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/106/01/2022/ 3605-3646 दिनांक: 19.05.2022

विषय: प्रचालन समन्वय उप-समिति की 195वीं बैठक की कार्यसूचीI
Subject: Agenda of 195th OCC meeting.

प्रचालन समन्वय उप-समिति की 195वीं बैठक का आयोजन वीडियो कॉन्फ्रेंसिंग के माध्यम से दिनांक 24.05.2022 को 11:00 बजे से किया जायेगा I उक्त बैठक की कार्यसूची उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट http://164.100.60.165 पर उपलब्ध है I

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।

195th meeting of the Operation Co-ordination sub-committee will be conducted through Video Conferencing on **24.05.2022** from **11:00 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.

सौमित्र
19/05/2022.

(सौमित्र मजूमदार)
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
18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016 Phone: 011-26513265 e- mail: seo-nrpc@nic.in Website: www.nrpc.gov.in

1. Confirmation of Minutes

The minutes of the 194th OCC meeting were issued vide letter of even number dated 06.05.2022.

Sub-committee may deliberate and kindly confirm the Minutes.

2. Review of Grid operations

2.1 Power Supply Position (Provisional) for April 2022

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

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	120	147	22.2%	320	308	-3.8%
	(Req)	100	147	46.6%	290	308	6.2%
DELHI	(Avl)	3785	3201	-15.4%	6100	6197	1.6%
	(Req)	2900	3202	10.4%	6100	6197	1.6%
HARYANA	(Avl)	4930	4529	-8.1%	10730	9320	-13.1%
	(Req)	4175	4827	15.6%	9000	9320	3.6%
HIMACHAL PRADESH	(Avl)	920	946	2.9%	1630	1717	5.3%
	(Req)	908	959	5.6%	1635	1717	5.0%
J&K and LADAKH	(Avl)	1270	1346	6.0%	3000	2603	-13.2%
	(Req)	1830	1425	-22.1%	3110	2603	-16.3%
PUNJAB	(Avl)	5140	4883	-5.0%	8410	9986	18.7%
	(Req)	4150	5026	21.1%	8370	9986	19.3%
RAJASTHAN	(Avl)	7940	7771	-2.1%	17980	14167	-21.2%
	(Req)	7760	8223	6.0%	13000	14291	9.9%
UTTAR PRADESH	(Avl)	10800	12529	16.0%	21500	21146	-1.6%
	(Req)	10350	12910	24.7%	21500	21146	-1.6%
UTTARAKHAND	(Avl)	990	1227	23.9%	2850	2329	-18.3%
	(Req)	1110	1286	15.9%	1910	2329	21.9%
NORTHERN REGION	(Avl)	35895	36580	1.9%	73000	62200	-14.8%
	(Req)	33283	38006	14.2%	59100	63300	7.1%

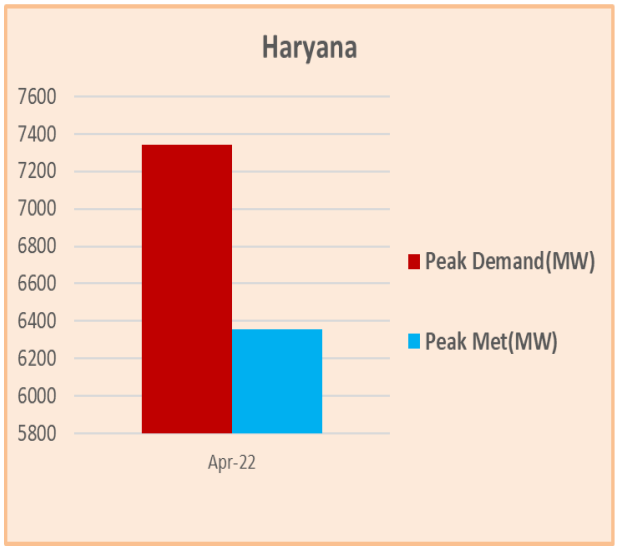
As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of April-2022 in terms of Energy Requirement for all states / UTs and in terms of Peak Demand similar variation is noted for Chandigarh, HP, UTs of J&K and Ladakh, Punjab, Rajasthan, UP, and Uttarakhand. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

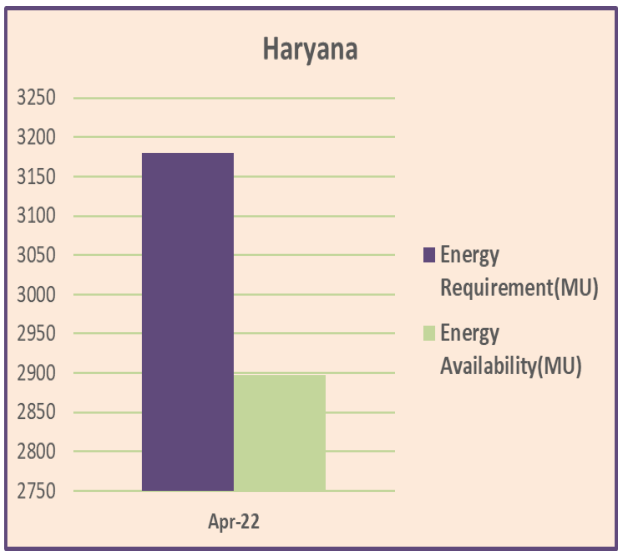
All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month

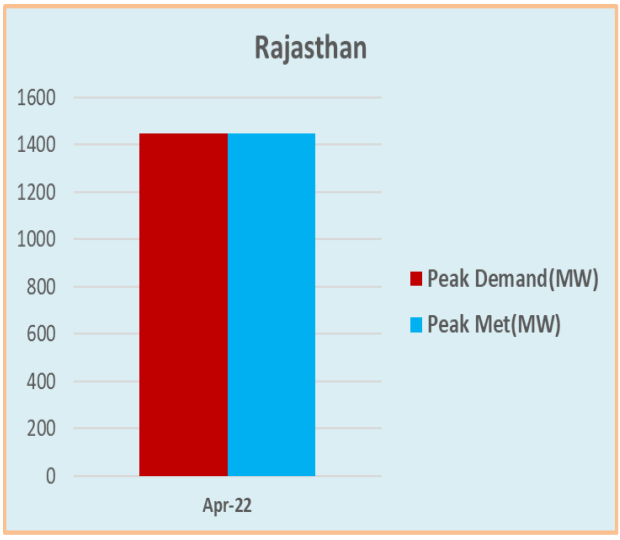
respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

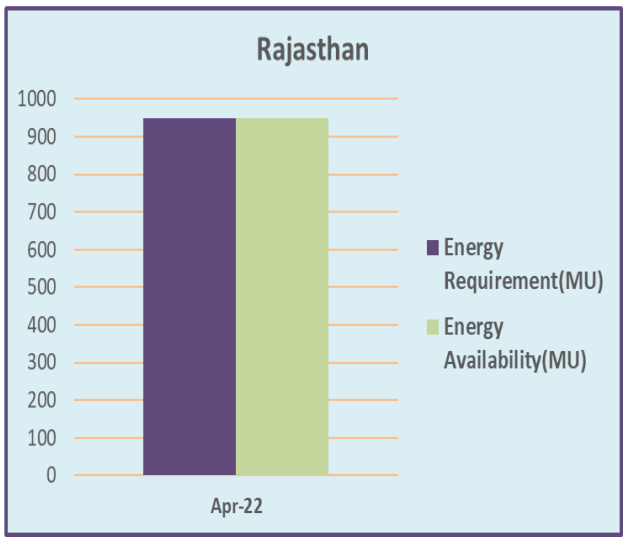
2.2 Power Supply Position of NCR

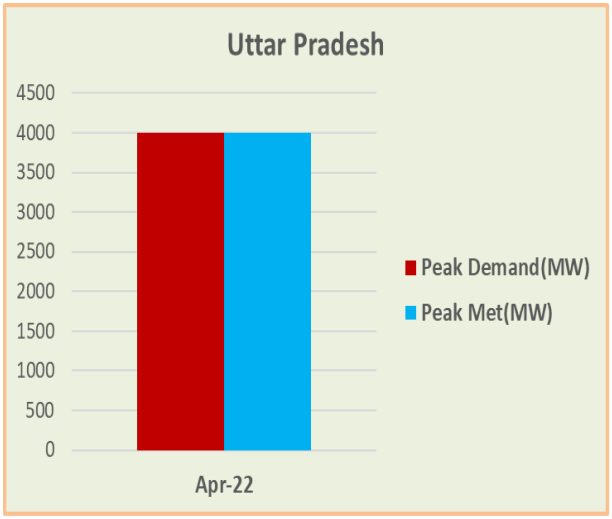
NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of April-2022 is available on NRPC website (http://164.100.60.165). Power supply position during the current financial year is shown as under:

