
13	Kurukshetra-Sonipat-1	14
14	Chamera1(NHPC)-Jallandhar-2	14
15	Kurukshetra-Jind-2	13
16	Agra-Bhiwadi-1	13
17	Kurukshetra-Sonipat-2	12
18	Dehradun-Abdullapur-1	12
19	Chamera1(NHPC)-Jallandhar-1	11
20	Ratangarh(RRVPNL)-Sikar-2	9
21	Chamba-Jallandhar-1	9
22	Chamba-Jallandhar-2	6
23	Kanpur-Ballabhgarh-3	6
24	Meerut-Mandola-1	5
25	Bareily-Meerut-1(LILO)	5

26	Nathpajhakri(SJVNL)-Panchkula-1	4
27	Kaithal-Dadri(NTPC)	4
28	Auraiya(NTPC)-Agra-1	4
Total		362
TOTAL = 553		

Annexure

Figure-1: MW and MVAR drawl of 400/220kV Jodhpur ICTs (Flow from 400kV to 220kV side)

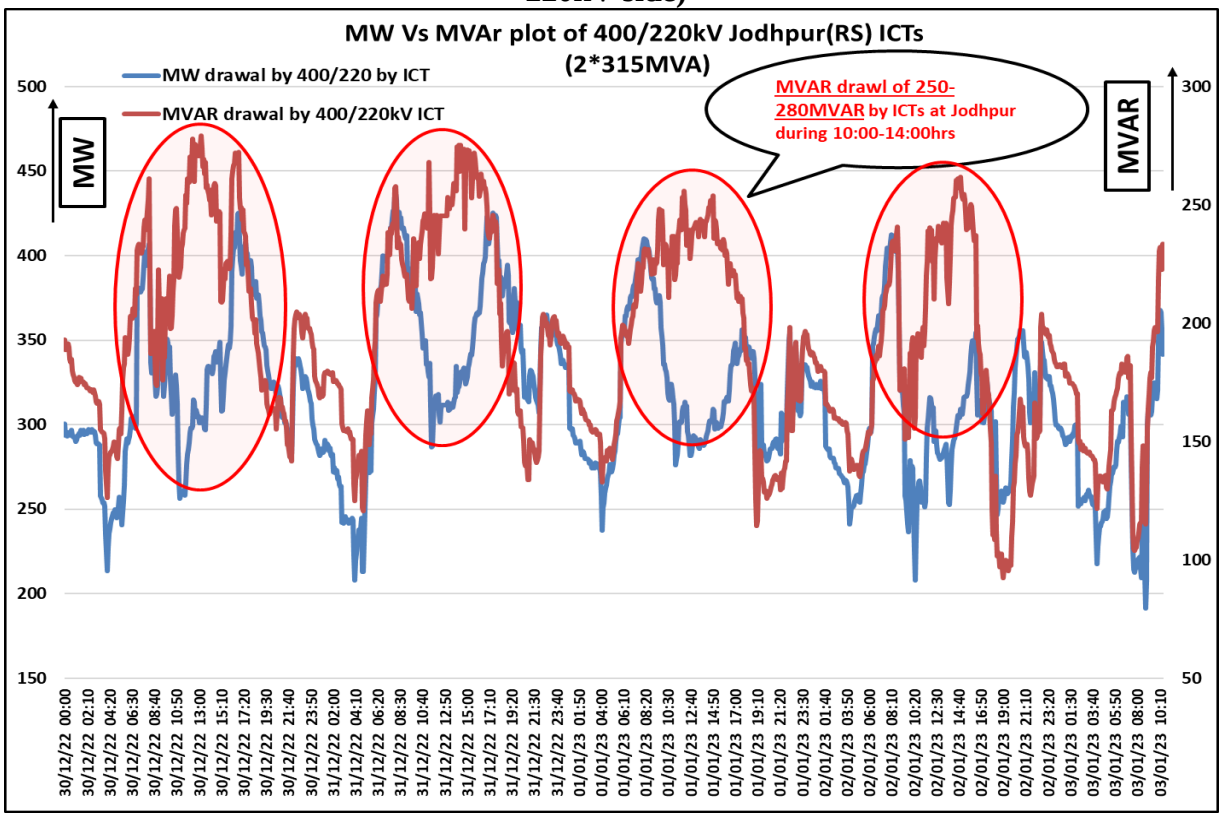


Figure-2: 400kV Voltage at Jodhpur and PF of 400/220kV ICTs at Jodhpur

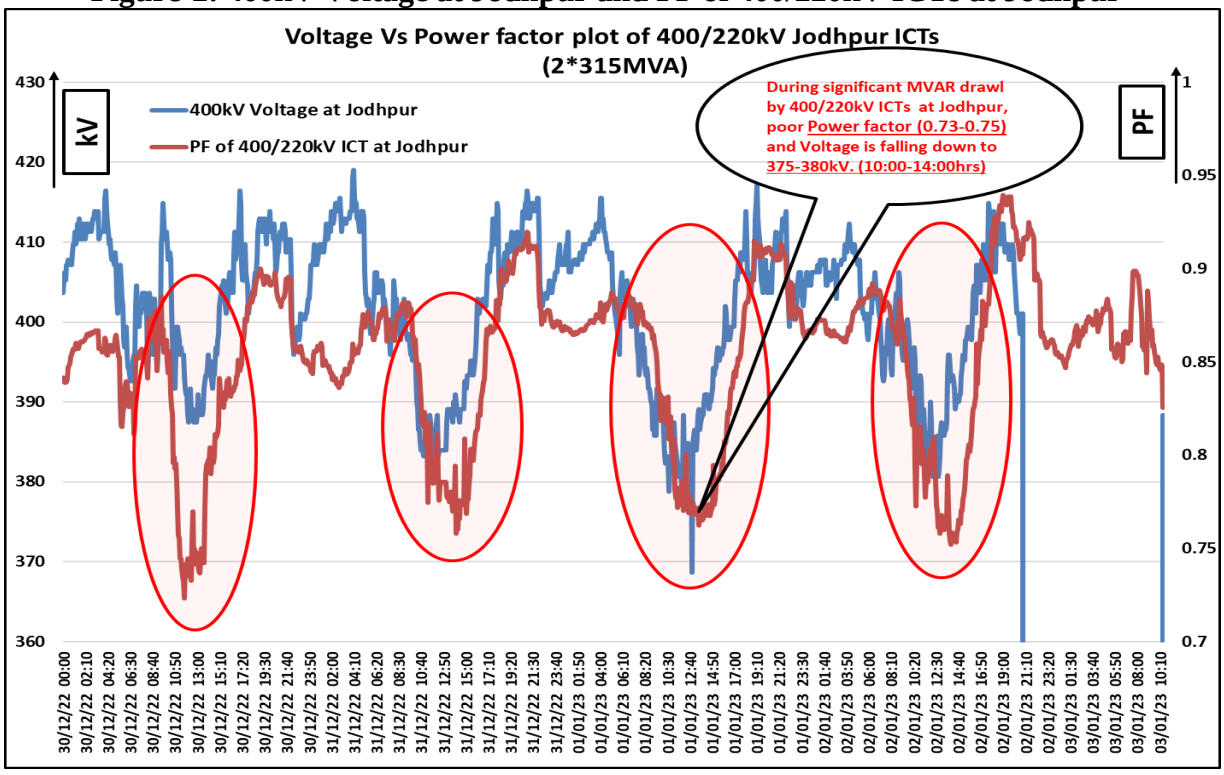


Figure-3: MW and MVAR drawl of 400/220kV Kankani ICTs (Flow from 400kV to 220kV side)

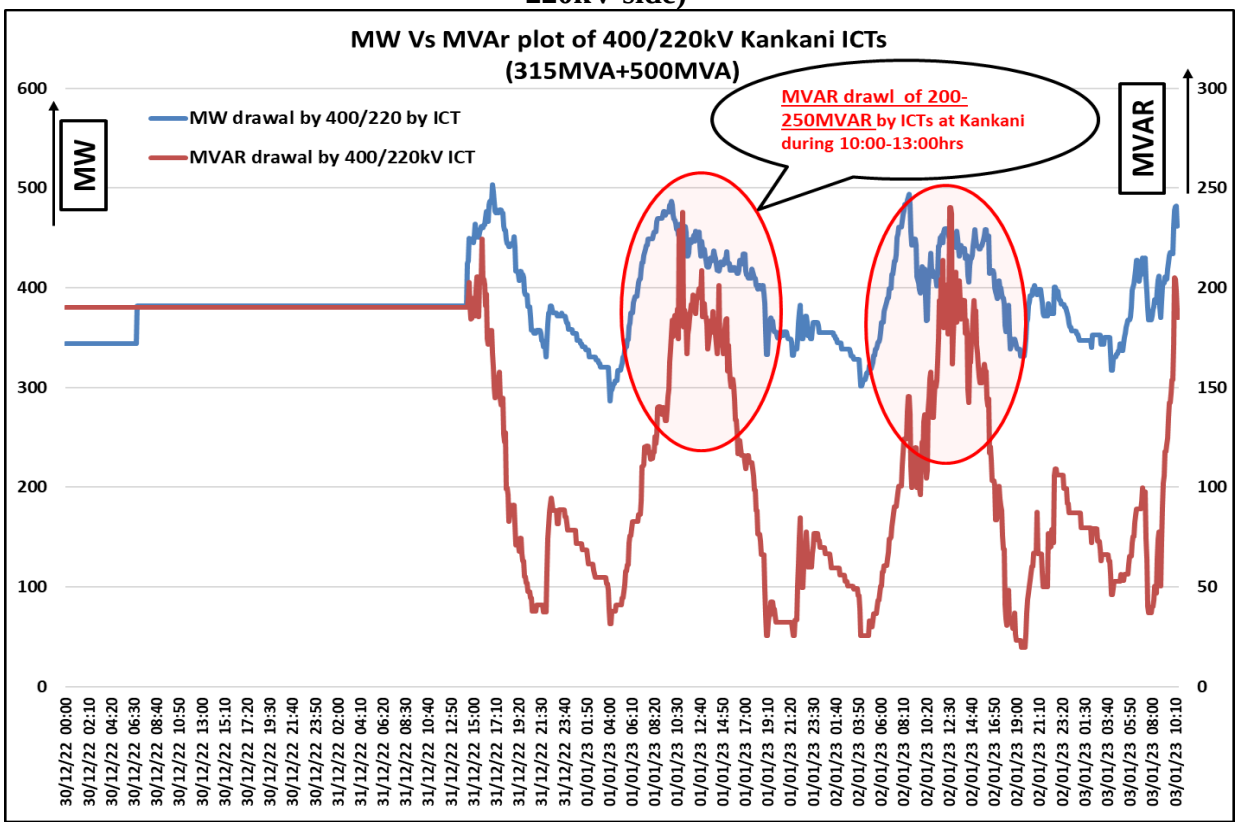


Figure-4: 400kV Voltage at Kankani and PF of 400/220kV ICTs at Kankani

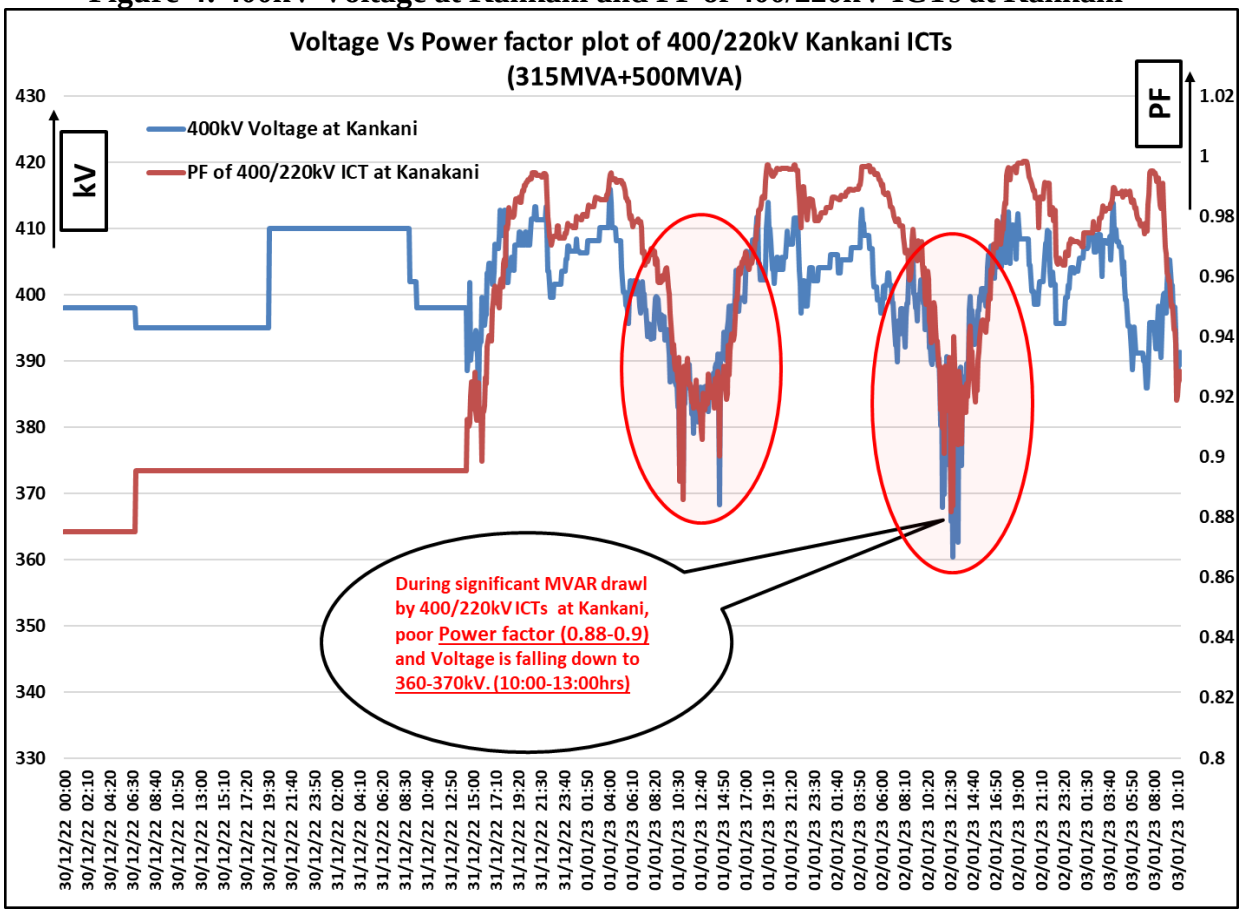


Figure-5: MW and MVAR drawl of 400/220kV Merta ICTs (Flow from 400kV to 220kV side)