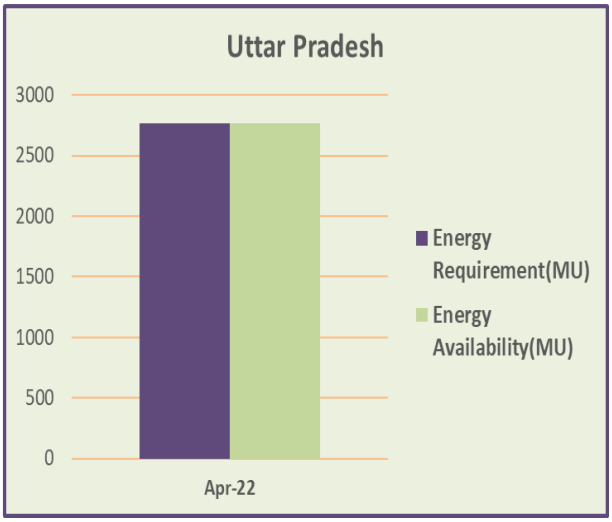


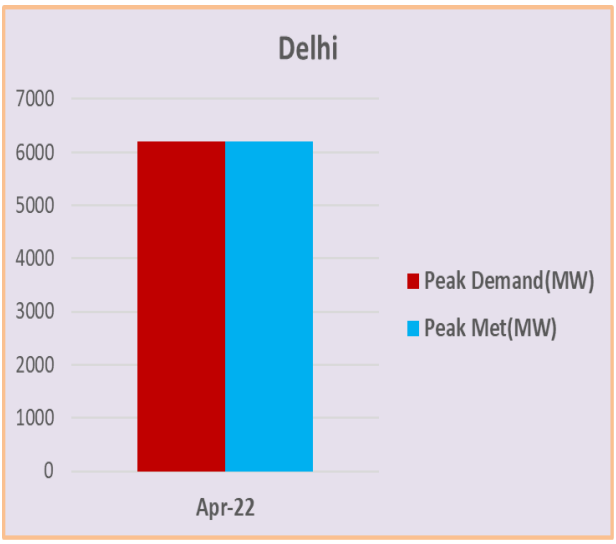


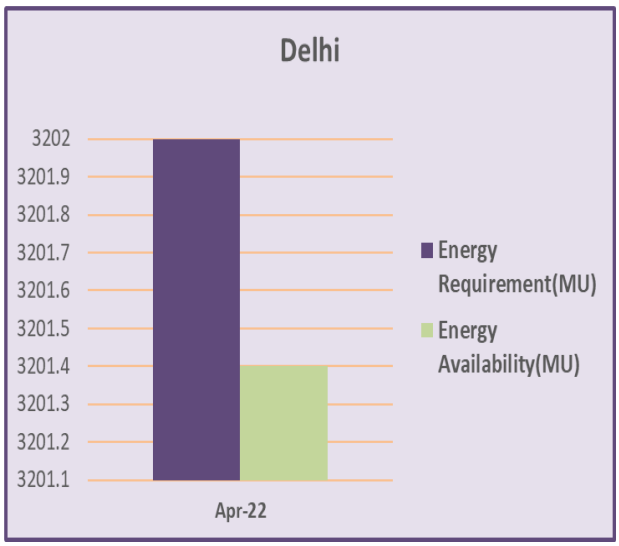












3. Maintenance Programme of Generating Units and Transmission Lines

3.1. Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of June-2022 is scheduled on 23-May-2022 via Video Conferencing.

3.2. Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of June-2022 is scheduled on 23-May-2022 via Video conferencing.

4. Planning of Grid Operation

4.1. Anticipated Power Supply Position in Northern Region for June 2022

The Anticipated Power Supply Position in Northern Region for June 2022 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	180	410	No Revision

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Requirement	160	380	submitted
	Surplus / Shortfall	20	30	
	% Surplus / Shortfall	12.5%	7.9%	
DELHI	Availability	2750	6250	No Revision submitted
	Requirement	4100	7500	
	Surplus / Shortfall	-1350	-1250	
	% Surplus / Shortfall	-32.9%	-16.7%	
HARYANA	Availability	5620	11720	No Revision submitted
	Requirement	6610	12030	
	Surplus / Shortfall	-990	-310	
	% Surplus / Shortfall	-15.0%	-2.6%	
HIMACHAL PRADESH	Availability	1020	1621	12-May-22
	Requirement	1009	1620	
	Surplus / Shortfall	11	1	
	% Surplus / Shortfall	1.1%	0.1%	
J&K and LADAKH	Availability	2070	3530	No Revision submitted
	Requirement	1660	2810	
	Surplus / Shortfall	410	720	
	% Surplus / Shortfall	24.7%	25.6%	
PUNJAB	Availability	6340	12160	No Revision submitted
	Requirement	7250	15500	
	Surplus / Shortfall	-910	-3340	
	% Surplus / Shortfall	-12.6%	-21.5%	
RAJASTHAN	Availability	9420	18840	No Revision submitted
	Requirement	8560	14300	
	Surplus / Shortfall	860	4540	
	% Surplus / Shortfall	10.0%	31.7%	
UTTAR PRADESH	Availability	14850	25500	10-May-22
	Requirement	14550	25500	
	Surplus / Shortfall	300	0	
	% Surplus / Shortfall	2.1%	0.0%	
UTTARAKHAND	Availability	1290	2830	No Revision submitted
	Requirement	1250	2250	
	Surplus / Shortfall	40	580	
	% Surplus / Shortfall	3.2%	25.8%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
NORTHERN REGION	Availability	43540	76100	
	Requirement	45149	75200	
	Surplus / Shortfall	-1609	900	
	% Surplus / Shortfall	-3.6%	1.2%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of June-2022 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	Mar-2022
HARYANA	Apr-2018	Feb-2022
HIMACHAL PRADESH	Apr-2018	Feb-2022
PUNJAB	Apr-2018	Jan-2022
RAJASTHAN	Apr-2018	Mar-2022
UTTAR PRADESH	Apr-2018	Jan-2022
UTTARAKHAND	Apr-2018	Dec-2021

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. Automatic Demand Management System

6.1 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:

State/ Utility	Status
Punjab	**Scheme not implemented.** At SLDC level, remote tripping of 100 feeders at 66 kV is possible. At 11 kV feeder level, ADMS is to be implemented by Distribution Company.

State/ Utility	Status
Delhi	**Fully implemented** by TPDDL, BRPL and BYPL. NDMC implementation was scheduled to be completed by 31.03.2020 but got delayed due to some changes incorporated in the scheme.
Rajasthan	**Under implementation.** LoA placed on 12.12.2018 with an execution period of 18 months for ADMS at the level of 33 kV feeders at EHV Substation of RVPN under SCADA / EMS part of project. Supply is in progress. Work is under execution and likely to completed by June'2021. ADMS functionality at 11 kV feeders from 33/11 kV substation is under the jurisdiction of the DISCOMs.
UP	**Scheme implemented by NPCL only.** Remote operation of 50 feeders at 132 kV level being operated from SLDC. Further, the solution proposed by M/s Siemens was found to be non-economical and was not accepted by the management. Noida Power Company Ltd have implemented Intelligent Load Shedding (ILS) scheme, in compliance of IEGC requirements for automatic demand management.
Haryana	**Scheme not implemented.** More than 1700 feeders were tested from SLDC control room for remote operation. Regarding the implementation of ADMS at DISCOM level, the matter is being taken up with the DISCOMs.
HP	**Scheme not implemented.** 02 feeders could be operated from SLDC through manual intervention. Letter has been sent by HPSEB to HP-SLDC for making its operation automatic.

6.2 As decided in the 175th OCC meeting, the nominations for matter specific meeting had been received from HVPN, UHBVN/DHBVN, PSPCL, RVPN (SLDC & Automation), UPPTCL, KESCO (DISCOM-UP), NPCL (DISCOM-UP).

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

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

expedite the submission of pending nominations.

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

6.6 MS, NRPC stated that non-implementation of ADMS by states is indistinguishably non-adherence to directions of CERC.

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

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

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

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

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

6.12 In 189th OCC, NRLDC representative informed that CERC will be apprised again within next 10 days about the latest status of ADMS as per the updated information available with them.

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

***Members may kindly note*.**

7. 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.

8. NR Islanding scheme

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

8.2 In 187th OCC, it was decided that respective states would submit MIS report before every OCC meeting so that same may be discussed. It was also highlighted that MoP has agreed for PSDF funding for implementation of islanding schemes and states were requested to prepare and submit DPR for the same. Further, a sample DPR on implementation of Islanding scheme for PSDF funding has been already circulated vide email dated 07.10.2021 and requested to expedite the preparation of DPR.

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

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

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

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

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

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

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

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

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

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

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

8.14 In 190th OCC, UPSLDC representative informed that CPRI has asked for some additional details and technical commercial offer would be provided to them by CPRI by 15th Jan 22.

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

8.16 Rajasthan SLDC representative informed that they have given the details in the hard copy of the load and generation to be considered for islanding scheme, and based on that have requested NRLDC to simulate it in PSSE software for validation. NRLDC representative agreed to the request of the Rajasthan SLDC.

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

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

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

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

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

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

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

8.24 A meeting was convened by HPSLDC with officials of NRPC Sectt., NRLDC, HPSEBL, & HPPTCL on 11.02.2022 for apprising the status on implementation of Islanding scheme and MoM of the same is awaited. In the meeting, it was observed that system study work has been pending due to pre-occupation of the concerned

resource. Therefore, it was decided that HPSLDC shall write letters to MDs of HPSEBL & HPPTCL for expediting the implementation and NRPC Sectt may be kept in copy so that the matter may be apprised to MoP in next review meeting. Further, it was decided to review the status in another meeting in the first week of March 22.

8.25 HPSLDC convened a meeting with the officials of NRPC Sectt., NRLDC, HPSEBL & HPPTCL on 04.03.2022 and presented the results of static and dynamic study of the islanding scheme in the HP control area.

8.26 A meeting was convened by UPSLDC with officials of NRPC Sectt., NRLDC & UPPTCL on 07.03.2022 to review progress of implementation of Unchahar and Agra Islanding schemes and MoM of the same is awaited.

8.27 In the 193rd OCC, Punjab and J&K representative were requested to convene a meeting in the last week of March with the officials of NRPC and NRLDC to deliberate about the updated status of the islanding scheme in their control area.

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

Members may kindly deliberate.

9. Coal Supply Position of Thermal Plants in Northern Region

9.1. 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.

9.2. Accordingly, coal stock position of generating stations in northern region during current month (till 10th May 2022) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	88.33	17	**1.7**
ANPARA TPS	2630	89.90	17	**3.7**
BARKHERA TPS	90	57.21	26	**0.5**
DADRI (NCTPP)	1820	91.85	26	7.6
GH TPS (LEH.MOH.)	920	74.65	26	**3.0**
GOINDWAL SAHIB TPP	540	28.24	26	4.2
HARDUAGANJ TPS	1265	59.07	26	**3.6**
INDIRA GANDHI STPP	1500	90.18	26	11.0
KAWAI TPS	1320	92.88	26	4.9
KHAMBARKHERA TPS	90	40.83	26	**1.7**
KOTA TPS	1240	78.42	26	7.3
KUNDARKI TPS	90	61.05	26	**1.3**
LALITPUR TPS	1980	82.51	26	**1.8**
MAHATMA GANDHI TPS	1320	62.22	26	15.6
MAQSOODPUR TPS	90	58.86	26	**0.4**
MEJA STPP	1320	45.74	26	13.3
OBRA TPS	1094	60.37	26	**3.2**

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
PANIPAT TPS	710	90.63	26	4.4
PARICHHA TPS	1140	52.72	26	**1.6**
PRAYAGRAJ TPP	1980	80.36	26	**3.2**
RAJIV GANDHI TPS	1200	40.14	26	10.7
RAJPURA TPP	1400	94.93	26	24.0
RIHAND STPS	3000	92.42	17	29.2
ROPAR TPS	840	58.28	26	5.3
ROSA TPP Ph-I	1200	70.79	26	**1.3**
SINGRAULI STPS	2000	87.05	17	20.1
SURATGARH TPS	1500	71.87	26	5.6
TALWANDI SABO TPP	1980	59.18	26	6.6
TANDA TPS	1760	87.71	26	**1.9**
UNCHAHAR TPS	1550	85.51	26	5.4
UTRAULA TPS	90	47.62	26	**1.8**
YAMUNA NAGAR TPS	600	89.30	26	4.7
CHHABRA-I PH-1 TPP	500	84.45	26	**3.4**
KALISINDH TPS	1200	46.57	26	4.2
SURATGARH STPS	1320	0.00	26	**3.9**
CHHABRA-I PH-2 TPP	500	43.01	26	7.0
CHHABRA-II TPP	1320	72.55	26	**2.4**

10. Requesting Generating companies to furnish Daily/Monthly Generation and outages Data online at National Power Portal (NPP)

10.1. OPM Division, CEA vide letter dated 20.04.2022 (Copy of the letter is attached as **Annexure-A.III**.) have highlighted a list of generating companies in Northern region that are not furnishing Daily/Monthly Generation and outage data online at National Power Portal (NPP).

All generators are requested to ensure timely data submission on NPP.

11. Water requirement by Jal Shakti Vibhag, Himachal Pradesh from Chamera-1 Dam (Agenda by NHPC)

11.1. This has reference to the agenda placed by NHPC in the 193rd OCC meeting regarding the water requirement by Jal Shakti Vibhag, Himachal Pradesh from Chamera-1 Dam.

11.2. In 193rd OCC meeting it was decided that matter may be communicated to GM Division, CEA as annual energy loss of about 0.28 MU from Chamera-1 Power Station would result to departure from PPA. Accordingly, the aforesaid matter was communicated to GM Division, CEA by NRPC Sectt. vide letter dated 21.04.2022.

11.3. NHPC has again requested OCC forum to give permission to “Jal Shakti Vibhag,

Himachal Pradesh" for lifting of water from upstream of Chamera-1 Dam for implementation of various Water Supply System (WSS) to villages in Tehsil Dalhousie and Bhattiyat.

Members may kindly deliberate.

12. SPS implemented at 400kV S/Stn Mundka (Agenda by DTL)

12.1. DTL vide email dated 11.04.2022 (copy enclosed as **Annexure-A.IV**.) has shared the SPS Logic of implemented scheme at 400 kV substation Mundka. It is further intimated that SPS has been implemented at 400/220kV Mundka ICTs on 19.04.2022.

12.2. Further, DTL has mentioned that now one more 315 MVA ICT has been commissioned and added in the existing transformation capacity of 400 kV substation Mundka. Moreover, 4 nos. 500 MVA Power transformers have been commissioned at newly constructed 400 kV substation Dwarka and one no. 315 MVA ICT has also been commissioned and restored at 400 kV substation Bawana. With the commissioning of above-mentioned ICT's/elements in the Delhi system, N-1 contingency for ICT's is already fulfilled at 400 kV substation Mundka and as such SPS is no longer required at 400 kV substation Mundka.