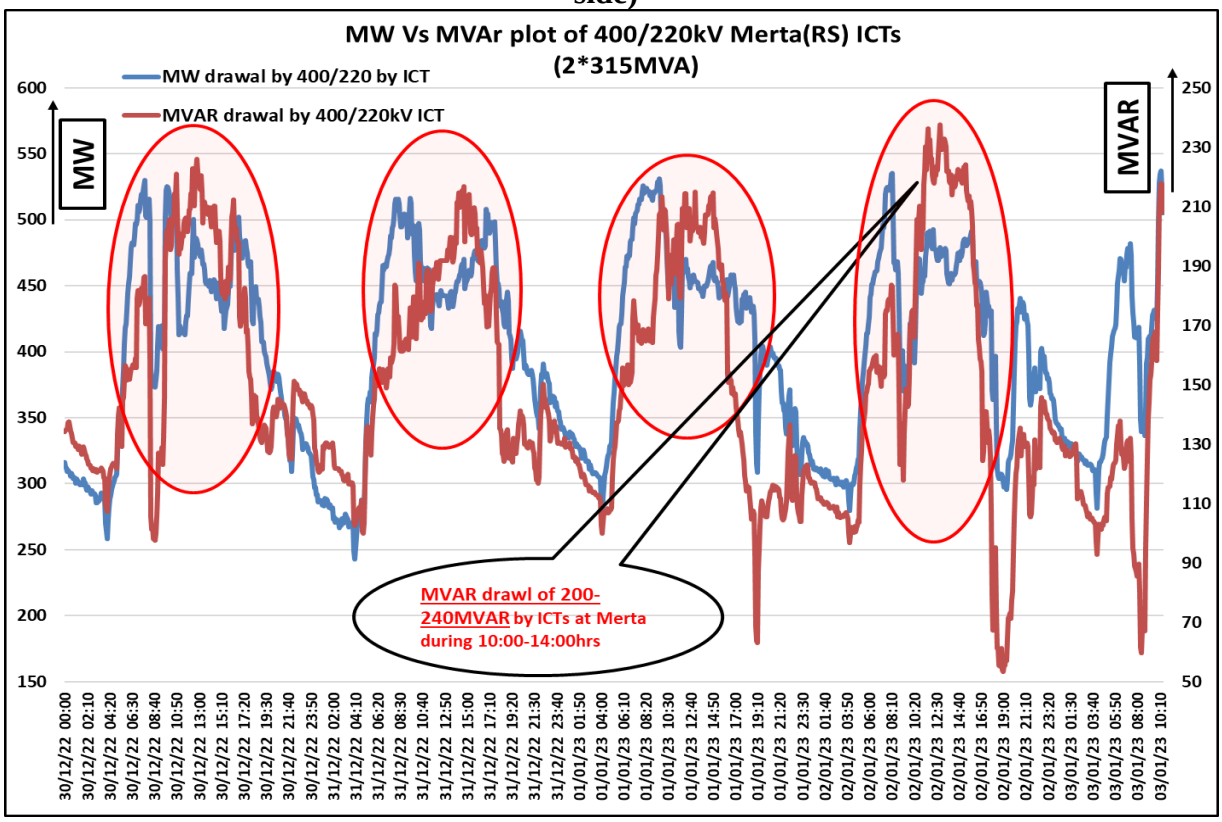


Figure-6: 400kV Voltage at Merta and PF of 400/220kV ICTs at Merta

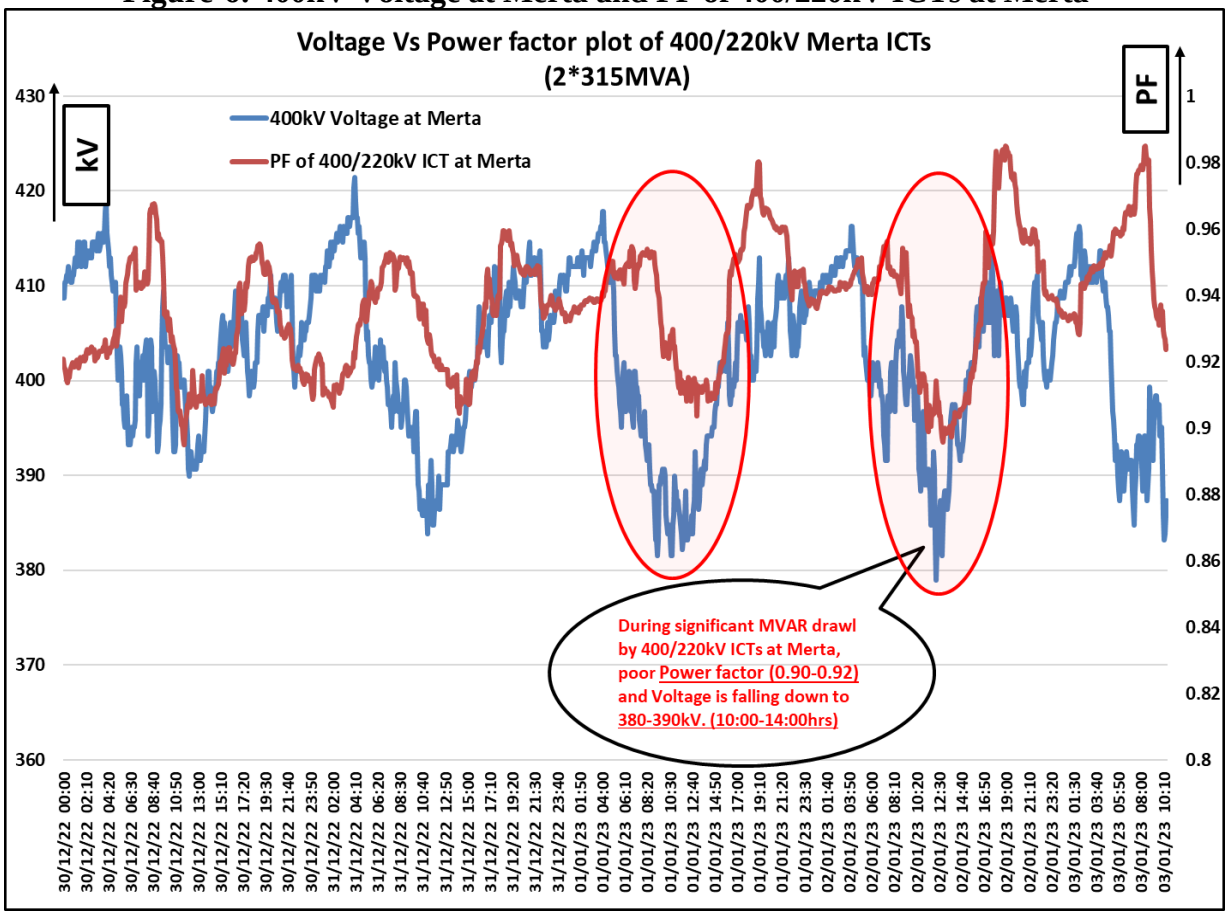


Figure-7: MW and MVAR drawl of 400/220kV Bhinmal (PG) ICTs (Flow from 400kV to 220kV side)

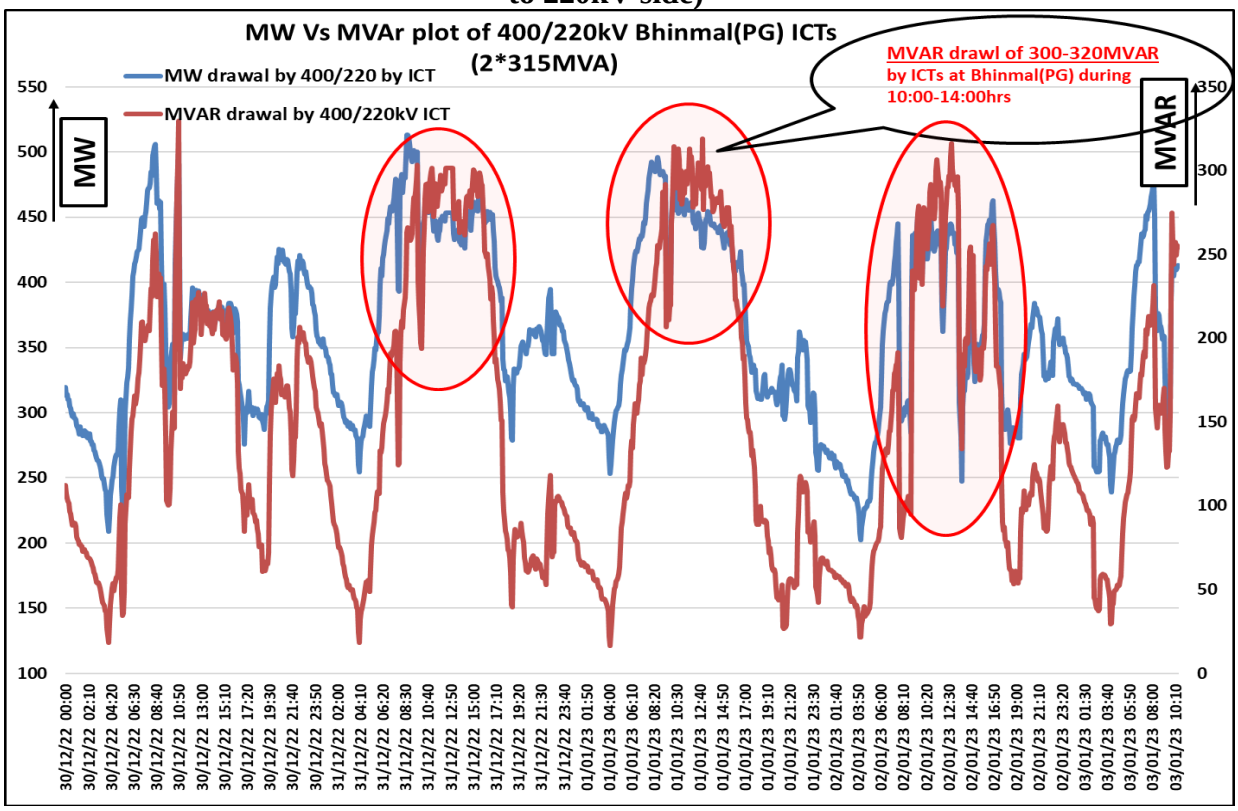


Figure-8: 400kV Voltage at Bhinmal (PG) and PF of 400/220kV ICTs at Bhinmal (PG)

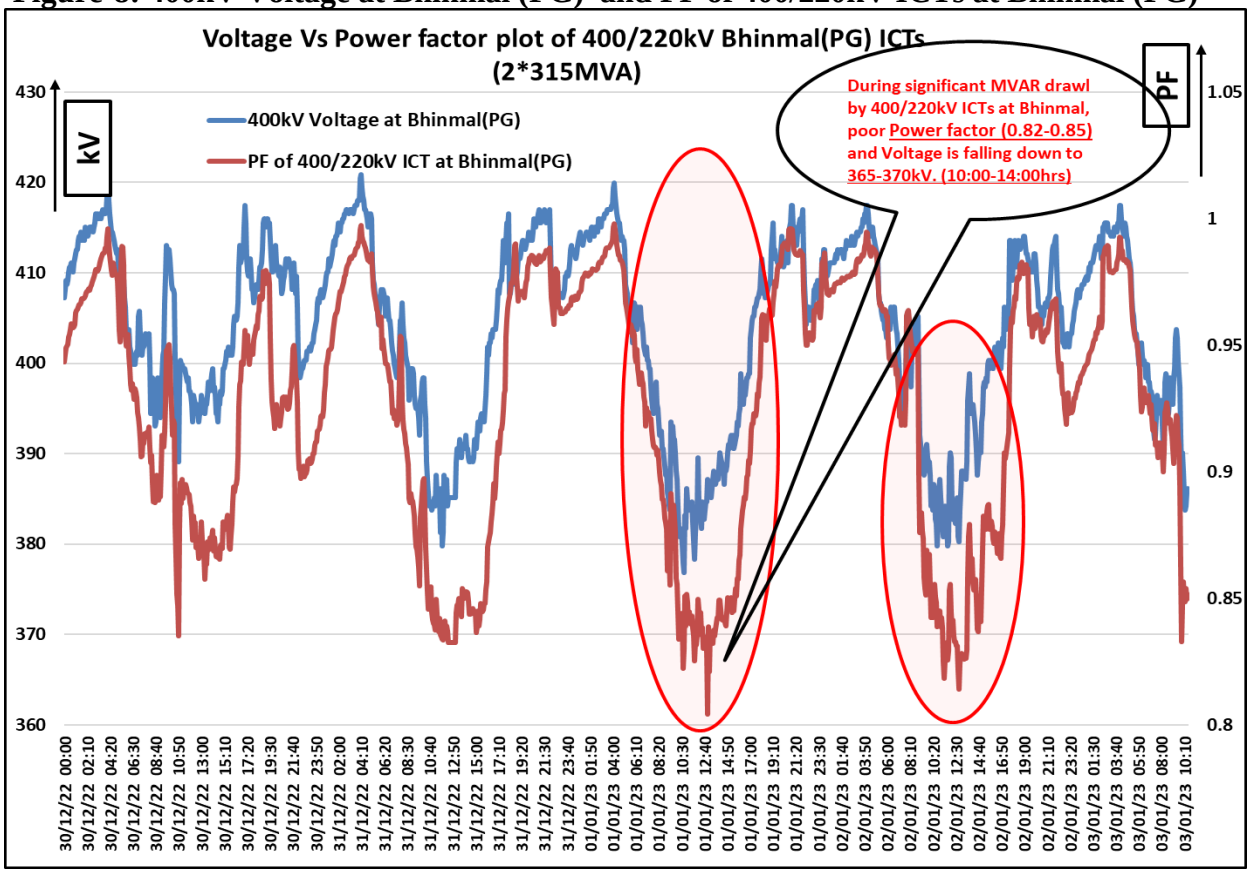


Figure-9: MW and MVAR drawl of 400/220kV Bikaner (RS) ICTs (Flow from 400kV to 220kV side)

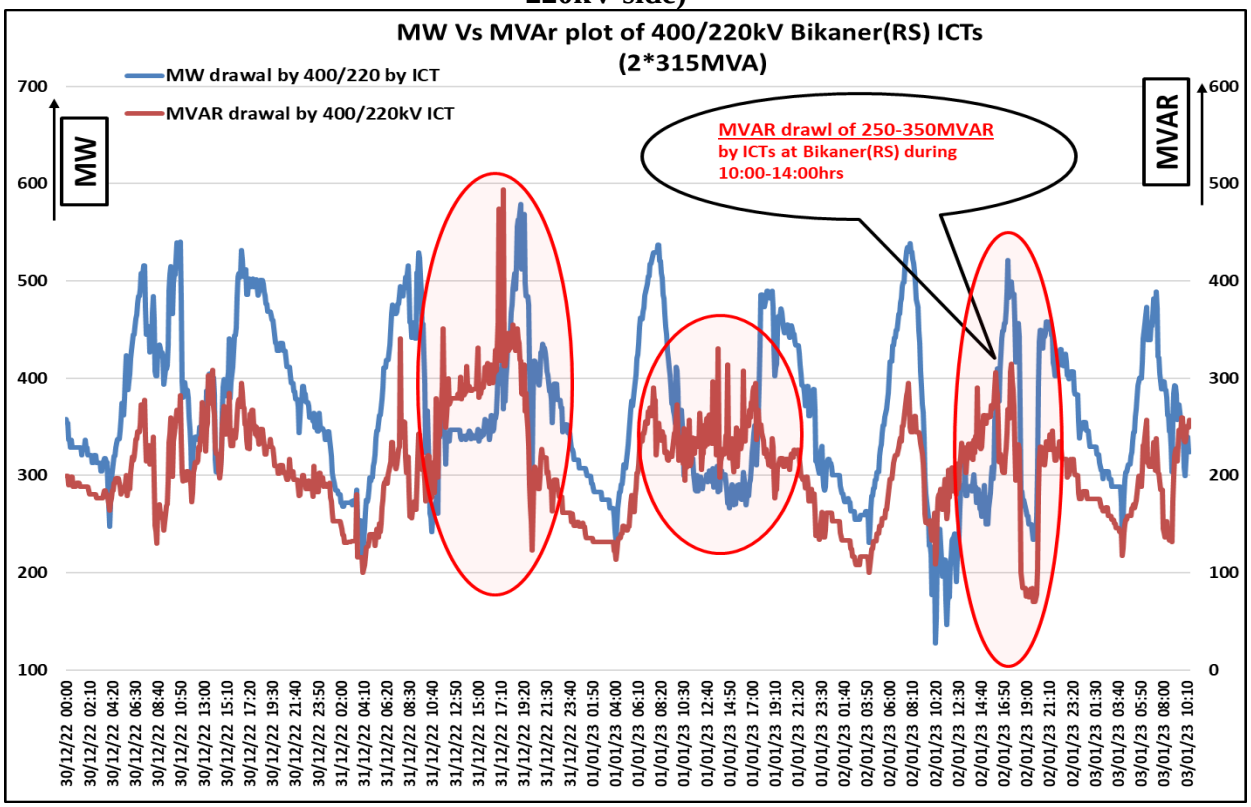
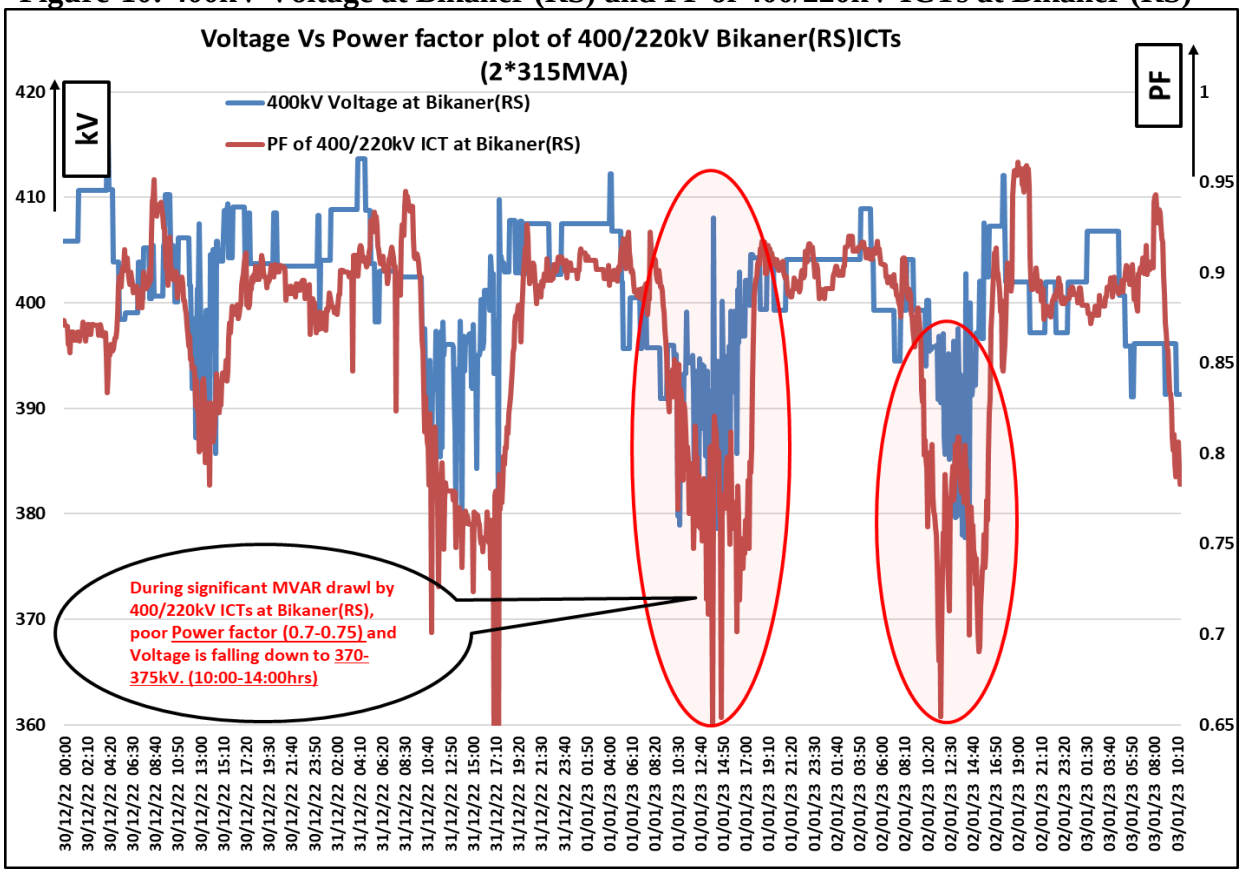


Figure-10: 400kV Voltage at Bikaner (RS) and PF of 400/220kV ICTs at Bikaner (RS)



National Load Despatch Centre

Import Capability of Uttar Pradesh for February 2023

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2023 to 28th February 2023	00-24	15100	600	14500	8420	6080		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints		N-1 contingency of 400/220kV Azamgarh, Obra, Mau, Sohawal (PG), Gorakhpur (UP), Sarnath, Lucknow (PG) ICTs						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of Rajasthan for February 2023

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2023 to 28th February 2023	00-24	7600	600	7000	3400	3600		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Chittorgarh, Jodhpur, Bikaner, Ajmer, Merta, Hindaun and Bhinmal ICTs						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre

Import Capability of Haryana for February 2023

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2023 to 28th February 2023	00-24	9100	600	8500	3000	5500		https://hvpn.org.in/#/atcttc
Limiting Constraints		N-1 contingency of 400/220kV ICTs at Deepalpur, Panipat(BBMB) and Kurukshetra(PG)						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of Delhi for February 2023

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2023 to 28th February 2023	00-24	7100	300	6800	4150	2650		https://www.delhisldc.org/resources/atcttcreport.pdf
Limiting Constraints	N-1 contingency of 400/220kV Mundka, HarshVihar and Mandola ICTs.							