Members may kindly deliberate.

13. Regarding reduction of bus fault level on 220kV Bus at 765/400/220kV PGCIL Substation at Bhadla. (Agenda by Saurya Urja Company of Rajasthan Ltd)

13.1 SUCRL vide email dated 13.05.2022 (copy enclosed as **Annexure-A.V)** has submitted that during short circuit study & actual current flowing during fault through DR records that the fault level of 220kV Bus at PGCIL Bhadla-I substation reached to maximum design value of 220kV bus.

13.2 Currently there are two 500 MW Pooling Substation (PSS) connecting the Bhadla Solar Park with CTU and STU network. Each PSS have five numbers of 125MVA Power transformer (ICT) to evacuate the power from Solar Power Developers (SPD) through 220kV Double Circuit Transmission Line.

13.3 Further, they have apprised that three ICTs have failed since May 2021, one of those has been repaired and placed back in service whereas one is under repair and the third one has failed recently. Summary of the failure for three ICTs are similar in nature i.e. Tripping of Incomer Feeder from solar plant initiated due to cable fault for ICT-01 & ICT-04 failure and CT fault in case of ICT-03 failure.

13.4 As a time being solution, SUCRL have requested to keep Bus Coupler Breaker OPEN for six months, effective from the earliest possible date for reduction of the existing Short Circuit Level of 220kV Bus.

Members may kindly deliberate.

14. Regarding certification of availability of assets under SLTS project since 31.10.2019 (Agenda by POWERGRID)

14.1. NR2-Powergrid vide mail dated 17.05.2022 (copy enclosed as **Annexure-A.VI)** has informed that 220 kV Srinagar-Leh Transmission System is re-designated as ISTS

vide MoP letter ref. No. 3/18/2011- Trans Vol (2) dated 23.03.2021 and was transferred to POWERGRID with effect from 31.10.2019.

14.2. Henceforth, Powergrid has submitted that Availability certification of these assets for period from 31.10.2019 upto till date needs to be done so that POWERGRID can claim O&M charges of these assets.

Members may kindly deliberate.

15. Issue of Deemed Availability Certification of shutdown availed by POWERGRID for shifting of transmission lines for NHAI Projects

15.1. Ministry of Power vide letter dt. 31.08.2021 requested CERC to suitably modify the CERC (Terms and Conditions of Tariff) Regulations, 2019 so that RPC Sectt can issue deemed availability certificate for the shutdown period availed by transmission licensees for shifting of their transmission lines in NHAI projects, provided that transmission customers are not affected by the shutdown of the line.

15.2. The issue was deliberated in 47th TCC/49th NRPC meetings, it was decided that deemed availability for the shutdown period availed by transmission licensees for shifting of their transmission lines in NHAI projects may be provisionally allowed till the Commission takes final call on Tariff Regulations. Accordingly, deemed availability for the shutdown period availed by transmission licensees for shifting of their transmission lines in NHAI projects is being given since October 2021 after consulting with concerned beneficiaries.

15.3. Recently, CEA vide letter (copy enclosed as **Annexure-A.VII.)** has requested to look into the issue where in POWERGRID was requested by NHAI to refund the charges against the shutdown for Delhi-Vadodra-Mumbai Greenfield expressway of NHAI Sohna unit. POWERGRID informed that Rs.18.68 Cr (incl GST) was requested by POWERGRID for these shutdowns; however, Rs.1.01 Cr (incl GST) has been deposited by NHAI against it.

15.4. The list of shutdowns (Sr. No. 1 to 4 in **Annexure-A.VIII)** are taken by POWERGRID for NHAI Sohna unit for which Rs 18.68 Cr (incl GST) was requested and Rs. 1.01 Cr (incl GST) was deposited. Other shutdowns (Sr. no. 5 to 15 in **Annexure-A.VIII)** are taken by POWERGRID for other NHAI projects whose deemed availability is also under examination. Beneficiaries are requested to confirm whether they were affected or faced any transmission constraint due to outages at **Annexure-A.VIII** during shifting/diversion works of NHAI. The comments have already been requested vide email dated 18.05.2022; however, information is yet to be received.

Members may kindly deliberate.

16. PTCC clearance of existing transmission lines after modification / route diversion on request of other government agencies. (Agenda by POWERGRID)

16.1 NR-1 Powergrid vide letter dated 17.05.2022 (copy enclosed as **Annexure-A.IX.)** has mentioned that mostly transmission lines during route diversion works are modified by raising height of Towers and in few cases transmission Line is diverted in close proximity of 50Mtr from the existing corridor resulting increase of line length between 50-100Mtrs which is very nominal in respect to total line length. Further, ground clearance of diverted route is generally more than 14 Meters which further

reduces the interference in telecom lines, if any.

16.2 In view of above, Powergrid has submitted that it may be understood that no significant change in course of Transmission Lines as well as power flow due to line diversion is envisaged. Therefore, PTCC clearance may not be required in line with clause 2.0 of advisory ref. No. PTCC/MISC/2022/391-393 dated 06.05.2022 issued by CEA (Copy attached in ***Annexure-A.IX***).

Members may kindly deliberate.

17. Consideration of outage of transmission lines due to forest / bush fire as deemed available. (Agenda by POWERGRID)

17.1 NR-1 Powergrid vide letter dated 17.05.2022 (copy enclosed as ***Annexure-A.X***) has intimated about the details of outage of transmission line for April-2022 due to forest / bush fire and requested to be considered as deemed available.

Members may kindly deliberate.

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

18. NR Grid Highlights for April 2022

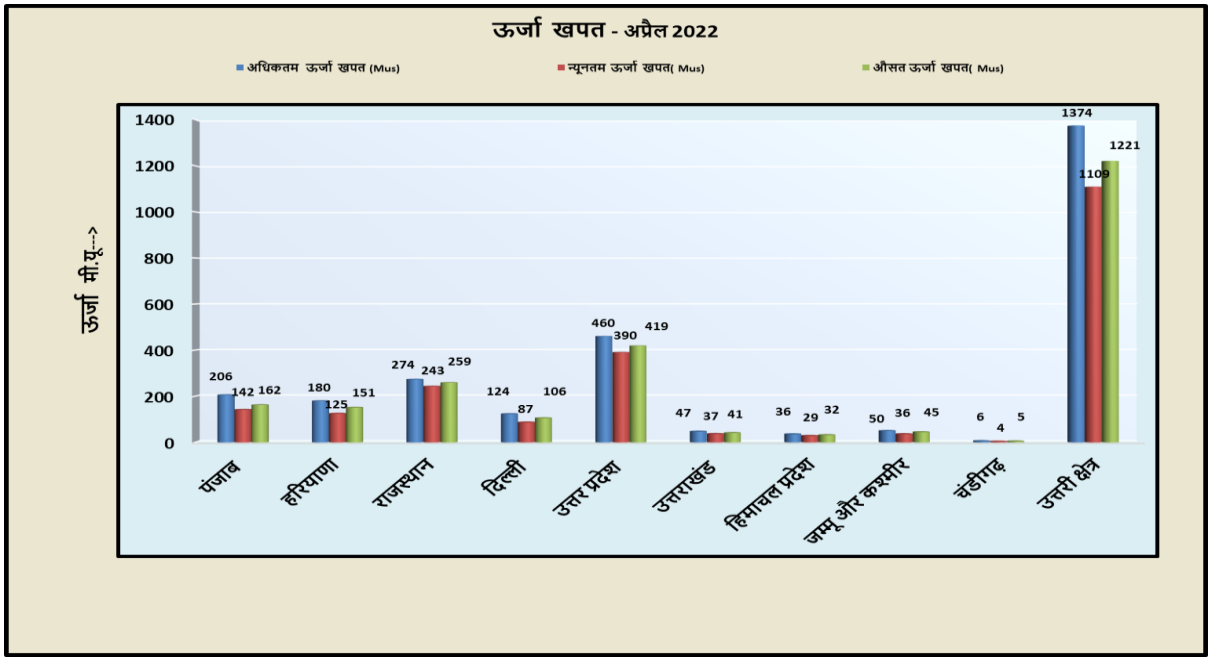
Maximum energy consumption of Northern Region was 1373.87 MUs on 30th April'22 and it was 24.08% higher than April' 2021 (1107.24 MUs 29th April'21)