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

National Load Despatch Centre
Import Capability of HP for February 2023

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2023 to 28th February 2023	00-24	1400	100	1300	1400	-100		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		N-1 contingency of 400/220kV Nallagarh ICTs. High loading of 220kV Nallagarh-Upernangal D/C and 220kV Hamirpur-Hamirpur D/C						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

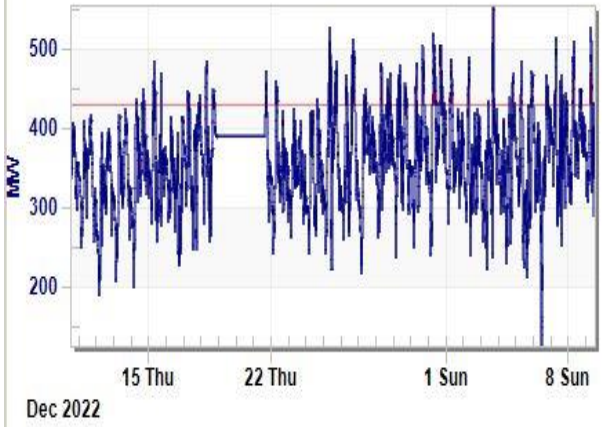
National Load Despatch Centre
Import Capability of Uttarakhand for February 2023

Issue Date: - Issue Time: 1600 Revision No. 0

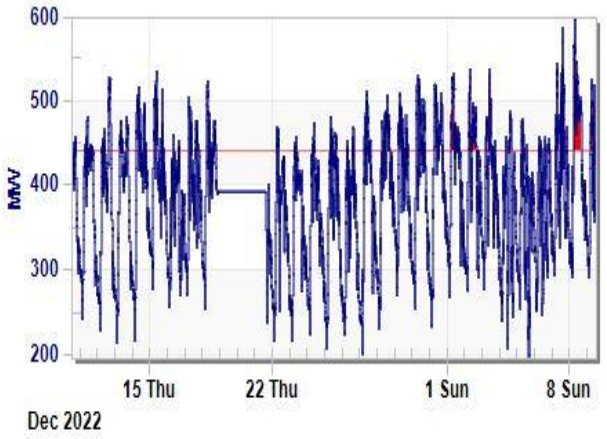
Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st February 2023 to 28th February 2023	00-24	1700	100	1600	1020	580		http://uksldc.in/transfer-capability
Limiting Constraints		N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Roorkee-Roorkee and 220kV CBGanj-Pantnagar lines						

80% of LTA/MTOA/ISGS allocation capacity considered to account for machine outages

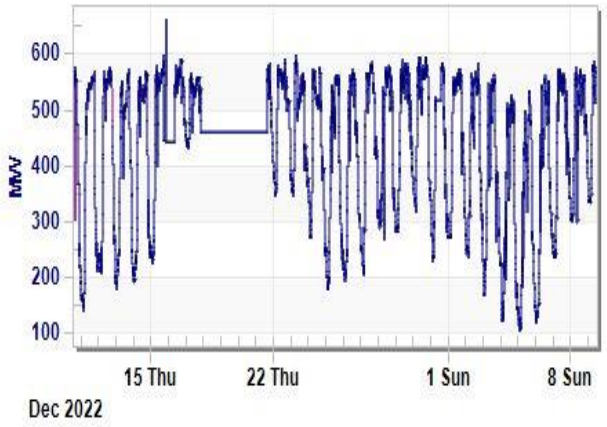
Jodhpur ICT loading



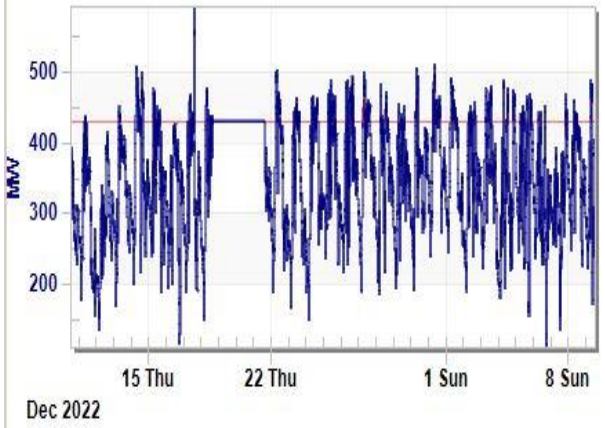
Merta ICT loading



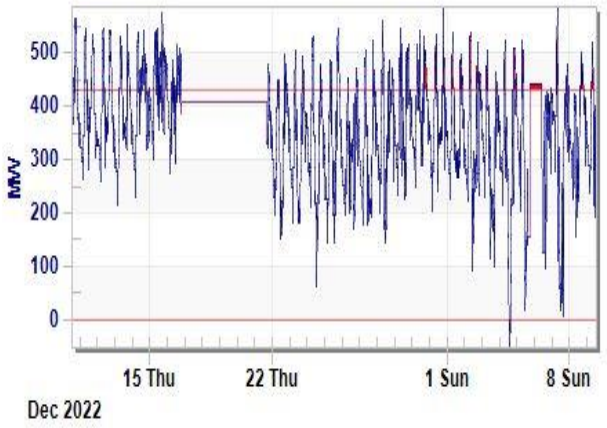
Chittorgarh ICT loading



Bhinmal ICT loading



Bikaner ICT loading



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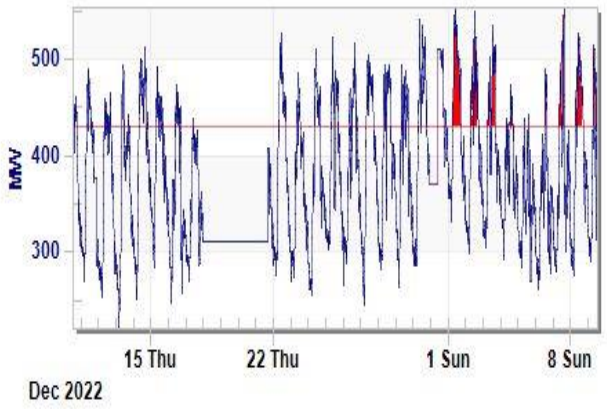

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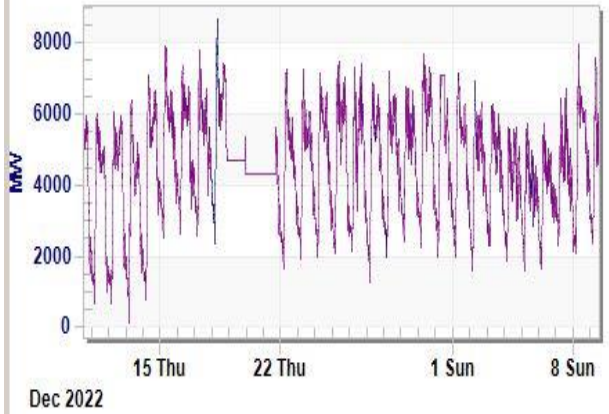

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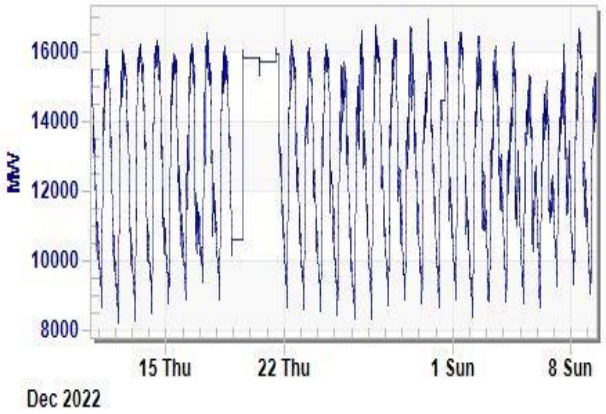

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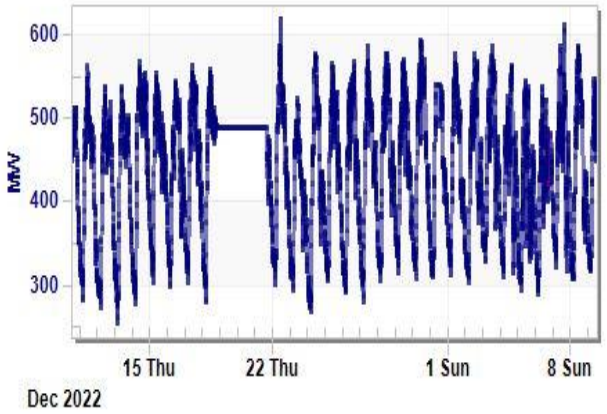
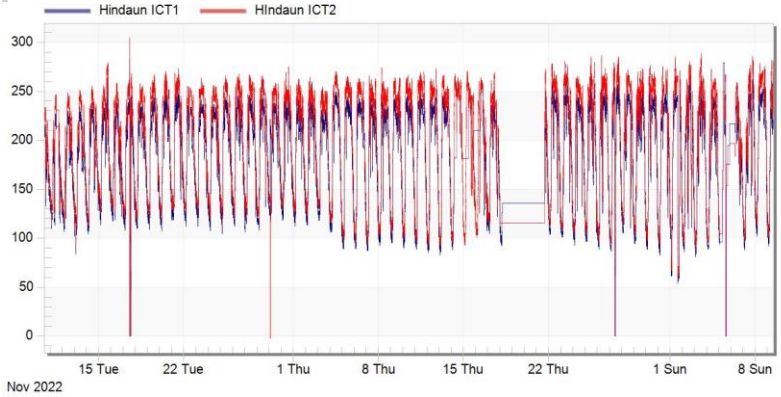
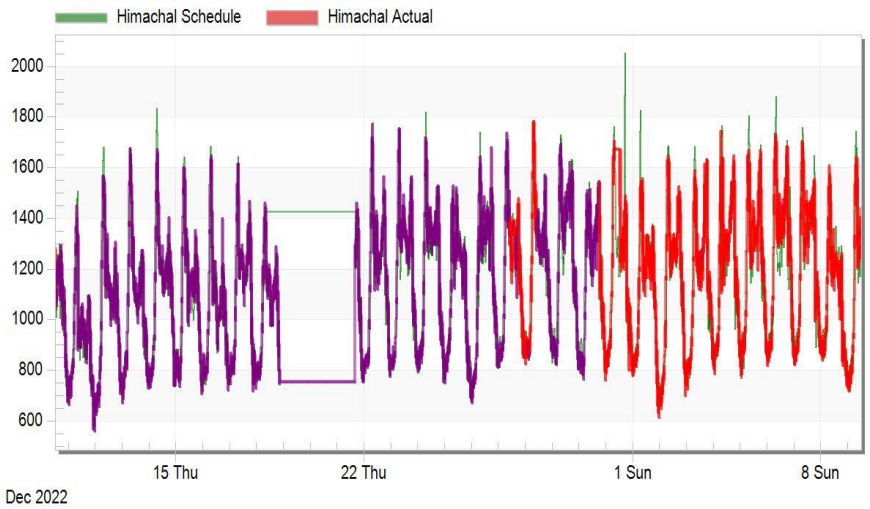
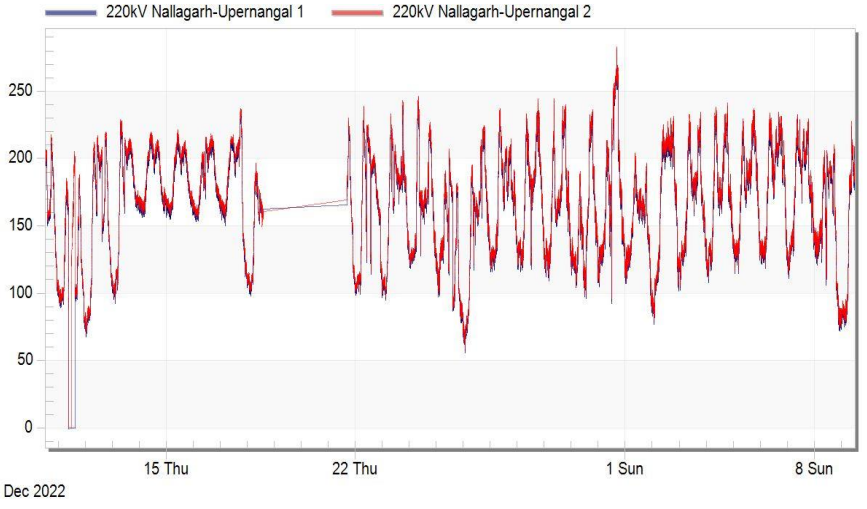





Himachal Schedule
Himachal Actual
2000
1800
1600
1400
1200
1000
800
600
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022


220kV Nallagarh-Upernangal 1
220kV Nallagarh-Upernangal 2
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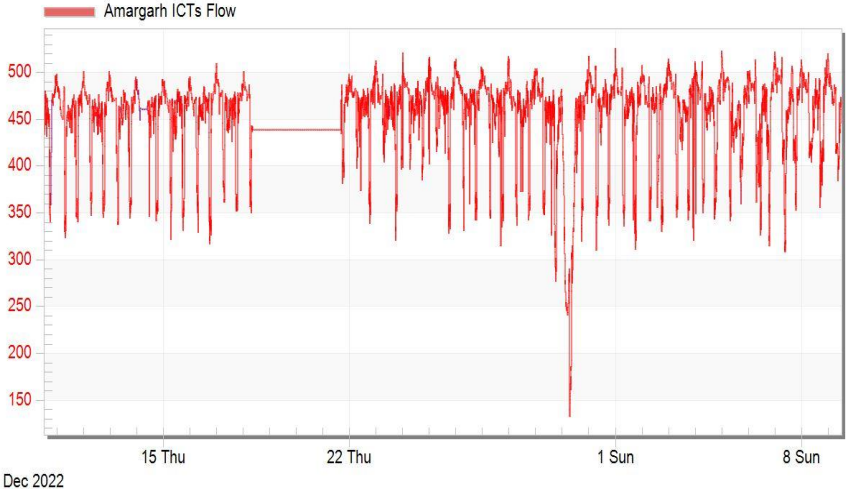
200
150
100
50
0
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022


Amargarh ICTs Flow
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400
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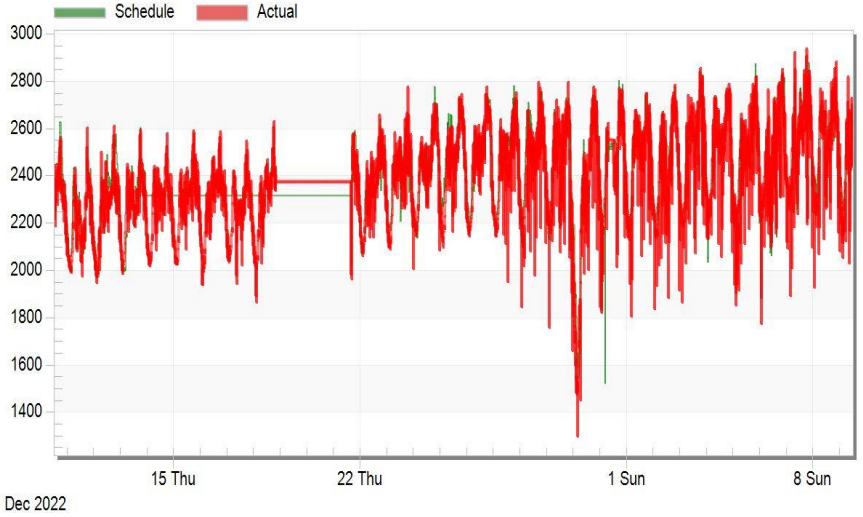
300
250
200
150
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022


Schedule
Actual
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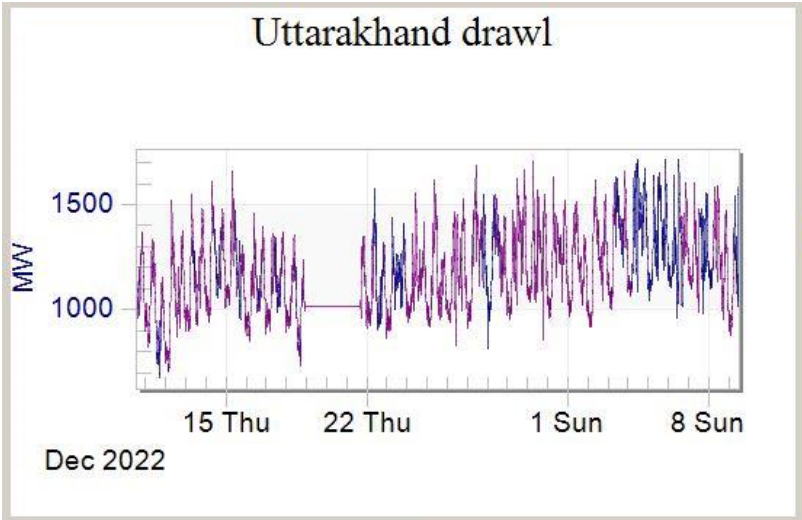
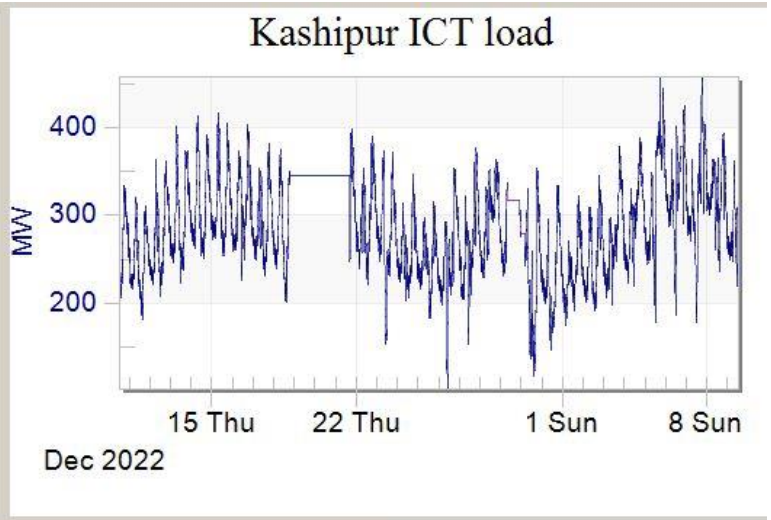
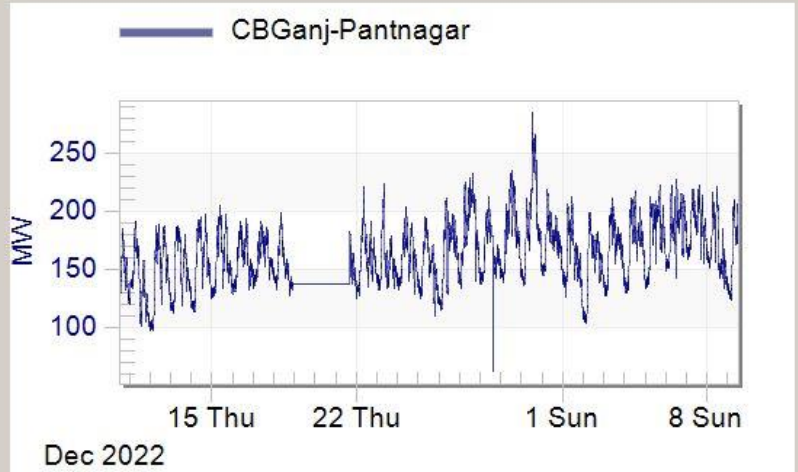
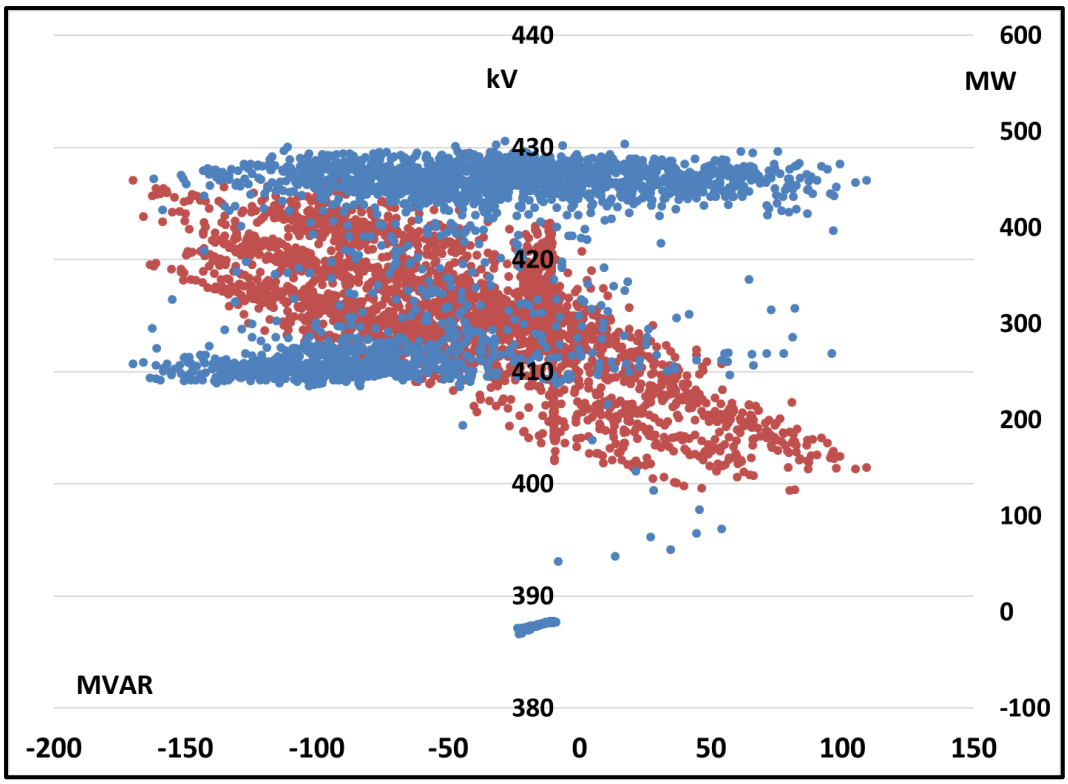
2800
2600
2400
2200
2000
1800
1600
1400
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022

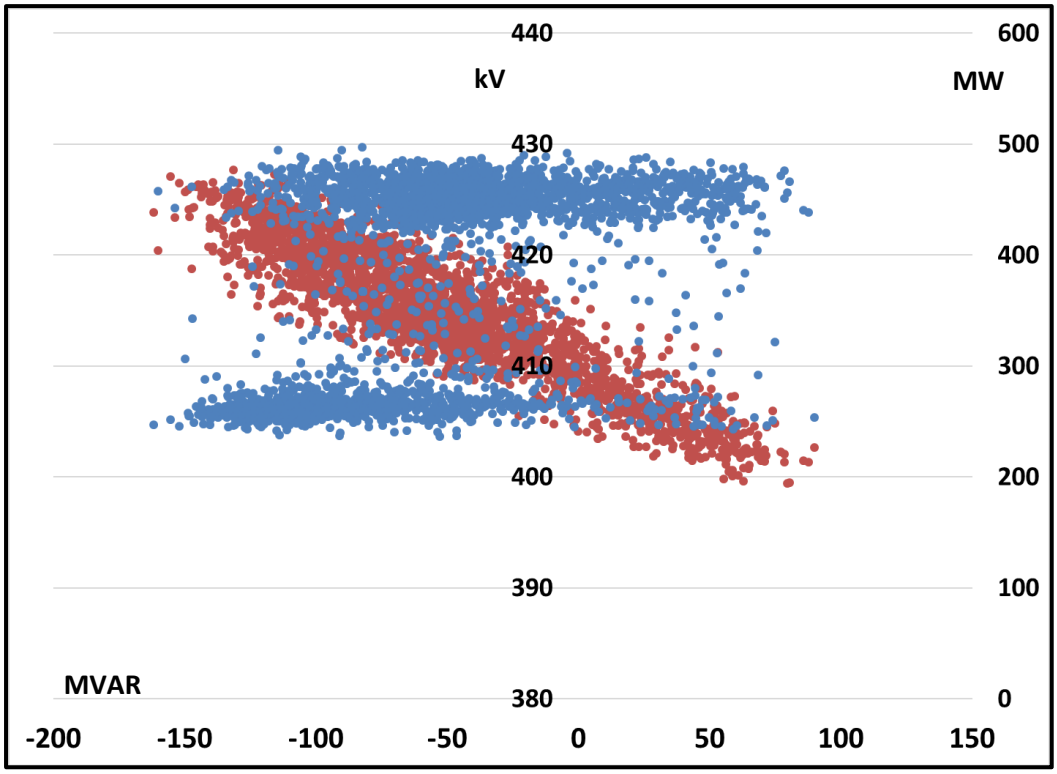

Uttarakhand drawl
MW
1500
1000
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022


Kashipur ICT load
MW
400
300
200
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022