Average energy consumption per day of Northern Region was 1220.52 MUs and it was 22.23% higher than April'21 (998.52 MUs per day)

Maximum Demand met of Northern Region was 62217 MW on 30th April'22 @12:00 hours (based on data submitted by Constituents) as compared to 51852 MW on 13th April'21 @20:00 hours

Northern Region all time high value recorded in April'22

	All Time High Record		**Previous Record (up to Mar-22)**	
	Value (MU)	**Achieved on**	**Value (MU)**	**Achieved on**
Solar Generation	**107.91**	**29.04.22**	**103.67**	**31.03.22**



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

क्षेत्र/राज्य	अप्रैल-2021	अप्रैल-2022	% अंतर
चंडीगढ़	3.51	4.888	39.13
दिल्ली	74.33	105.697	42.21
हिमाचल प्रदेश	28.13	32.148	14.30
हरियाणा	128.74	151.297	17.52
जम्मू और कश्मीर	52.41	44.880	-14.37
पंजाब	130.45	162.424	24.51
राजस्थान	213.73	258.943	21.16
उत्तराखंड	36.93	41.204	11.59
उत्तर प्रदेश	337.41	419.042	24.20
उत्तरी क्षेत्र	**998.52**	**1220.523**	**22.23**

Frequency Data Comparison

Month	Avg. Freq. (Hz)	Max. Freq. (Hz)	Min. Freq. (Hz)	<49.90 (% time)	49.90 – 50.05 (% time)	>50.05 (% time)
April'22	49.93	50.26	49.43	32.00	59.30	8.80
April'21	50.00	50.30	49.69	7.90	74.90	17.10

In Apr'22, frequency remained within IEGC band for only **59.30%** of the time. Large generation outage or any other contingency event, could result in further drop in

frequency and therefore, overdrawals below 49.90 Hz must be controlled quickly in order to keep system secure. All utilities are requested to follow all the measures described in subsequent agenda points.

All the concerned are requested to strictly take actions and avoid over drawal from Grid for safe & secure operation of the Grid. Therefore, the following is requested:

1. Managing the demand portfolio and making prearrangements for procurement of power and ensuring portfolio balancing through STOA/RTM market segments
2. More units shall be kept on bar in order to meet the increased demand safely as well as maintaining reserves
3. Keeping sufficient coal stock and maintaining adequate reserves.
4. Restricting deviations from schedule and ensuring no under injection by the generators from schedule.
5. Advance action is required for bringing the units on bar to avoid situation such as encountered in March/ April 2022.
6. Ensure that ADMS is in service and expedite its implementation if not commissioned.
7. Ensure healthiness and availability of AUFLS and df/dt load shedding.
8. In case of inadequate margins in intrastate generators measures for emergency load regulation measures may be taken in interest of grid security.
9. Pursue generators to expedite revival of thermal units under forced outage wherever feasible.

19. List of radial feeders for physical regulation

In view of continuous overdrawl by NR utilities, radial feeders are being opened as per NRLDC's instruction in real-time operation. Utilities have been requested number of times to update list of radial feeders which can be opened on the directions of NRLDC to regulate the demand. List of such radial feeders has been provided by respective utilities and is part of '*Operating Procedure of Northern Region*'. The same is being discussed number of times in OCC as well as NRPC meetings. The issue was also discussed in 193 and 194 OCC meeting.

Following are the attributes for such feeders:

- Feeders shall be radial in nature
- They should usually have substantial load flow so that reduction of drawal can be prominently noticed on opening of such lines.
- Such feeders are not part of any other scheme such as any SPS, UFR or df/dt actuated shedding

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

A meeting was organized by NRLDC on 06.05.2022 with participation from all SLDCs to review the list of feeders for physical regulation after most of the states had not submitted their feedback. Following is the updated status as per discussions held in the meeting.

List of feeders for physical regulation				
UP				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	220kV Meerut-Gajraula	Gajraula	100	Radial
2	220kV Baghpat(PG)-Baghpat D/C	Baghpat	60	Radial
3	220kV Allahabad(PG)-Jhusi	Jhusi	200	Radial
4	220kV Sohawal(PG)-Barabanki D/C	Barabanki	120	Radial
5	220kV Mainpuri(PG)-Neemkarori D/C	Farukkhabad	120	Radial
6	220kV Gorakhpur(PG)-Gola D/C	Gorakhpur	80	Radial
7	132kV Ballia(PG)-Bansdeeh	Ballia	15	Radial
8	132kV Ballia(PG)-Sikandarpur	Ballia	30	Radial
50 nos. 132kV feeders can also be opened from SLDC and testing was also carried out few days back at SLDC level				
Punjab				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	132kV Jamalpur-Ghulal D/C	Ghulal	91	High loading during paddy
2	66kV Jamalpur-Chandigarh Road	Chandigarh Road	37	To be preferred
3	66kV Jamalpur-Sherpur	Ludhiana	13	-
4	220/132kV Sangrur ICT 1,2, 3	Shamsabad	166	High loading during paddy
5	220kV Amritsar-Naraingarh D/C	Amritsar adjoining area	100	To be preferred
6	220kV Patiala-Nabha D/C	Nabha	190	To be opened after discussion with SLDC
7	220kV Jalandhar-Kanjli D/C	Kapurthala	64	To be preferred
120 nos. 66kV feeders may be tripped from SLDC control room to control overdrawl (usually when freq below 49.8Hz)				
Haryana				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	Feeders in schedule A	Panipat, Hisar, Jagadhari, Ballabgarh,	300	High loading during paddy
2	Feeders in schedule B		225	High loading during paddy

		Kurukshetra		
3	132kV Narela-Kundli	Rai-Sonepat	55	Radial
4	66kV Dhulkote-Babyal, 66kV Dhulkote-Ambala City 1 & 2	Ambala City	40	
5	66kV Samaypur-Globe Steel 1 & 2	Ballabgarh	40	Fed from 220kV A-5 Faridabad also
6	66kV Samaypur-A-5 Faridabad 1 & 2	Faridabad	55	Fed from 220kV A-5 Faridabad also
7	66kV Samaypur-Sohna 1 & 2	Sohna	25	Fed from Badshahpur and Tandu also
220/132kV, 220/66 kV ICTs at BBMB stations such Hissar, Ch. Dadri, Kurukshetra, Jagadri. Dhulkote, can be opened. However, many 132kV, 66 kV and below feeder are covered under Schedule A & B				
As informed by SLDC on 06.05.2022, Not many 132kV radial feeders are available for opening of physical regulation. SLDC Haryana representative stated that they shall study and share revised list for physical feeder opening. Moreover, details of some of the feeders tested remotely from Haryana SLDC would also be shared.				

Rajasthan

S. No.	Transmission line / Transformers to be opened	Power supply interruption	Approx load relief (MW)	Remark
1	220kV Anta-Lalsot	Lalsot	130	The load of 220 kV GSS Lalsot is normally fed from Anta radially. However, if ring of 220kV Anta-Lalsot-Dausa is closed then SLDC will open 220 kV Dausa – Lalsot line immediately after physical regulation message received from NRLDC.
2	220 kV Bhinmal (PG) – Sayla Ckt-I & II	Sayla	40	However, 220 kV GSS Sayla is also fed from 220 kV GSS Jalore. SLDC will open 220 kV Sayla – Jalore line immediately after physical regulation message received from NRLDC.
3	220 kV Bassi(PG) - Bagru line	Bagru	80	However, 220 kV GSS Bagru is also fed from 220 kV GSS Phulera. SLDC will open 220 kV Bagru – Phulera line immediately after physical regulation message received from NRLDC.
4	220kV Bhiwadi(PG)-Khushkera	Khushkhera & Kishangarh	170	Limited alternate supply may be available.

	220kV Neemrana(PG)-Khushkera	Bas		220kV Alwar-K.G.Bas - Khushkhera line may get overloaded.
5	220/132 kV, 160 MVA Transformer at 220kV GSS Behror	Behror	80	SLDC will open 220/132kV transformer of 220kV GSS Behror immediately after physical regulation message received from NRLDC.
J&K				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	220kV Kishanpur-Barn D/C	Baran	200	Radial feeder
2	220kV New Wampoh-Mirbazar	Mirbazar	200	Radial feeder
3	132kV Gladni-Kalakote S/C	Jammu	80	Priority 1
4	Kashmir Bemina	Kashmir	50	
5	132kV Barn-KalakoteD/C	Jammu	80	Priority 2
6	132kV Zainakote -Pattan D/C	Kashmir	70	
220kV Samba-Hiranagar may not be opened as it also supplies to Railways				
Uttarakhand				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	132kV Pithoragarh(PG)-Pithoragarh	Pithoragarh	50	Radial feeder
2	220kV Sitarganj- Eldeco	Eldeco	40-60	Industrial load (only in case of extreme situations)
No control available from SLDC control room for physical regulation. It was discussed that such feeders may be identified which are fed from two resources and will provide relief. Compiled list of such feeders after discussion at state level needs to be shared with NRLDC at the earliest. In case it is difficult to identify such feeders, contingency plan needs to be developed at SLDC level and shared with NRLDC.				
Himachal Pradesh				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	66kV Bhakra-Rakkar	Upernangal	200	Radial feeder
2	66kV Pong-Sansarpur	Mirbazar	200	Radial feeder
3	132kV Dehar-Kangoo	Kangoo	120	Priority 1
4	220kV Dehar-Kangoo			
5	220kV Nallagarh-Upernangal D/C	Baddi/ Nallagarh	180-315	Industrial load (only in case of extreme situations)
6	220kV Khodri-Majri D/C	Giri/ Solan	80-140	Limited supply may be

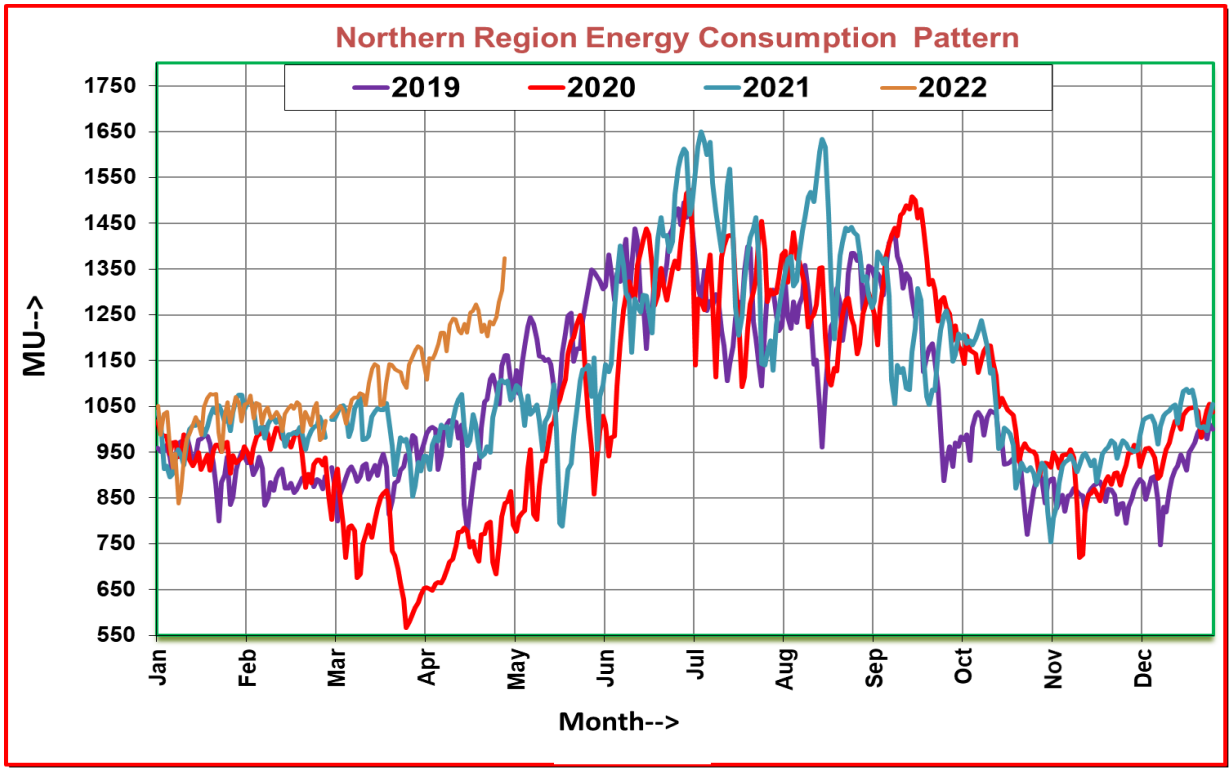
7	132kV Kulhal-Giri			available from Kunihar.Many essential loads, Oxygen plants, administrative buildings
8	66kV Parwanoo-Pinjore	Parwanoo	5-13	Generally kept open
9	33kV Ganguwal-Bilaspur	Bilaspur	6-8	33kV Bilaspur is also fed from 220kV Kangoo
Delhi				
S No	Name of Feeder	Affected area	Approx Load relief (MW)	Remarks
1	220kV Mundka-Peeragarhi D/C	Peeragarhi	100-150	Radial feeder
2	220kV BTPS-Okhla D/C	Okhla	200-350	Radial feeder
3	33kV Delhi ckts 1,2,3,4 feeders from Rohtak road (BBMB)	Rohtak Road	20-30	Radial feeder
4	220kV MaharaniBagh-Lodhi Road D/C	Lodi Road	200-300	May not be opened as VIP area
5	220kV Maharanibagh-Masjid Moth D/C	Masjid Moth		Radial feeder
Haryana, Punjab, Rajasthan and Uttarakhand representatives confirmed they have increased Ufr settings by 0.2Hz as per NPC meeting decision				

Concerned SLDCs are requested to provide the update as discussed in meeting held on 06.05.2022.

Members may like to discuss.

20. Summer preparedness 2022

As discussed in 193 & 194 OCC meeting, due to extreme weather conditions, high demand is observed during summer/monsoon months in Northern region. Along with high demand, high loadings of lines and transformers and low voltages especially at distribution level are big challenge to safe and secure grid operation.