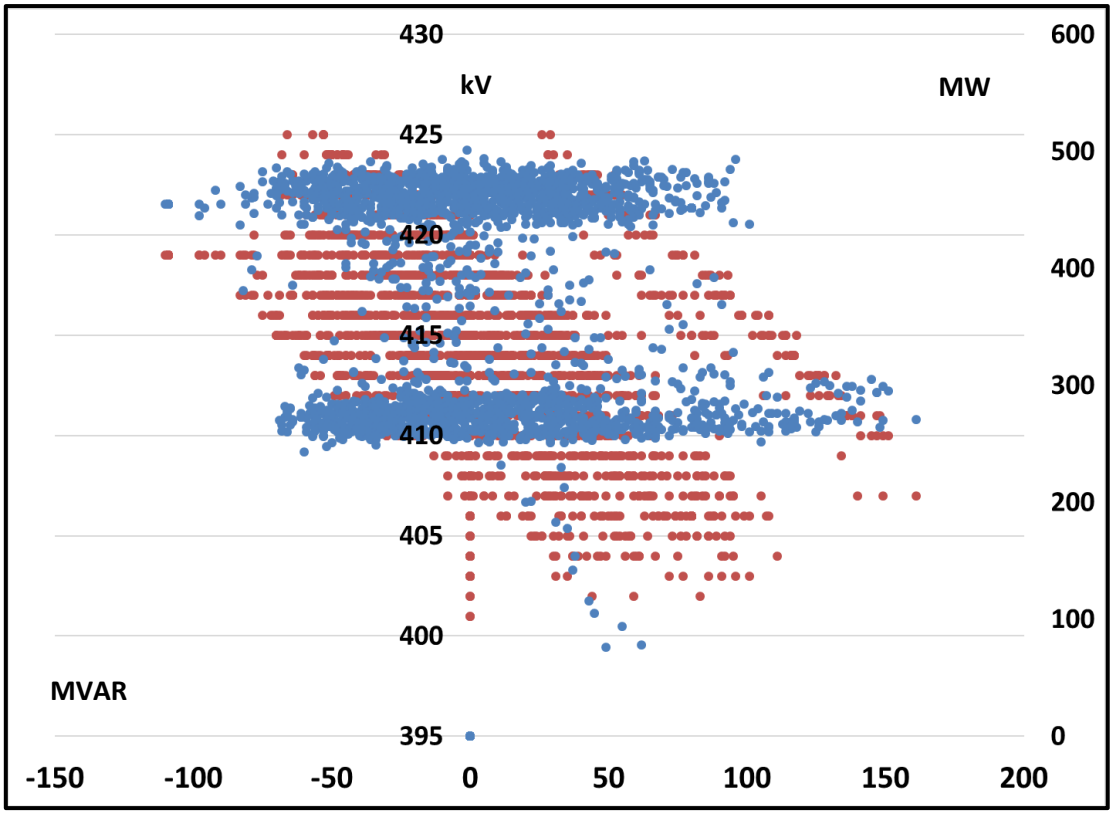

CBGanj-Pantnagar
MW
250
200
150
100
15 Thu
22 Thu
1 Sun
8 Sun
Dec 2022



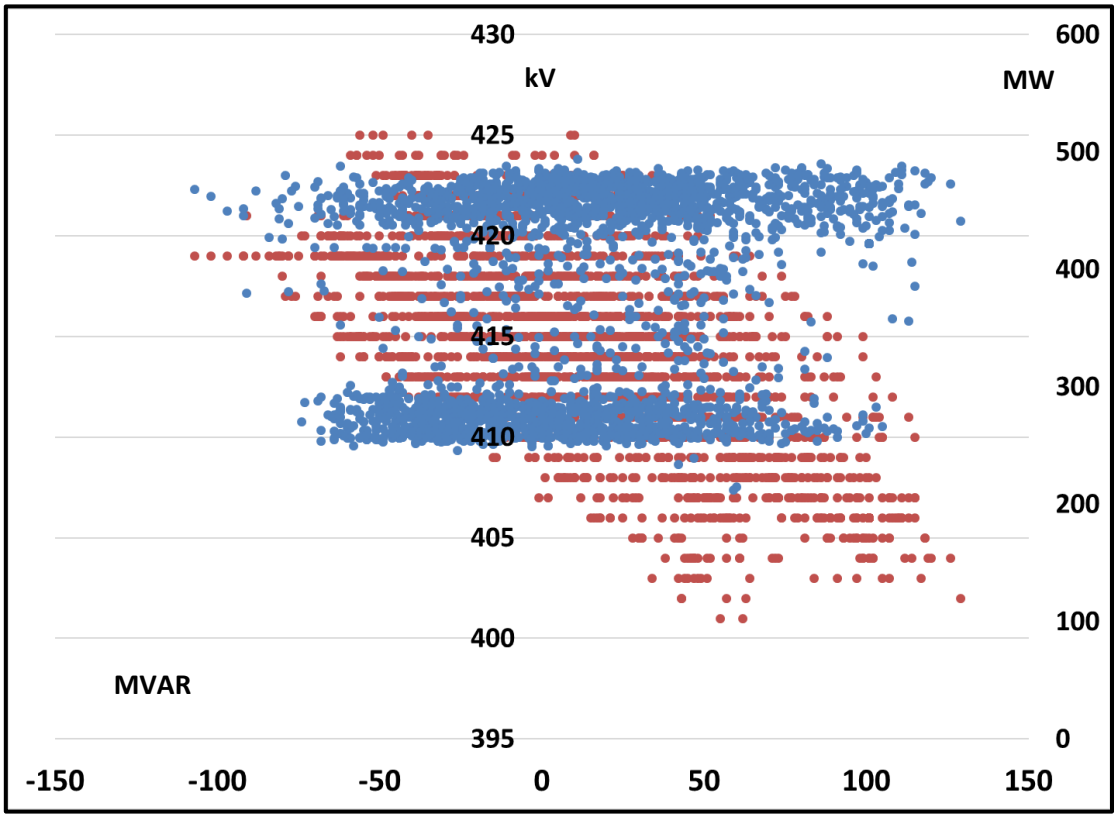
Dadri Thermal Unit V 490MW



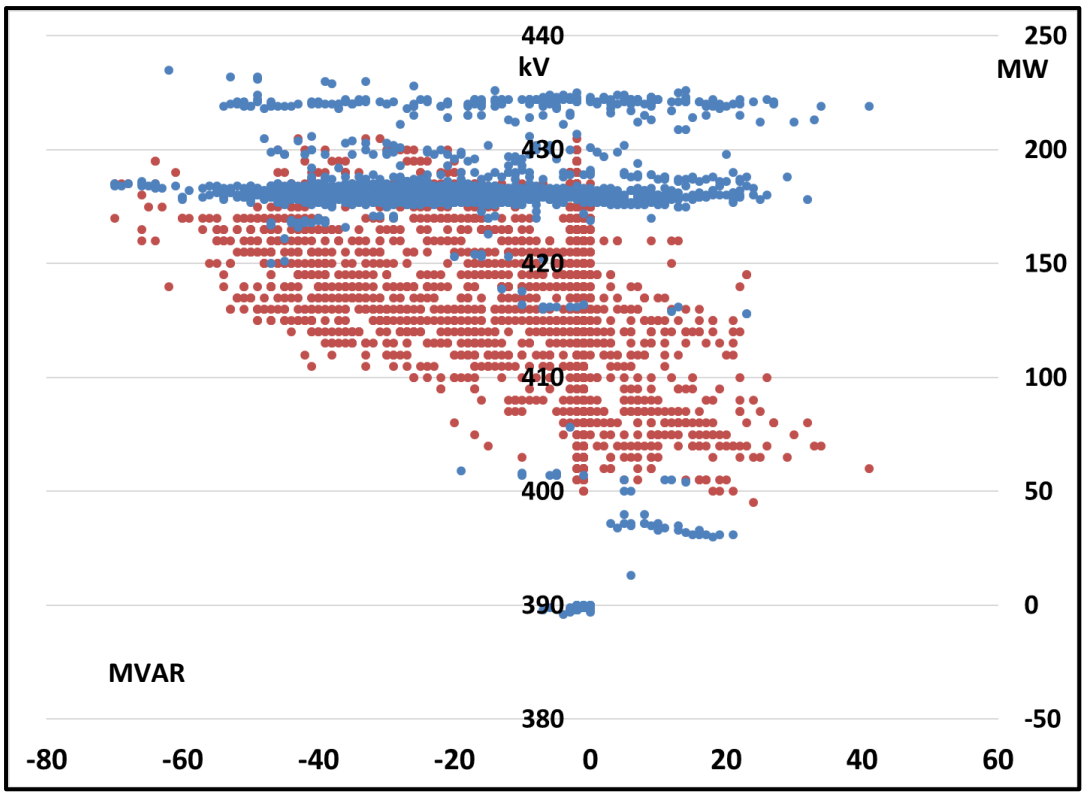
Dadri Thermal Unit VI 490MW



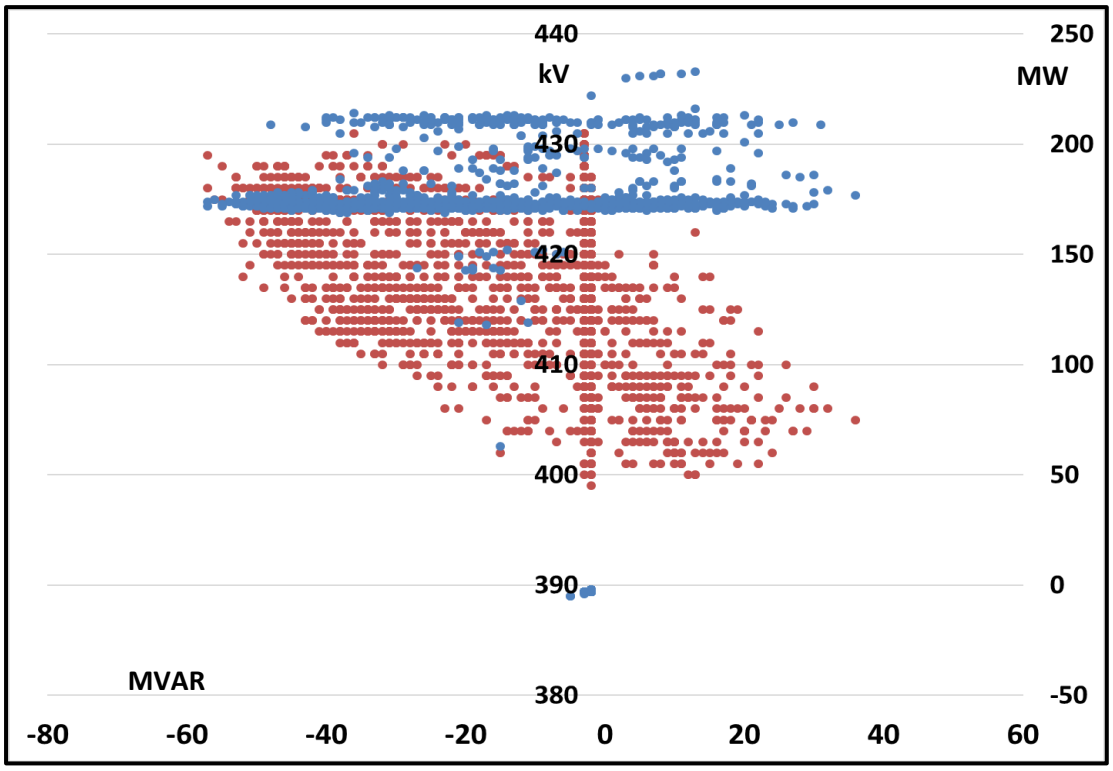
IGSTPP Unit I 500MW



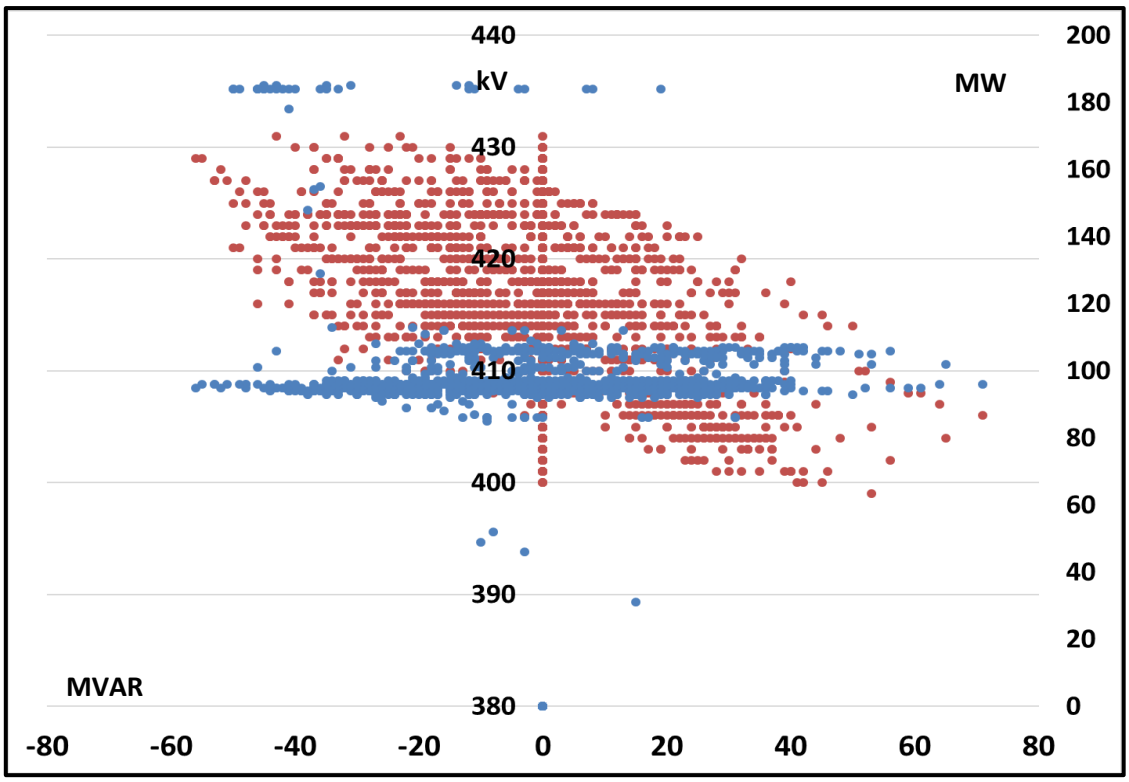
IGSTPP Unit II 500MW



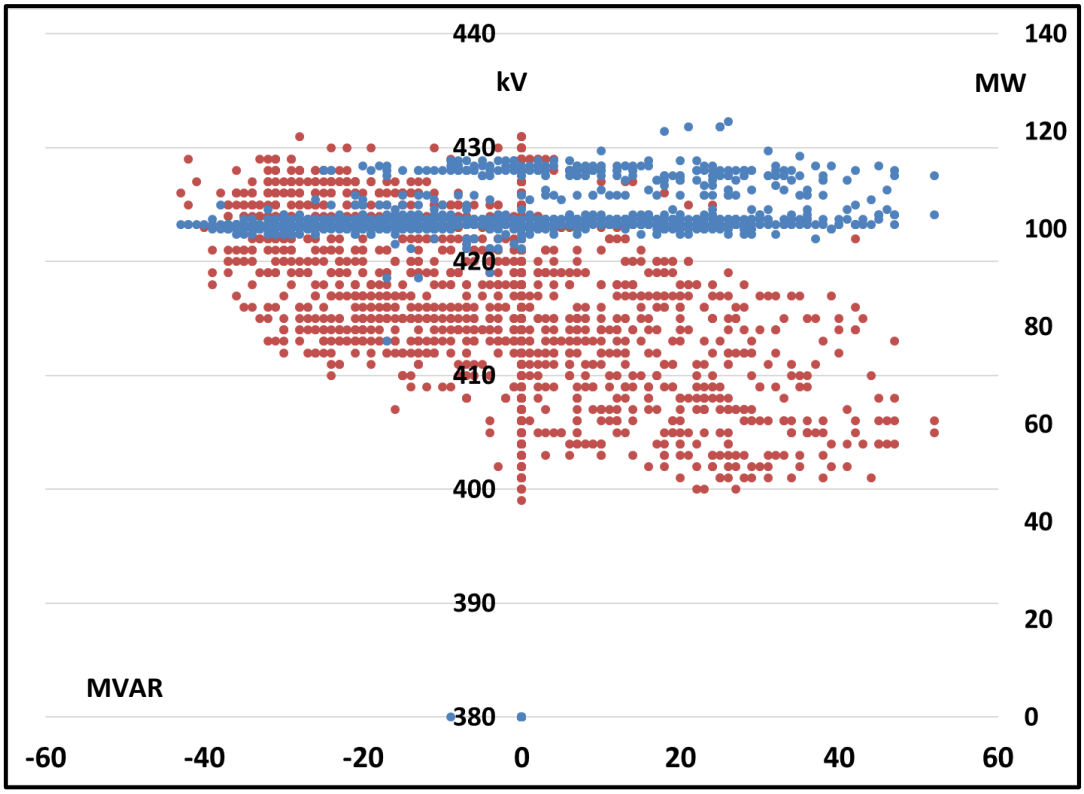
Bawana GT Unit I 250MW



Bawana GT Unit IV 250MW



Bawana ST Unit I 250MW



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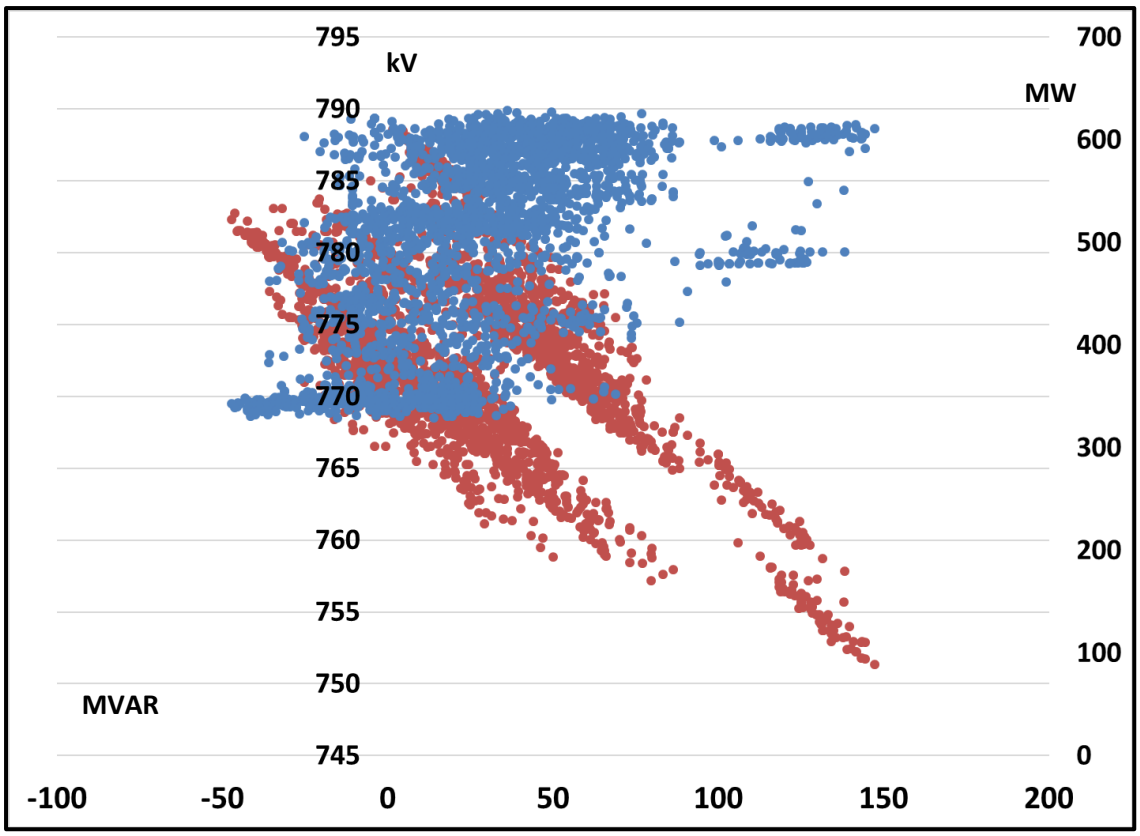
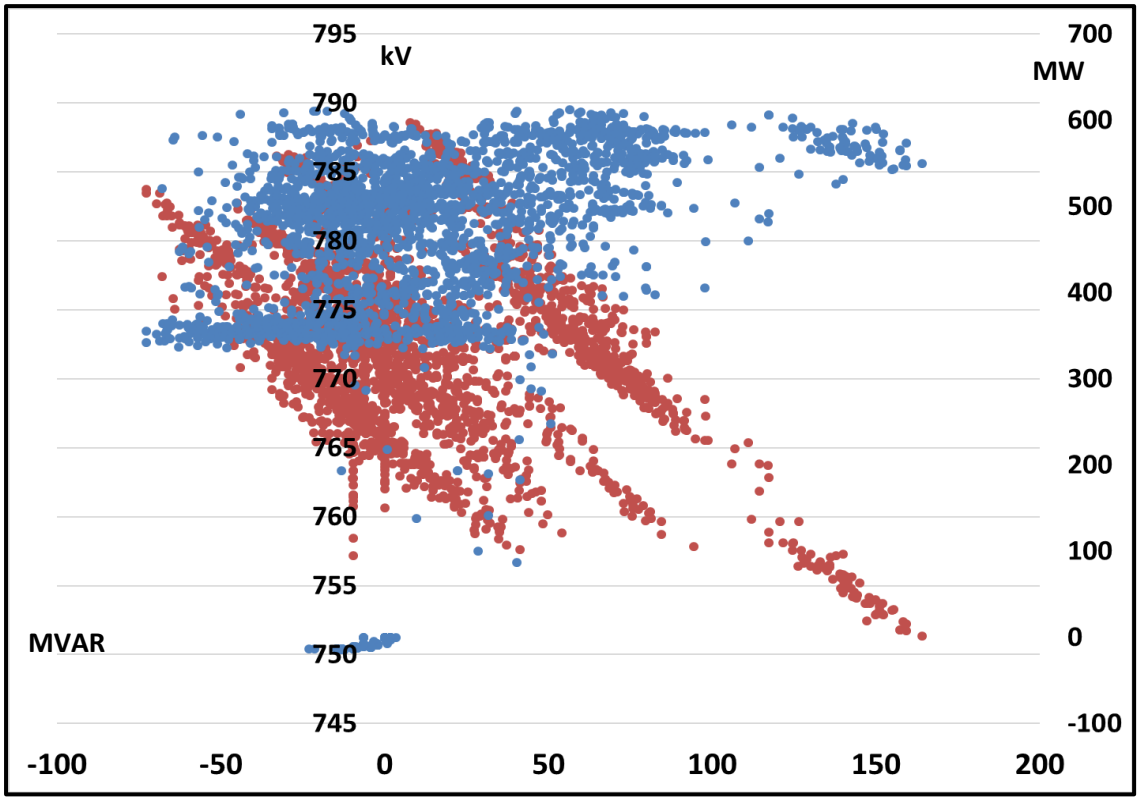
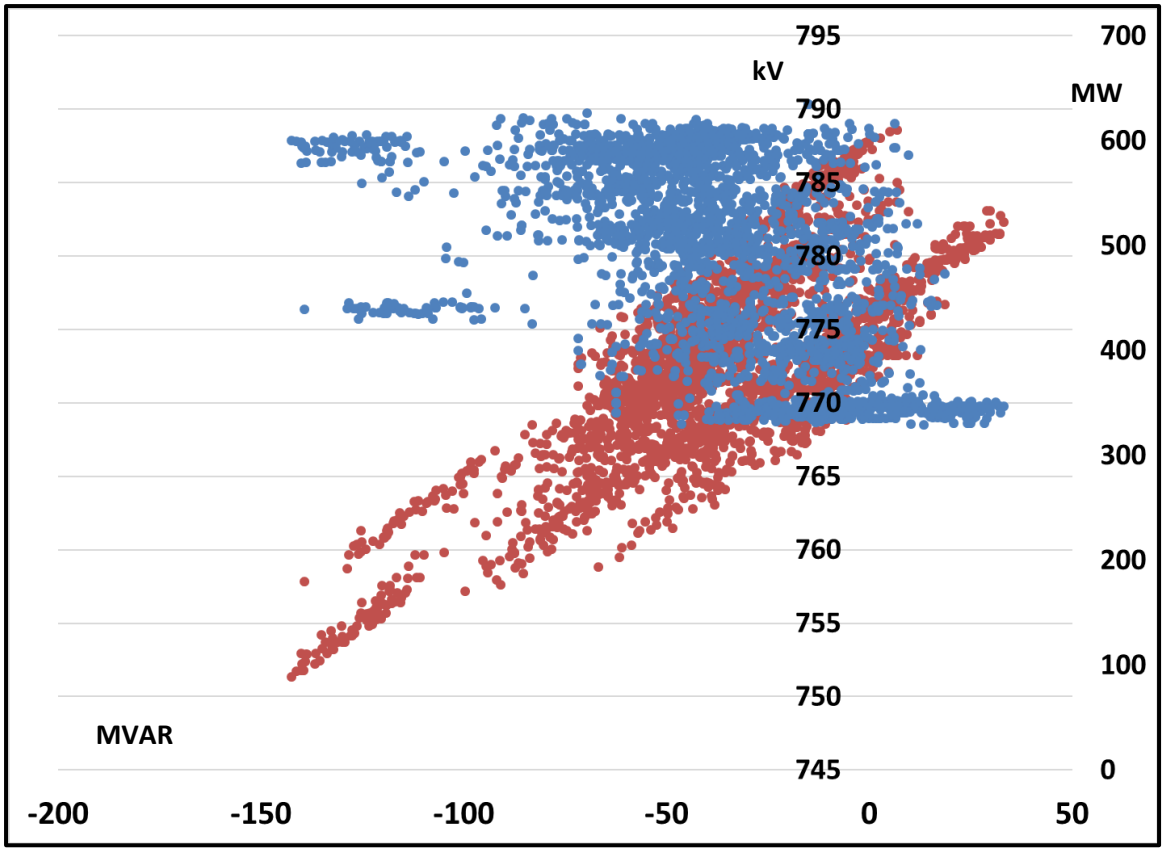