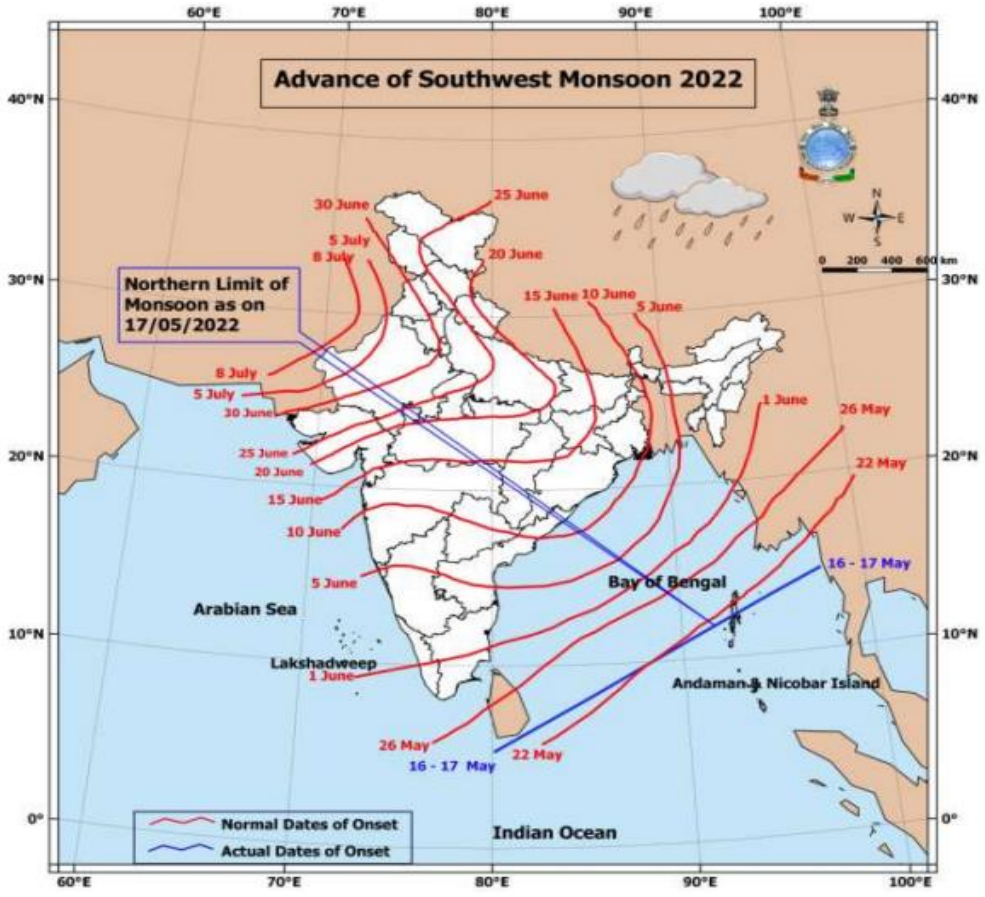


As per latest LGBR issued by NRPC, attached as **Annexure-B.I**, anticipated demand and energy consumption data it is clear that the upcoming months would be really challenging for Northern region. Some of the states such as Punjab, Haryana, Delhi, UP and Chandigarh may face issues in meeting the demand in safe manner. To overcome the commonly encountered challenges during summer months and ensuring smooth grid operation, following are few points which have been discussed on many occasions in previous OCC (recently in 193 & 194 OCC) and TCC/ NRPC meetings and are required to be followed by all:

- During summer, in anticipation of increasing demand, adequate reserves need to be maintained.
- All ISGS and state thermal generators need to back down upto 55% of their capacity, if required for scheduling purposes.
- Apart from portfolio management based on proper forecast, re-starting of units under reserve shutdown at state as well as Inter-state level through appropriate transactions is required.
- Update & sharing coal stock position of thermal plants at least a week in advance as agreed earlier in TCC/NRPC meeting.
- In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states are advised to maximize their internal generation to avoid low frequency/low voltage operation or other related issues
- Extra precautions need to be taken care for important lines which have history of tripping during thunderstorm/ windstorm. ERS availability to be ensured.
- To maintain the voltage profile of Grid within IEGC band during summer, following known actions are suggested:
  - Switching ON Capacitor/Switching OFF reactor as per system requirement

- Tap Optimization at 400/220kV by NRLDC and 220/132kV by respective state control area based on scatter plots of ICTs, offline studies, NRPC RE account etc.
- Dynamic reactive support from Generator as per their capability curve.
- SCADA Displays for better visualization during real-time

- All state control area/Users shall ensure before start of summer that their protection and defense system are in working conditions and settings are as per the recommendations of NRPC
- All are requested to ensure the telemetry of all analog & digital points of all stations at respective control centers.
- All utilities are requested to regularly monitor advance weather information related websites and take necessary actions accordingly. POSOCO-IMD website available @ http://14.139.247.5/power/NRLDC/main/MAIN.html can also be utilised for advance weather information. Live thunderstorm monitoring along with RADAR images are available at website. Press release issued by IMD dated 17.05.2022 is attached as **Annexure-B.II**.



All utilities are advised to take actions to ensure above mentioned measures are implemented and share their action plan for demand management during summer 2022.

Members may like to discuss.

21. Reactive power support in the grid

Tap position change

As discussed in last two OCC meetings, ICT Tap Optimization at 400kV & above to be carried out by NRLDC. Same exercise needs to be carried out by SLDCs at 220kV & below levels. Based on voltage data of April 2022, it is proposed to carry out tap change exercise at following 400/220kV nodes:

Decrease by 2 Steps

POWERGRID: Gorakhpur, Hamirpur, Kanpur, Kaithal, Patiala, Roorkee

BBMB: Panipat

UPPTCL: Sarnath (Varanasi)

Scatter plots for these stations are attached as **Annexure-B.III.**

SLDCs are also requested to provide the tap change exercise carried out by them or proposed to be carried out before winter.

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

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

Although SLDCs are uploading the hourly load shedding figures of the previous day on the web-based reporting software of NRLDC the next day, but reason for the shedding or unserved demand at any hour is not segregated into the possible different categories.

In 192nd OCC meeting, Delhi, J&K and Chandigarh SLDC representative were not available for comments. NRLDC representative expressed concern and stated all SLDCs should immediately take necessary actions as the same is pending since long. As discussed in last OCC meeting, Delhi SLDC should communicate with DISCOMs to timely furnish the data as the same further needs to be shared with MoP. Delhi SLDC was also asked to share their communication to DISCOMs with POSOCO and MoP for taking further actions if DISCOMs are not ready to timely share the details as per the format.

In 193rd OCC meeting, Delhi SLDC representative stated they have started sharing the load shedding details are required from 20th March 2022 onwards. However, due to delay in receiving the data from DISCOMs, there might be some delay in reporting the data to NRLDC.

In 194th OCC meeting, Delhi SLDC representative again highlighted that there is delay in receipt of information from DISCOMs. NRLDC and NRPC representatives expressed concern and stated that same status is being given since last 3-4 meetings and no improvement is seen in this regard. Separate meetings need to be organised

with DISCOMs and NRLDC and NRPC representatives would also join. Delhi SLDC representative agreed for the same.

Delhi has started sharing this data from May 2022 onwards. However, it is seen that some of the states such as J&K and Chandigarh are not sharing data. J&K and Chandigarh to provide update.

Members may like to discuss.

23. TTC/ATC of state control areas for summer 2022

From last several OCC meetings, it has been discussed that most of the NR states except J&K, Ladakh and Chandigarh U/Ts are sharing basecase and ATC/TTC assessment with NRLDC. It is observed that some states are still not regularly declaring the TTA/ATC for the import and export of power. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

SLDCs are requested to go through the tentative ATC/TTC limits for June 2022 (**Annexure-B.IV.a**) 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 observed above or close to N-1 contingency limits is also attached as **Annexure-B.IV.b**.

Punjab

In 194th OCC meeting, it was discussed that all these elements are expected before paddy 2022. Punjab SLDC has shared their ATC/TTC assessment with NRLDC on 30.03.2022. NRLDC vide their letter dated 25.04.2022 has agreed to the enhanced limits subject to full internal generation of Punjab and the commissioning of following transmission elements:

- Augmentation of 1 No. 315 MVA ICT with 500 MVA ICT at Ludhiana by shifting of 500 MVA ICT lying spare at Malerkotla to Ludhiana *(expected by May'2022).*
- Commissioning of new 500MVA ICT at Rajpura*(expected by May'2022)*.
- Augmentation of Kartarpur-Jalandhar PGCIL line with HTLS conductor to make 2 No. 315 MVA ICTs N-1 complaint at Nakodar. The loading of these ICTs to be controlled by shifting of Kartarpur load to Jalandhar PGCIL (presently running from Nakodar ICTs) (*(expected by May'2022*).

In the month of May 2022, when import by Punjab state control area was more than 6500MW, severe N-1 non-compliance was observed at 400/220kV Rajpura ICTs whereas loading was close to N-1 contingency limit at 400/220kV Nakodar ICTs. Punjab has implemented SPS at both these locations, but it is necessary to complete the works highlighted at s.no. 2 & 3 to ensure N-1 compliance at these stations.