Bara Unit I 660MW



Bara Unit II 660MW



Bara Unit III 660MW

Sr No	Element Name	Outage Date	Outage Time	Reason
1	220 KV Ganguwal-Jagadhari (BB) Ckt-1	26-Dec-22	10:45	Phase to earth fault B-N. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
		25-Dec-22	07:39	Phase to phase fault R-Y. As per PMU, R-Y fault is observed.
		27-Dec-22	05:03	Phase to earth fault B-N. As per PMU, B-N fault occured, no auto-reclosing observed.
		28-Dec-22	03:27	Phase to earth fault R-N. As per PMU, R-N fault occured, no auto-reclosing observed.
2	220 KV Hissar(BB)-Chirawa(RS) (BB) Ckt-1	20-Dec-22	08:03	tripped on dfdt from Hisar end only. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		20-Dec-22	09:30	Line tripped from Hissar end on Under frequency. As per PMU, frquency didn't go below 49.41Hz.
		22-Dec-22	16:29	B-N fault, Zone-2, Dist. 103km from Chirawa(RS) & Dist. 6.1km, Fault current 14.4kA from Hissar(BBMB). As per PMU, R-N fault occured, no auto-reclosing observed.
		25-Dec-22	09:03	Line tripped from Hissar end on Under frequency. As per PMU, frquency didn't go below 49.41Hz.
3	220 KV Mandola(PG)-Gopalpur(DTL) (DTL) Ckt-1	19-Dec-22	00:52	Y-N fault, Zone-1, Fault current 11.84kA from Gopalpur(DTL). As per PMU, Y-N fault occured, no auto-reclosing observed.
		20-Dec-22	04:05	Y-N fault, Zone-1, Fault current 4.217kA from Gopalpur(DTL). As per PMU, B-N fault occured, no auto-reclosing observed.
		20-Dec-22	05:27	B-N fault, Zone-1, Fault current 3.787kA from Gopalpur(DTL). As per PMU, B-N fault occured, no auto-reclosing observed.
		25-Dec-22	15:06	R-N fault, Zone-1 from Gopalpur end. As per PMU, No fault observed. DR not received from Mandola end.
4	400 KV Aligarh-Sikandrabad (UP) Ckt-1	03-Dec-22	23:06	R-N fault, Zone-1, Fault current 5.809kA from Sikandrabad (UP). As per PMU, R-N fault occured, unsuccessful autoreclsoing is observed.
		12-Dec-22	02:20	R-N fault, Zone-1, Dist. 18.33km, Fault current 9.198kA from Sikandrabad (UP). As per PMU, R-N fault occured, no auto-reclosing observed.
		19-Dec-22	05:33	Phase to earth fault Y-N.
		20-Dec-22	02:25	B-N fault, Zone-1, Dist. 62.39km, Fault current 5.101kA from Aligarh. As per PMU, multiple B-N faults are observed.
		21-Dec-22	03:55	R-N fault, Zone-1, Dist. 7.5km, Fault current 12.78kA from Aligarh(UP). As per PMU, R-N fault occured, no auto-reclosing observed.

5	400 KV Harduaganj -Sikandrabad (UP) Ckt-1	19-Dec-22	05:44	Phase to earth fault B-N. As per PMU, B-N fault occured, no auto-reclosing observed.
		21-Dec-22	02:51	B-N fault, Dist. 10.67km, Zone-1, Fault current 13.19kA from Harduaganj. As per PMU, no fault is observed.
		21-Dec-22	05:34	Y-N fault, Dist. 47.93km, Zone-1, Fault current 5.62kA from Sikandrabad and Fault current 4.87kA, Dist. 47.6km from Harduaganj. As per PMU, multiple faults (Y-N fault followed by B-N fault) are observed.
		23-Dec-22	14:03	B-phase insulator damaged at tower no. 195. As per PMU, no fault is observed.
6	400 KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-2	19-Dec-22	08:01	Phase to phase fault Y-B. As per PMU, Y-B fault occurred and delayed clearance of 480ms is observed.
		19-Dec-22	19:50	Y-N Fault, Zone-1, Dist. 51.7km, Fault current 6.66kA from Mundka end. As per PMU, Y-N fault occured, no auto-reclosing observed.
		20-Dec-22	02:32	Phase to earth fault Y-N. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		21-Dec-22	10:41	One conductor of twin moose Y-phase jumper has got snapped at Tower no. 43. As per PMU, no fault is observed.
7	400 KV Muktsar-Makhu (PS) Ckt-2	19-Dec-22	05:31	Phase to earth fault B-N. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
		21-Dec-22	07:46	R-N fault, Fault current 2.73kA, Dist. 25.3km from Muktsar. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		25-Dec-22	04:27	Y-N Fault, Fault current 5.06kA, Dist. 49.9km from Makhu, Fault current 5.20kA, Dist. 35.7km from Mukatsar. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		26-Dec-22	02:56	Y-N fault, Fault current 7.41kA, Dist. 27.5km from Makhu & Fault current 4.22kA, Dist. 56.6km from Mukatsar. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		27-Dec-22	04:57	R-N fault, Fault current 6.38kA, Dist. 41.1km from Makhu & Fault current 3.94kA, Dist. 44.5km from Mukatsar. at tower no 137 (r-ph flashed insulator string) and tower no 214 (flashed pilot string) has been replaced. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
8	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	21-Dec-22	07:14	R-N fault, Zone-1, Dist. 36.3km, Fault current 5.59kA from Ratangarh(RS). As per PMU, no fault is observed.
		21-Dec-22	23:16	R-N fault, Zone-1, Fault current 5.74kA, Dist. 36.8km from Ratangarh, Zone-1, Fault current 3.70kA from Suratgarh. As per PMU, B-N fault occured, no auto-reclosing observed.
		28-Dec-22	12:21	B-N fault, Zone-1, Dist. 87.6km, Fault current 3.35kA from Ratangarh(RS). As per PMU, Y-N fault occured, no auto-reclosing observed.

		31-Dec-22	00:23	DISTANCE PROTECTION OPTD. 1.AUTORECLOSER OPTD. 2.AUTORECLOSER LOCKOUT. 3.MAIN 1/2 PROT. OPTD. MAIN-1: Va- 1.04Vn, Vb- 0.00Vn,Vc- 0.88Vn, Ia- 0.01In,Ib- 0.05In,Ic- 0.01In MAIN-2: PHASE-Y, ZONE-Z1,DISTANCE- 115.6 KMS, FAULT CURRENT- 2.85KA AT RTH ENF.PHASE-Y, ZONE-Z1, DISTANCE- 16.38 KMS. As per PMU, Y-N fault occured, no auto-reclosing observed.
9	400 KV Talwandi Saboo(PSG)-Muktsar(PS) (PS) Ckt-1	20-Dec-22	02:30	Phase to earth fault B-N. As per PMU, multiple B-N faults are observed.
		21-Dec-22	00:47	Phase to earth fault R-N. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
		25-Dec-22	06:03	Y-N Fault, Dist. 32.7km, Fault current 5.37kA from Mukatsar. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
		27-Dec-22	06:58	R-N fault, Zone-1 from Muktsar. Tripped due to Fog. Y-phase insulator string flashed-over at tower no. 123, has been replaced. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.

Grid Event summary for December 2022

S.No.	Category of Grid Disturbance (GD-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved 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)	Status of action taken
					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		
1	GD-1	1) 220KV Amargarh(INDIGRID) – Ziankote(JK)(PDD JK) ckt 1 2) 220KV Amargarh(INDIGRID) – Ziankote(JK)(PDD JK) ckt 2	J&K	JKPTCL	3-Dec-22	21:19	3-Dec-22	22:50	01:31	1. 220/132kV Ziankote S/s have two bus at 220kV side i.e., main bus & reserve bus. 2. During antecedent condition, 220kV Wagoora-Ziankote ckt-1&2 and 220kV Ziankote-Alustang ckt were connected at reserve bus and 220kV Amargarh-Ziankote-Ckt-1&2 along with 220/132kV 150MVA Transformer-1,2&3 were connected at main bus. Both the bus were running in split mode. 3. During antecedent condition, 220KV Amargarh(INDIGRID) – Ziankote(JK)(PDD JK) ckt-1 & ckt-2 were carrying ~140MW each. 4. As reported at 21:19 hrs, R-N phase to earth fault occurred on 220KV Amargarh(INDIGRID) – Ziankote(JK)(PDD JK) ckt 2, fault distance was ~12.05km and fault current was ~5.24kA from Amargarh end. At the same time, 220KV Amargarh(INDIGRID) – Ziankote(JK)(PDD JK) ckt 1 also tripped. 5. As per PMU, R-N phase to earth fault which cleared within 120ms is observed. 6. As per SCADA, change in load of approx. 200MW occurred in J&K control area.	0	0.303	0	200	0.000	0.471	34480	42430		Y(INDIGRID) Y(J&K)			Y(INDIGRID)	Y(J&K)	Y(INDIGRID)	Y(J&K)	120	i) SCADA data of 220/132kV Ziankote(JK) S/s is not available. Availability of the same need to be ensured.
2	GD-1	1) 220 KV Jalandhar-Pong (BB) Ckt-2 2) 220 KV Pong(BB)-Dasuya(PS) (BB) Ckt-2 3) 66 MW Pong HPS - UNIT 4 4) 66 MW Pong HPS - UNIT 6 5) 220/66kV 40MVA Transformer-1 at Pong(BB)	Punjab	BBMB	4-Dec-22	01:20	4-Dec-22	03:25	02:05	1. During antecedent condition, 210MW Unit-1,2,3,4&6 were running and generating approx. 58MW, 66MW, 66MW, 50MW & 61MW respectively. Unit-2,4&6 & 220kV feeders to Jalandhar ckt-2, Jessore, Dasuya ckt-2 were connected at 220kV Bus-2 and Unit-1, Unit-3, 220/66kV 40MVA Transformer & 220kV feeders to Jalandhar ckt-1, Dasuya ckt-1 were connected at 220kV Bus-1. 2. As reported, 66MW Unit-6 was charged at 01:15hrs after half yearly maintenance work. At 01:20 hrs, B-Phase Suspension & Tension strings in 220 kV Pong S/Yard at Gantry of U#6 damaged. On this fault, Unit-4&6, 220/66kV 40MVA transformer along with 220kV feeders to Jalandhar(ckt-2), Dasuya(ckt-2) tripped. Remaining elements remained intact. 3. As per PMU at Jalandhar (PG), B-N fault which cleared within 120ms is observed. 4. As per SCADA, total generation loss of approx. 110MW is observed at Pong HEP(BBMB).	0	0	110	0	0.369	0.000	29817	35904		Y(BBMB)				Y(BBMB)	Y(BBMB)		120	i) Healthiness of electrical and mechanical elements need to be ensured. ii) As fault cleared within 120ms and fault occurred in Unit-6, why did 220kV feeders to Jalandhar(ckt-2), Dasuya(ckt-2), 220/66kV 40MVA transformer & Unit-4 trip? Details of protection operated need to be shared. iii) DR/EL & tripping report of all the tripped elements need to be shared. iv) Remedial action taken report to be shared.
3	GD-1	1) 220kV Hiranagar-Ghatti (PDD JK) ckt-2 2) 220kV Hiranagar-Ghatti (PDD JK) ckt-1 3) 220kV Hiranagar-Bishna (PDD JK) ckt 4) 220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 5) 220 KV Samba(PG)-Hiranagar(PDD) (PDD JK) Ckt-2	J&K	JKPTCL	4-Dec-22	20:57	4-Dec-22	22:36	01:39	1. 220/66kV Hiranagar S/s have two bus at 220kV side i.e., main bus & reserve bus. 2. During antecedent condition, 220kV Hiranagar (PDD)-Sarna(PS) (PG) ckt was under planned shutdown for HTLS conductor rewiring work. All the other elements i.e., 220kV Hiranagar-Ghatti (PDD JK) ckt-1 & ckt-2, 220 KV Samba(PG)-Hiranagar(PDD) (PG) ckt-1 & ckt-2, 220kV Hiranagar-Bishna (PDD JK) ckt and 220/132kV 200MVA Transformer-1&2 were connected at 220kV Main bus. 3. As reported at 20:57 hrs, R-N phase to earth fault occurred on 220kV Hiranagar-Ghatti (PDD JK) ckt-2, fault distance and fault current were 7.1km & 6.3kA from Hiranagar end. On this fault, distance protection of 220kV Hiranagar-Ghatti (PDD JK) ckt-2 operated in Z-1 but due to pole discrepancy, line CB didn't open properly and thus fault didn't clear. As fault didn't clear and bus bar protection is also not available at Hiranagar S/s, 220kV Hiranagar-Ghatti (PDD JK) ckt-1, 220kV Hiranagar-Bishna (PDD JK) ckt, 220 KV Samba(PG)-Hiranagar(PDD) (PG) Ckt-1 & Ckt-2 all tripped from Hiranagar end only on earth fault overcurrent protection. 4. As per PMU at Kishenpur(PG), no fault is observed in system. 5. As per DR submitted by Samba(PG), R-N phase to earth fault with delayed clearance in 680ms is observed. Samba end sensed fault in Zone-3. 6. As per SCADA, load loss of approx. 110MW observed in J&K(UT) & Ladakh(UT) control area. 7. As reported, after revival of 220kV Hiranagar (PDD)-Sarna(PS) (PG) ckt, both bus are running in split mode and 220kV	0	0.15	0	110	0.000	0.266	33436	41387		Y(J&K)				Y(J&K)		Y(J&K)	680	i) Healthiness of CB? ii) review of protection settings
4	GD-1	1) 220kV Bus-1 at Pong(BB) 2) 220kV Bus-2 at Pong(BB) 3) 220 KV Jalandhar-Pong (BB) Ckt-1 4) 220 KV Jalandhar-Pong (BB) Ckt-2 5) 220 KV Jalandhar(BB)-Dasuya(PS) (BB) Ckt-1 6) 220 KV Jalandhar(BB)-Dasuya(PS) (BB) Ckt-2 7) 220 KV Jalandhar(BB)-Jessore(HP) (BB) Ckt 8) 66 MW Pong HPS - UNIT 2 9) 66 MW Pong HPS - UNIT 3 10) 220/66kV 40MVA Transformer-1 at Pong(BB)	Punjab	BBMB	6-Dec-22	15:03	6-Dec-22	18:57	03:54	1. During antecedent condition, 210MW Unit-2&3 were running and generating ~66MW each. Unit-2 & 220kV feeders to Jalandhar ckt-2, Jessore, Dasuya ckt-2 were connected at 220kV Bus-2 and Unit-3, 220/66kV 40MVA Transformer & 220kV feeders to Jalandhar ckt-1, Dasuya ckt-1 were connected at 220kV Bus-1. 2. As reported at 15:03 hrs, during synchronizing 66MW Unit-6 at Pong(BBMB) at 220kV Bus-1, B-phase pole of SF6 circuit breaker of the unit-6 got burst, it also damaged isolators/accessories of adjacent bays/circuits. On this fault bus bar protection of 220kV Bus-2 operated and elements i.e., 66MW Unit-2 & 220kV feeders to Jalandhar ckt-2, Jessore, Dasuya ckt-2 tripped. However, bus coupler didn't open and so fault cleared with the tripping of 66MW Unit-3, 220/66kV 40MVA transformer and 220kV feeders to Jalandhar ckt-1, Dasuya ckt-1 in Z-2 from remote end 3. As per PMU at Jalandhar (PG), B-N fault with delayed clearance in 480ms is observed. 4. As per SCADA, total generation loss of approx. 132MW is observed at Pong HEP(BBMB).	0	0	132	0	0.287	0.000	46021	48959		Y(BBMB)				Y(BBMB)	Y(BBMB)		480	i) Mechanical healthiness of CB need to be ensured. ii) Why did bus coupler breaker not open on bus bar protection operation? iii) DR/EL & tripping report of all the tripped elements need to be shared. iv) Remedial action taken report to be shared.
5	GI-2	1) 400/220 kV 500 MVA ICT 9 at Fatehgarh_II(PG) 2) 220 KV Fatehgarh_II(PG)-Devikot SL_FTGH2 (NTPC_DEVIKOT) (NTPC_DEVIKOT) Ckt-1 3) 220 KV Fatehgarh_II(PG)-ASEJOL_HB FTGH2 (ASEJOL) (ASEJOL) Ckt-1 4) 220 KV Fatehgarh_II(PG)-AHEJOL PSS HB_FGRAH_PG (AHEJOL) (AHEJOL) Ckt-2	Rajasthan	POWERGRID	9-Dec-22	02:15	9-Dec-22	04:28	02:13	1. During antecedent condition, 400kV Bus-IIB was under shutdown to facilitate the testing of bus bar protection (SIEMENS bus bar relay) through 447 Bay (main bay of upcoming 400/220kV 500MVA ICT-VIII). 400/220kV 500MVA ICT-9 was the only element connected at 400kV Bus-IIB via tie bay(443 bay). ICT-9 was further connected at 220kV side with 220kV ckt to ASEJOL-1&2 & NTPC DEVIKOT. 2. It was assumed that tripping command would go to 444 bay(main bay of ICT-IX) and 447 bay (main bay of upcoming ICT-VIII). In this case ICT-IX would remain intact with the tie bay (443 bay). 3. However as reported at 02:15 hrs, during testing, bus bar relay sent tripping command to 443 bay also (tie bay of ICT-IX). There was some issue related wiring configuration in SIEMENS bus bar relay. 4. As ICT-IX was charged through tie bay only (443 bay), it tripped with the tripping of tie CB and sent inter trip command to 220kV side. With this, 220kV Bus IIIB& IVB became dead. 5. As per PMU, no fault in system is observed.	0	0	0	0	0.000	0.000	27404	35214		Y(PG)			Y(PG)		Y(PG)		NA	
6	GD-1	1) 400 KV Dehar(BB)-Panchkula(PG) (PG) Ckt-1 2) 165MW unit-4 at Dehar(BB) 3) 220/132kV 40MVA ICT-3 at Dehar(BB)	Punjab	BBMB	13-Dec-22	11:52	13-Dec-22	14:36	2:44	1. As reported, at 11:52hrs on 13th Dec 2022, 400 KV Dehar(BB)-Panchkula(PG) (PG) Ckt-1 tripped on R-N phase to earth fault, fault distance was 24.6km(Z-1) & 104km (Z-2) from Panchkula & Dehar end respectively. 2.A t the same time, 165MW Unit-4 at Dehar(BBMB) and 220/132kV 40MVA ICT-3 at Dehar(BB) also tripped. 3. As per PMU at Panchkula(PG) end, first R-N phase to earth fault occurred at 11:51:59hrs which cleared with the delay of ~640msec and again at 11:52:02hrs R-N phase to earth fault occurred. 4. As per SCADA, generation loss of approx. 165MW occurred due to tripping 165MW Unit-4 at Dehar(BB).	0	0	165	0	0.320	0.000	51512	54281		Y(PG) Y(BBMB)			Y(PG)	Y(BBMB)	Y(PG) Y(BBMB)		640	i) Exact location and nature of fault? ii) Reason of delayed clearance of fault? iii) DR, EL & tripping report of any of the tripped elements need to be shared. iv) Remedial action taken report to be shared.
7	GD-1	1) 220 KV TATA Noorsar SL_BKN PG (TPGEL)- Bikaner(PG) (TPGEL) Ckt-1	Rajasthan	TPGEL	14-Dec-22	15:07	14-Dec-22	16:01	0:54	1. As reported, at 15:07hrs, 220 KV TATA Noorsar SL_BKN PG (TPGEL)-Bikaner(PG) (TPGEL) Ckt tripped on under voltage protection operation at TPGEL end. 2. As per PMU at TPGEL end, antecedent phase voltage of the line was ~128kV (line voltage 221kV) which is well in the operating range. 3.A s per PMU, loss of approx. 145MW RE generation occurred at TPGEL RE station due to tripping of the line (loss of evacuation path). 4.A s per the communication with TPGEL, under voltage protection was kept enable in both Main-1 & Main-2 relay. Same has been disabled now.	0.13	0	145	0	0.304	0.000	47691	49189		Y(PG)	Y(TPGEL)		Y(PG)	Y(TPGEL)	Y(PG)	Y(TPGEL)	NA	
8	GD-1	1) 220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt 2) 40MW Unit-2 at Tanakpur HEP	Uttarakhand	NHPC	16-Dec-22	06:25	16-Dec-22	07:05	0:40	1. During antecedent condition, 220kV Tankapur-CB Ganj Ckt was in out condition. 40MW Unit-2 was running and generating approx. 32MW. All the elements i.e., Unit-2, Sitarganj line(carrying 24MW towards Tanakpur) & 220/132kV ICT (carrying 55MW towards Mahendra Nagar) were connected at 220kV Bus-2. 2. As reported, at 06:25hrs, during shutdown of 40MW Unit-3 at Tanakpur HEP, Y-Phase pole of CB got stuck, leading to the flow of unbalanced current into the GT neutral and Unit-3 tripped on GT neutral over current protection operation. 3.A s Y-ph pole is stuck, LBB protection of Unit-3 also operated and sent tripping command to elements connected at bus-2. However, Sitarganj line & 220/132kV ICT didn't trip from Tanakpur end. 220kV Sitarganj line tripped from Sitarganj end only. 4. Further after 5-6 secs, due to flowing of unbalanced current in GT of Unit-2 also, Unit-2 tripped on neutral over current protection operation. 5. Due to loss of source from Sitarganj and Tanakpur, power supply to Mahendra Nagar lost. 6. As per PMU at Meerut(PG), no fault in system is observed. 7. As per SCADA, generation loss of approx. 32MW occurred at Tanakpur HEP. observed at Tanakpur HEP.	0.021	0	32	0	0.079	0.000	40579	46728		Y(PG) Y(NHPC)			Y(PG) Y(NHPC)		Y(NHPC)		NA	i) Healthiness of CB need to be ensured. ii) Why did elements didn't trip on LBB protection operation? LBB logic need to be reviewed and checked. iii) Remedial action taken report to be shared.

S.No.	Category of Grid Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved 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)	Status of action taken
	(GD-1 to GD-V)				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		
9	GD-1	1) 220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt 2) 40MW Unit-2 at Tanakpur HEP 3) 220 KV Tanakpur(NH)-CB Ganj(UP) (PG) Ckt	Uttarakhand	NHPC	18-Dec-22	17:38	18-Dec-22	18:25	0:47	1. During antecedent condition, 40MW Unit-2 was running and generating approx. 32MW. All the elements i.e., Unit-2, Sitarganj line(carrying 24MW towards Sitarganj), CB Ganj line (carrying 58MW towards Tanakpur) & 220/132kC ICT (carrying 52MW towards Mahendra Nagar) were connected at 220kV Bus-2, 220kV Bus-1 was under shutdown. 2. As reported, at 17:38hrs, during shutdown of 40MW Unit-3 at Tanakpur HEP, Y-Phase pole of CB got stuck. However, as magnitude of unbalanced current flowing to GT neutral was very low, GT neutral over current protection didn't operate and LBB protection of Unit-3 CB also didn't initiate. 3. As Y-ph pole is stuck, to prevent reverse power flow in unit-3, CBs of Unit-2, CB Ganj Line and Sitarganj Line were opened manually. 4. Due to opening of the elements, power flow to Mahendra Nagar also became zero. 5. As per PMU at Meerut(PG), no fault in system is observed. 6. As per SCADA, generation loss of approx. 32MW occurred at Tanakpur HEP observed. 7. As reported by NHPC, fault in Y-ph pole of CB has been rectified on 19.12.2022.	0.025	0	32	0	0.077	0.000	41335	47420		Y(PG) Y(NHPC)		Y(NHPC)	Y(PG)		Y(NHPC)		NA	i) What was the issue in Y-ph pole of CB of Unit-3. ii) Remedial action taken report to be shared.
10	GD-1	1) 765 KV Bara-Mainpuri (UP) Ckt-2 2) 660 MW Bara TPS - UNIT 2	Uttar Pradesh	UPPTCL	19-Dec-22	06:35	19-Dec-22	10:39	04:04	1. During antecedent condition, 765 KV Bara-Mainpuri ckt-2 and 765/400kV 1500MVA ICT at Bara were carrying 1195MW & 333MW respectively. 660MW Unit-1,2&3 were generating approx. 503MW, 437MW & 588MW respectively. 2. As reported, at 06:35 hrs, 765 KV Bara-Mainpuri ckt-2 tripped on Y-N phase to earth fault after unsuccessful A/R operation. 3. As per PMU at Mainpuri(PG), Y-N phase to earth fault with unsuccessful A/R operation is observed. 4. Logic of SPS implemented at 765/400kV Bara TPS for Safe evacuation of its generation is: Case: If P is greater than or equal to 1250 MW where P is MW flow on HV side of 1500 MVA ICT (765/400 KV) at Bara TPS AND Main CB (707-52) & Tie CB (708-52) of 765 KV Bara -Mainpuri ckt -2 tripped (Along with 86A/B trip relay operated) Action: One of the three Units at Bara TPS shall trip based on the selection. 5. As per SPS logic, it operated and Unit-2 at Bara TPS tripped. 6. As per SCADA, generation loss of approx. 440MW at Bara TPS is observed.	0	0	440	0	1.107	0.000	39754	46330	Y(UP)			Y(UP)			Y(UP)		80	ii) Whether A/R operated at both end? Proper operation of A/R need to be ensured. iii) CB status of Unit-2 is not recorded in SCADA SOE. Availability of the same need to be ensured.
11	GD-1	1) 765 KV Bara-Mainpuri (UP) Ckt-2 2) 660 MW Bara TPS - UNIT 2	Uttar Pradesh	UPPTCL	20-Dec-22	03:03	20-Dec-22	13:44	10:41	1. During antecedent condition, 765 KV Bara-Mainpuri ckt-2 and 765/400kV 1500MVA ICT at Bara were carrying 1241MW & 223MW respectively. 660MW Unit-1,2&3 were generating approx. 482MW, 506MW & 477MW respectively. 2. As reported, at 03:03 hrs, 765 KV Bara-Mainpuri ckt-2 tripped on R-N phase to earth fault. 3. As per PMU at Mainpuri(PG), R-N phase to earth fault followed by B-N fault is observed. No A/R operation observed. 4. Logic of SPS implemented at 765/400kV Bara TPS for Safe evacuation of its generation is: Case: If P is greater than or equal to 1250 MW where P is MW flow on HV side of 1500 MVA ICT (765/400 KV) at Bara TPS AND Main CB (707-52) & Tie CB (708-52) of 765 KV Bara -Mainpuri ckt -2 tripped (Along with 86A/B trip relay operated) Action: One of the three Units at Bara TPS shall trip based on the selection. 5. As per SPS logic, it operated and Unit-2 at Bara TPS tripped. 6. As per SCADA, generation loss of approx. 506MW at Bara TPS is observed.	0	0	505	0	1.722	0.000	29327	33482	Y(UP)			Y(UP)			Y(UP)		80	ii) Whether A/R operated at both end? Proper operation of A/R need to be ensured. iii) CB status of Unit-2 is not recorded in SCADA SOE. Availability of the same need to be ensured.
12	GD-1	1) 400 KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-2 2) 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-1 3) 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-2 4) 400 KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-1 5) 400/220kV 315MVA ICT-4 at Daulatabad(HV) 6) 500 MW ISTPP (Jhajjar) - UNIT 1 7) 500 MW ISTPP (Jhajjar) - UNIT 2 8) 500 MW ISTPP (Jhajjar) - UNIT 3	Haryana	HVPNL	20-Dec-22	06:49	20-Dec-22	13:59	07:10	1. 400kV Jhajjar(APCPL) has four (04) evacuating lines i.e., 400KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-1&2 and 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-1&2. During antecedent condition, 500 MW Jhajjar TPS (APCPL) - UNIT 1,2&3 all were running and carrying approx. 1400MW. 2. As reported at 02:32hrs on 20.12.2022, 400KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-2 tripped on Y-N phase to earth fault, fault distance was 13.5km from Jhajjar(APCPL) end. Unsuccessful A/R operation observed at Jhajjar end. 3. Further at 06:47hrs, 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-1 tripped on Y-N phase to earth fault, fault distance was ~25km from Jhajjar end. At the same time, 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-2 tripped from Jhajjar end in Z-3 (~102km) along with 400/220kV 315MVA ICT-4 at Daulatabad(HV). It seems that fault of 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-1 didn't clear from Daulatabad end within time which further led to the tripping of other elements on back up protection. 4. With the tripping of Mundka-2 & Daulatabad-1&2 lines, only one line i.e., 400KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-1 was available for power evacuation and its MW loading increased to ~1400MW. 5. Further at 06:49hrs, 400KV Jhajjar(APCL)-Mundka(DV) (APCL) Ckt-1 also tripped on R-N phase to earth fault, fault occurred due to snapping of jumper at tower location no 119. 6. With the tripping of all four (04) lines at Jhajjar(APCPL), all three 500MW running units at Jhajjar(APCPL) tripped due to loss of evacuation path.	0	0	1400	0	3.376	0.000	41468	47192	Y(APCPL) Y(DTL)	Y(Har)		Y(DTL)	Y(APCPL)	Y(Har)		Y(APCPL) Y(DTL) Y(Har)	1240	i) On which protection operation 400/220kV 315MVA ICT-4 at Daulatabad(HV) tripped? ii) As per PMU and SCADA data, 400 KV Jhajjar(APCL)-Daulatabad(HV) (HV) Ckt-1 tripped from Daulatabad end with delay ~1200msec. Reason of delayed clearance of fault from Daulatabad end? Protection settings at Daulatabad end need to be reviewed. iii) Proper operation of A/R also need to be ensured. iv) DR/EL & tripping report of all the tripped elements need to be shared. v) Remedial action taken report to be shared.
13	GD-1	1) 400/220 kV 500 MVA ICT 2 at Panipat(BB) 2) 220 KV Panipat-Dhulkote (BB) Ckt-1 3) 220 KV Panipat-Dhulkote (BB) Ckt-2 4) 220 KV Panipat-Kurukshetra (BB) Ckt-1 5) 220KV Bus 1, 2 & 3 at Panipat(BB) 6) 220 KV Panipat(BB)-Chajpur(HV) (HVPNL) Ckt-2 7) 220 KV PanipatTH(HV)-Panipat(BB) (HVPNL) Ckt-2 8) 220 KV Panipat-Charkhi Dadri (BB) Ckt-1 9) 400/220 kV 450 MVA ICT 1 at Panipat(BB) 10) 220 KV PanipatTH(HV)-Panipat(BB) (HVPNL) Ckt-4 11) 220 KV Panipat(BB)-Chajpur(HV) (HVPNL) Ckt-1 12) 220 KV PanipatTH(HV)-Panipat(BB) (HVPNL) Ckt-3 13) 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-2 14) 220 KV PanipatTH(HV)-Panipat(BB) (HVPNL) Ckt-1 15) 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1 16) 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-3	Haryana	HVPNL	20-Dec-22	00:29	20-Dec-22	03:55	03:26	1. As reported, at 00:29hrs on 20th Dec 2022, all the elements connected at 220kV Panipat(BBMB) tripped on bus bar protection operation at BBMB end. 2. As per the details received from Narela(DTL) end, fault was in its Z-2. 3. As per PMU at Dadri Thermal(NTPC) end, R-N & Y-N fault with delayed clearance of approx. 1080msec is observed. 4. As per SCADA, change in demand of approx. 150MW is observed in Haryana control area.	0	0.49	0	150	0.000	0.409	30837	36697	Y(BBMB) Y(DTL)			Y(DTL)	Y(BBMB)		Y(BBMB)		1080	i) Exact location and nature of fault? ii) Reason of delayed clearance of fault? iii) DR, EL & tripping report of any of the tripped elements are shared yet. BBMB must ensure the timely uploading of the details on tripping portal. iv) Remedial action taken report to be shared.
14	GI-2	1) 400/220 kV 315 MVA ICT 1 at Auraiya(NT) 2) 400/220 kV 315 MVA ICT 2 at Auraiya(NT) 3) 220 KV Auraiya(NT)-Sikandra(UP) (PG) Ckt-1 4) 220 KV Auraiya(NT)-Sikandra(UP) (PG) Ckt-2 5) 220 KV Auraiya(NT)-Mehgaon(MP) (MPSEB) Ckt-1 6) 220/33 kV 40 MVA ICT 1 at Auraiya(NT) 7) 220kV Auraiya-Railway ckt	Uttar Pradesh	UPPTCL	26-Dec-22	06:57	26-Dec-22	08:24	01:27	1. As reported at 06:57hrs, R-N phase to earth fault occurred on 220kV Auraiya-Railway ckt. On this fault, bus bar protection at 220kV side of 440/220kv Auraiya(NTPC) operated. 2. Due to bus bar protection operation, 400/220kV 315MVA ICT-1&2, 220/33kV 40MVA ICT at Auraiya and 220kV feeders to sikandra-1&2, Mehgaon and Railway tripped. 3. As per PMU at Agra(PG), R-N phase to earth fault with delayed clearance in 920ms is observed. 4. As per SCADA, no change in demand and generation is observed	0	0	0	0	0.000	0.000	41071	47235			Y(NTPC)			Y(NTPC)		Y(NTPC)	920	i) Exact location and nature of fault? ii) Reason of delayed clearance of fault? iii) DR/EL & tripping report of all the tripped elements need to be shared. iv) Remedial action taken report to be shared.
15	GD-1	1) 400/220 kV 315 MVA ICT -1 at Hindaun(Raj) 2) 400/220 kV 315 MVA ICT -2 at Hindaun(Raj)	Rajasthan	RVPNL	27-Dec-22	11:11	27-Dec-22	11:36	00:25	1. As reported at 05:15hrs, 220kV Hindaun220-Sikrai(Dausa)(Raj) ckt tripped on phase to earth fault. 2. Due to tripping of above line, loading of 400/220kV ICTs at Hindaun(Raj) increased. 3. With the increase in demand, loading of ICTs further increased (MVA loading of ICTs at 11:11hrs, ICT-1: 268MVA & ICT-2: 289MVA) and at 11:11hrs, 400/220kV 315MVA ICT-1&2 tripped on O/C protection operation. 4. As per PMU, no fault is observed in system. 5. As per SCADA, load loss of approx. 450MW is observed in Rajasthan control area.	0	0.187	0	450	0.000	0.776	51362	57993		Y(Raj)			Y(Raj)	Y(Raj)		NA	i) 400/220kV 315MVA ICTs at Hindaun(Raj) are N-1 non complaint. Expeditious commissioning of network elements is required to take care the issue of N-1 violation. ii) Why DR/EL of tripped elements are not available? Issues related to extracting DR need to be resolved at the earliest. iii) SCADA SOE data of tripped elements are not available at NRLDC. Availability of the same need to be ensured.
16	GI-1	1) 220KV Bus 2 at Jalandhar(BB) 2) 220 KV Jalandhar-Jamalpur (BB) Ckt-2 3) 220 KV Jalandhar-Pong (BB) Ckt-2 4) 220 KV Dasuya(PS)-Jalandhar(BB) (BBMB) Ckt-2 5) 220 KV Jalandhar(BB)-Jamsher(PS) (BB) Ckt-2 6) 220/132kV 100MVA ICT-2 at Jalandhar(BB) 7) 220/132kV 100MVA ICT-4 at Jalandhar(BB) 8) 220/66kV 100MVA ICT-1 at Jalandhar(BB)	Punjab	BBMB	30-Dec-22	19:43	30-Dec-22	21:06	01:23	1. As reported, at 19:43hrs, Y-ph PT of 220 KV Jalandhar-Jamalpur (BB) Ckt-2 damaged at Jalandhar end and created bus fault on 220kV bus-2. On this bus fault, bus bar protection of 220kV bus-2 operated and all the elements connected at 220kV bus-2 at Jalandhar(BB) i.e., 220 KV Jalandhar-Jamalpur (BB) Ckt-2, 220 KV Jalandhar-Pong (BB) Ckt-2, 220 KV Dasuya(PS)-Jalandhar(BB) (BBMB) Ckt-2, 220 KV Jalandhar(BB)-Jamsher(PS) (BB) Ckt-2, 220/132kV 100MVA ICT-2&4 and 220/66kV 100MVA ICT-1 at Jalandhar(BB) at Jalandhar(BB) tripped. 2. Elements connected at 220kV bus-1 remained intact. 3. As per PMU at Jalandhar(PG), Y-N fault followed by R-B fault is observed. 4. As per SCADA, no change in demand of Punjab is observed. 5. As reported by BBMB, damaged Y-phase PT of 220 KV Jalandhar-Jamalpur (BB) Ckt-2 has been replaced.	0	0	0	0	0.000	0.000	43324	54814	Y(BBMB)			Y(BBMB)	Y(BBMB)		Y(BBMB)		120	i) Routine testing and monitoring of equipment need to be done to avoid such event in future. ii) DR, EL & tripping report of tripping elements need to be shared. iii) Remedial action taken report to be shared.

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	765 KV Fatehpur-Sasaram (PG) Ckt-1	POWERGRID	20-Dec-22	04:08	Nil	Phase to earth fault Y-N	NA	NA	yes	yes			As per DR, line successfully autoreclosed on Y-N fault, later tripped on fault in reclaim time. Fault due to dense fog.
2	400 KV Balia-Bihartariff (PG) Ckt-2	POWERGRID	21-Dec-22	03:41	Nil	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)			As per DR, line tripped after unsuccessful A/R operation on permanent R-N fault.
3	400 KV Gorakhpur(PG)-Muzaffarpur(PG) (POWERLINK) Ckt-2	POWERGRID	22-Dec-22	01:03	Nil	Phase to earth fault R-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)			As per DR, line tripped after unsuccessful A/R operation on permanent R-N fault.
4	400 KV Gorakhpur(PG)-Muzaffarpur(PG) (POWERLINK) Ckt-1	POWERGRID	23-Dec-22	01:26	Nil	Phase to earth fault Y-N	NA	NA	yes (After 24 hrs)	yes (After 24 hrs)			As per DR, line tripped after unsuccessful A/R operation on permanent Y-N fault.
5	400 KV Vindhyachal(PG)-Vindhyachal(NT) (PG) Ckt-1	POWERGRID	23-Dec-22	17:25	Nil	Tripped from NTPC end. R-phase jumper broken at VSTPS end.	NA	NA	yes (After 24 hrs)	NA			As per PMU at Varanasi(PG), R-N fault with delayed clearance in 200ms is observed.
6	400 KV RAPS_D(NP)-Shujalpur(PG) (RTCL) Ckt-2	NPCIL	23-Dec-22	18:07	Nil	DT received at Sujalpur end . 400KV Bus -1 was under planned shutdown at Sujalpur end so Main bay was already in open condition, Tie Bay 417 also tripped during Busbar relay testing works	NA	NA	No	No			
7	220 KV Auraiya(NT)-Mehgaon(MP) (MPSEB) Ckt-1	MPPTCL	26-Dec-22	06:57	Nil	Bus bar protection operated at Auraiya.	NA	NA	No	No			As per PMU at Agra(PG), R-N phase to earth fault with delayed clearance in 920ms is observed.
8	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	27-Dec-22	00:04	Nil	Phase to earth fault R-N	NA	NA	No	No			As per PMU at Agra(PG), R-N phase to earth fault with no A/R operation is observed.
9	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	27-Dec-22	09:57	Nil	R-N fault, Zone-1, Dist. 95.80km from Auraiya. Fault in WR portion.	NA	NA	No	No			As per PMU at Agra(PG),no fault is observed.

 # 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

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

Time Period: 1st December 2022 - 31st December 2022

S. No.	Utility	Total No. of elements tripped	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	AHEJOL	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
2	APFOL	2	2	100	2	0	100	2	0	100	2	0	100	
3	ASEJOL	1	1	100	1	0	100	1	0	100	1	0	100	
4	ASEPL	4	0	0	0	0	0	0	0	0	0	0	0	Details Received
5	AURAIYA-NT	8	8	100	8	0	100	8	0	100	8	0	100	DR/EL & Tripping report needs to be submitted
6	BBMB	87	49	56	55	14	75	56	17	80	57	3	68	
7	CHAMERA-II-NH	1	1	100	1	0	100	1	0	100	1	0	100	
8	CHAMERA-I-NH	2	2	100	2	0	100	2	0	100	2	0	100	
9	CLEANSOLAR_JODHPUR	1	1	100	1	0	100	1	0	100	1	0	100	
10	CPCC1	64	19	30	19	5	32	25	3	41	22	1	35	
11	CPCC2	34	6	18	6	4	20	7	5	24	7	0	21	
12	CPCC3	34	3	9	11	0	32	11	0	32	12	0	35	
13	DADRI-NT	2	1	50	1	0	50	1	0	50	1	0	50	
14	EDEN (ERCPL)	2	2	100	2	0	100	2	0	100	2	0	100	
15	INDIGRID	1	1	100	1	0	100	1	0	100	1	0	100	
16	JHAJJAR	13	6	46	6	0	46	6	0	46	13	0	100	
17	KOLDAM-NT	2	0	0	0	0	0	0	0	0	0	0	0	Details Received
18	NAPP	1	0	0	0	1	0	0	1	0	0	0	0	
19	NJPC	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
20	NTPC_SL_DEVIKOT	1	1	100	1	0	100	1	0	100	1	0	100	
21	RAPPA	9	0	0	4	0	44	5	0	56	5	0	56	
22	RAPPB	1	1	100	1	0	100	1	0	100	1	0	100	
23	RAPPC	1	1	100	1	0	100	1	0	100	1	0	100	
24	RENEW SOLARURJA (RSUPL)	1	1	100	1	0	100	1	0	100	1	0	100	
25	SAURYA	2	2	100	2	0	100	2	0	100	2	0	100	
26	SEWA-2-NH	1	1	100	1	0	100	1	0	100	1	0	100	
27	SINGOLI	1	1	100	1	0	100	1	0	100	1	0	100	DR/EL & Tripping report needs to be submitted
28	SLDC-DV	25	2	8	7	5	35	8	4	38	10	0	40	
29	SLDC-HP	3	0	0	3	0	100	3	0	100	0	0	0	Details Received
30	SLDC-HR	30	3	10	3	0	10	3	0	10	3	0	10	DR/EL & Tripping report needs to be submitted
31	SLDC-JK	6	0	0	6	0	100	6	0	100	6	0	100	
32	SLDC-PS	62	27	44	31	7	56	33	6	59	39	2	65	
33	SLDC-RS	54	0	0	14	0	26	14	0	26	27	0	50	

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

Time Period: 1st December 2022 - 31st December 2022

S. No.	Utility	Total No. of elements tripped	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		%	
34	SLDC-UK	8	0	**0**	0	1	**0**	0	4	**0**	0	0	**0**	Details Received
35	SLDC-UP	125	32	**26**	32	6	**27**	32	5	**27**	33	3	**27**	**DR/EL & Tripping report needs to be submitted**
36	STERLITE	4	0	**0**	0	0	**0**	0	0	**0**	1	1	**33**	
37	TANAKPUR-NH	5	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	Details Received
38	TANDA-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	**DR/EL & Tripping report needs to be submitted**
39	THAR SURYA 1 PRIVATE LIMITED	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**	
40	TPGEL_SL	2	2	**100**	2	0	**100**	2	0	**100**	2	0	**100**	
Total in NR Region		**604**	**180**	**30**	**230**	**43**	**41**	**242**	**45**	**43**	**268**	**10**	**45**	

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 Generatng 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
1	**THDC**					
	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)	
2	**SJVNL**					
	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 20222-23, 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 20222-23, 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	3rd Quarter
	NATHPA-JHAKRI HPS(Unit6 #250)	14.05.2017	14.05.2017	NO	Excitation system upgraded in 2013	3rd Quarter
	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.	
3	**HVPNL**					
	PANIPAT TPS(unit1# 250)	29.03.2016	29.03.2016	YES	--	3rd Quarter
	PANIPAT TPS(unit2# 250)	15.01.2018	15.01.2018	YES	--	3rd Quarter
	DCRTPP (YAMUNA NAGAR)(unit1#300)	19-12-2018	19-12-2018	YES	(Report attached)	3rd Quarter
	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	--	3rd Quarter
4	**NTPC**					
	Rihand (Unit1#500)	03-03-2017	03-03-2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit2#500)	02-07-2016	02-07-2016	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit3#500)	15-08-2015	15-08-2015	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	25-05-2017	25-05-2017	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit4#500)	11-12-2014	11-12-2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	Rihand (Unit5#500)	11-12-2014	11-12-2014	YES	Next test will be done during re-commissioning of unit after O/H	3rd Quarter
	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	--	3rd Quarter
	SINGRAULI STPS(Unit7#500)	15.07.2018	15.07.2018	NO	--	3rd Quarter
	UNCHAHAR I(2 * 210)	29-03-2016	29-03-2016	YES	--	3rd Quarter
	UNCHAHAR II TPS(unit1# 210)	13-07-2019	13-07-2019	YES	--	
	UNCHAHAR II TPS(unit2# 210)	10-08-2018	10-08-2018	YES	--	3rd Quarter
	UNCHAHAR UNIT6#500	-	31.03.2017	YES	--	3rd Quarter
	KOLDAM HPS(4 * 200)	01-07-2015	01-07-2015	YES	--	3rd Quarter
	DADRI GPS(2 * 154.51) (ST-Steam Turbine)	-	18-11-2015	YES	--	3rd Quarter
	ANTA GPS(3 * 88.71)(GT- Gas Turbine)	08-08-2014	08-08-2014	YES	--	3rd Quarter
	ANTA GPS(1 * 153.2)(ST- Steam Turbine)	08-08-2014	08-08-2014	YES	--	3rd Quarter
5	**Aravali Power Company Private Ltd**					
	ISTPP (JHAJJAR)(3 * 500)	-	25-08-2015	YES	--	3rd Quarter
6	**NHPC**					
	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 uni	3rd Quarter
	CHAMERA III HPS(Unit1#77)	29-10-2015	07-01-2012	YES	--	3rd Quarter
	CHAMERA III HPS(Unit2,3#77)	29-10-2015	19-06-2012	YES	--	3rd Quarter

	PARBATI III HEP (Unit1# 130)	21-01-2016	21-01-2016	YES	Have been done recetly. The report on PSS t	3rd Quarter
	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	--	3rd Quarter
	URI-II HPS(4 * 60)	Mar-14	Mar-14		carriedout in 2021-22	
	SALAL HPS (Unit-3,4,5,6 # 115)	16-12-2014	16-12-2014	YES	--	3rd Quarter
	KISHANGANGA(3 * 110)	18-05-20 18	18-05-20 18	YES	--	3rd Quarter
	BAIRASIUL HPS(3 * 60)	30-07-2015	30-07-2016	YES	--	3rd Quarter
	SEWA-II HPS(3 * 40)	09-07-2016	09-07-2016	YES	--	3rd Quarter
	PARBATI III HEP(4 * 130)	16-12-2016	16-12-2016	YES	--	3rd Quarter
	TANAKPUR HPS(Unit1# 31.42)	09-01-2015	09-01-2015	YES	--	3rd Quarter
	TANAKPUR HPS(Unit2,3#31.4)	24-05-2014	24-05-2014	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit1 ,2# 70)	04-05-2014	17-04-2018	YES	--	3rd Quarter
	DHAULIGANGA HPS(Unit3,4# 70)	26-06-2014	17-04-2018	YES	--	3rd Quarter
7	**PUNJAB**					
	RAJPURA(NPL) TPS(2 * 700)	22-04-2014	22-04-2014	YES	--	3rd Quarter
8	**Rajasthan**					
	KAWAI TPS(Unt1# 660)	08-08-2014	08-08-2014	YES	--	3rd Quarter
	KAWAI TPS(Unt2# 660)	09-10-2014	09-10-2014	YES	--	3rd Quarter
	CHHABRA TPS(Unit 1#250)	22-05-2018	22-05-2018	NO	--	3rd Quarter
	CHHABRA TPS(Unit 2,3,4#250)	04-10-2015	04-10-2015	NO	--	3rd Quarter
	CHHABRA TPS(Unit5# 660)	10-02-2016	10-02-2016	YES	--	3rd Quarter
	CHHABRA TPS(Unit6# 660)	7/28/2018	7/28/2018	YES	--	3rd Quarter
	KALISINDH TPS(Unit1# 600)	10-02-2016	10-02-2016	YES	--	3rd Quarter
	KALISINDH TPS(Unit2# 600)	08-02-2016	08-02-2016	YES	--	3rd Quarter
	KOTA TPS(Unit1#110)	PSS tuning and step response test of Unit#1,2,3,4,6&7 were sucessfully done on 02.03.22 to 04.03.22		YES		3rd Quarter
	KOTA TPS(Unit2#110)				--	3rd Quarter
	KOTA TPS(Unit3#195)				--	
	KOTA TPS(Unit4#195)				--	
	KOTA TPS(Unit6#110)				--	3rd Quarter
	KOTA TPS(Unit7#110)				--	3rd Quarter
	SURATGARH TPS (Unit5#250)	14-03-2022	14-03-2022	Yes	--	3rd Quarter
	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	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit2# 135)	14-07-2016	14-07-2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit3# 135)	03-01-2014	03-01-2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit4# 135)	03-11-2015	03-11-2015	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit5# 135)	21-09-2014	21-09-2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit6# 135)	14-08-2014	14-08-2014	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit7# 135)	20-02-2016	20-02-2016	No	--	3rd Quarter
	RAJWEST (IPP) LTPS(Unit8# 135)	11-06-2014	11-06-2014	No		3rd Quarter
9	**UTTAR PRADESH**					
	ANPARA-C TPS(Unit1# 600)	22-08-2015	22-08-2015	Yes	--	Nov-22
	ANPARA-C TPS(Unit2# 600)	08-03-2016	08-03-2016	Yes	--	During next overhauling
	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	--	Nov-22
	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		3rd Quarter
	Anpara-B (Unit5#500)	17.08.2014	Dec., 2019	Yes	--	
	Anpara-D(Unit6#500)	15.11.2016	15.11.2016	No	--	3rd Quarter
	Anpara-D (Unit7#500)	15.04.2017	15.04.2017	No	--	3rd Quarter
	Obra-B(Unit9#200)	22.03.2016	22.03.2016	Yes	Report enclosed.	3rd Quarter
	Obra-B(Unit10#200)	28.06.2016	20.06.2016	Yes	Report enclosed.	3rd Quarter
	Obra-B (Unit11#200)	21.01.2017	21.01.2017	Yes	Report enclosed.	3rd Quarter
	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	--	3rd Quarter
	Parichha-B (Unit4#210)	08.01.2016	08.01.2016	Yes	--	3rd Quarter
	Parichha-C (Unit5#250)	08.02.2020	08.02.2020	No	--	
	Parichha-C(Unit3#250)	09.01.2016	09.01.2016	No	--	3rd Quarter
	Harduaganj (Unit8#250)	20.08.2015	20.08.2015	No	--	3rd Quarter
	Harduaganj (Unit3#250)	13.04.2016	13.04.2016	No	--	3rd Quarter
	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	--	Apr-23
	ALAKNANDA HEP(Unit2# 82.5)	12.072017	12.072017	No	--	Apr-23
	ALAKNANDA HEP(Unit3# 82.5)	12.072017	12.072017	No	--	Apr-23
	ALAKNANDA HEP(Unit4# 82.5)	12.072017	12.072017	No	--	Apr-23
	MEJA TPS(Unit1#660)	16.10.2018	05.09.2017	yes	--	3rd Quarter
	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)	During next overhauling
	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)	During next overhauling
	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			
10	**BBMB**					
	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	--	3rd Quarter

	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	--	3rd Quarter
	BHAKRA HPS(Unit7#157)	18.02.2017	18.02.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#1 165)	08.08.2017	08.08.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#2 165)	08.08.2018	08.08.2018	No	--	3rd Quarter
	DEHAR HPS(Unit#3 165)	08.08.2019	08.08.2019	No	--	
	DEHAR HPS(Unit#4 165)	02.07.2017	02.07.2017	No	--	3rd Quarter
	DEHAR HPS(Unit#5 165)	08.08.2019	08.08.2019	No	--	
	DEHAR HPS(Unit#6 165)	02.07.2017	02.07.2017	No	--	3rd Quarter
	PONG HPS(6 * 66)	--	--	--	PSS not provided.RM&U agenda under considration.	