Punjab SLDC is requested to provide update on the commissioning of these elements. In first week of June 2022, Punjab and NRLDC would assess the ATC/TTC limits as per the commissioning of above transmission elements and

would be enhanced to 8500/9000MW if all the said transmission elements are commissioned.

UP

UP SLDC had shared their assessment with NRLDC vide letter dated 31-03-2022.

Intra–State Generation(w/o Solar and Co-Gen)	TTC	RM	ATC
10000	15100	600	14500
11000	14400	600	13800
12000	13800	600	13200
13000	13300	600	12700

In 194 OCC meeting, it was discussed that:

- As per assessment done by NRLDC, the TTC computation pertaining to UP state control area seems to be in order. However, local load management would be required at Mau, Azamgarh, Nehtaur, Obra, Sarnath, Moradabad & Gorakhpur (UP) to arrive at these figures. Azamgarh ICTs should also be mentioned in the limiting constraints. Also, the actual load-generation scenario can change the TTC quantum based on the assumed local load distribution.
- UP SLDC was asked to share plan for load management at constained ICTs and also update on progress of underlying network at new stations such as 400/220kV Sambhal, Rasra, Sahupuri, Rampur, Jaunpur etc.

UP SLDC representative stated that 400/220kV Rasra substation is expected to be commissioned shortly. Many constrained ICTs are likely to be relieved with commissioning of Rasra substation. Moreover, revised ATC/TTC assessments along with load management plan would be shared shortly. It was also agreed that mock testing of SPS may be carried out before summer season as most of the constrained ICTs have SPS. SPS for 400/220kV Obra and Nehtaur substation would also be planned and commissioned before summer season

Subsequently, UP SLDC vide mail dated 16.05.2022 has shared their revised assessments as follows:

Intra–State Generation(w/o Solar and Co-Gen)	TTC	RM	ATC
11000	15100	600	14500
12000	14500	600	13900
13000	14000	600	13400

Limiting

Same is being examined at NRLDC end.

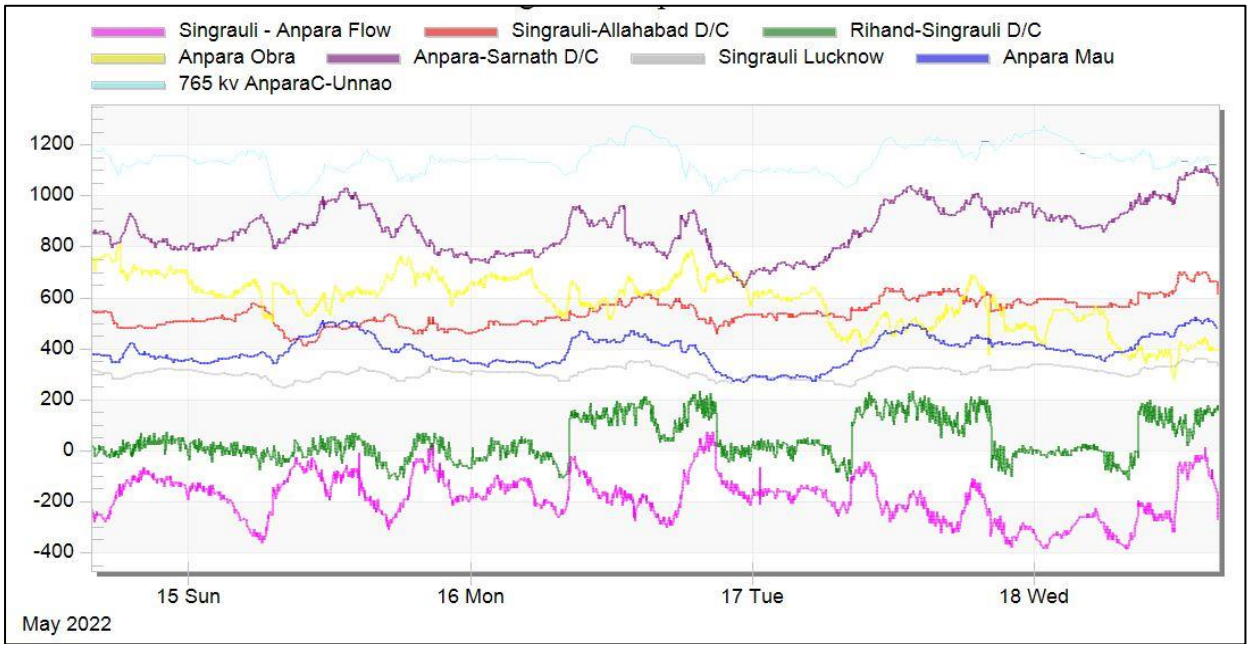
In the month of May 2022, when import of UP was in the range of 12000-12500MW, loadings close to N-1 limit were observed at 400/220kV Sarnath, Obra, Lucknow(PG), Sohawal and Allahabad(PG) ICTs.

UP SLDC representative is requested to provide the plan to ensure loadings at these 400/220kV ICTs below their N-1 contingency limits when load crosses 25000MW.

NR import is rising in the ongoing summer season, capability of inter-regional HVDC is utilised. It has been observed that whenever HVDC Vindhyachal is made towards NR, the constraint in form of loading of 400 kV Anpara-Obra takes place.

In the night hours around 2200 hours, the loading on 765 kV Vindhyachal-Varanasi is observed to be around 1700 MW/circuit. Under such conditions, operation of HVDC Vindhyachal towards NR is expected to relieve the loadings.

NRLDC/ NLDC is keeping HVDC towards WR even then high loading on 400 kV Anpara-Obra is being observed. Loading pattern is enclosed for reference.



Members may discuss plan to relieve loading on this line.

Rajasthan

Rajasthan SLDC has proposed SPS at 400/220kV Ajmer, Merta and Chittorgarh (Annexure-III of 194 OCC agenda).

In 194th OCC meeting, NRLDC representative stated following were comments from NRLDC side on the proposal:

- Ajmer: Proposed SPS seems to be in order in general as per NRLDC.
- Merta: 220/132kV Merta ICTs not shown in diagram.
- Chittorgarh: Other 220kV line may also need to be added as sought relief may not be provided.

Rajasthan representative agreed to look into the comments from NRLDC side. Rajasthan was given in-principal approval for implementation of SPS at 400/220kV Ajmer, Merta and Chittorgarh, expedite implementation of SPS, and share revised ATC/TTC assessment of Rajasthan state control area.

In the month of April-May 2022, severe N-1 non-compliance was observed at 400/220kV Ajmer, Chittorgarh, Merta, Bhinmal and Bikaner ICTs.

Rajasthan SLDC representative is requested to provide the plan to ensure loadings at these 400/220kV ICTs below their N-1 contingency limits and also status of implementation of SPS as agreed in last OCC meetings.

Delhi

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

In 194 OCC meeting, it was informed that works for Mundka ICT are in place and ICT is expected before 30th April 2022. It was informed that SPS has been implemented at 400/220kV Mundka ICTs.

NRLDC representative stated that SPS logic needs to be shared with NRLDC/ NRPC beforehand so that same can be discussed and approved in OCC/TCC/NRPC meeting before implementation.

DTL was asked to share the logic and mock-testing exercise & ATC/TTC assessment with NRLDC/ NRPC at the earliest. Moreover, Delhi SLDC should immediately start uploading their ATC/TTC limits on their website.

Delhi SLDC representative to provide update.

Haryana

In 194 OCC meeting, Haryana SLDC was asked to share the revised ATC/TTC limits for summer/monsoon 2022 along with anticipated generation scenario, basecase and reports with NRLDC at the earliest. Network arrangement for managing loading at Kurukshetra also needs to be shared. Haryana was also asked to expedite utilisation of underlying network at Bhiwani.

From the plot shown in Annexure, it can be seen that even at the import of nearly 7000MW, loading is above N-1 contingency limit at 400/220kV Deepalpur and near N-1 contingency limit at 400/220kV Panipat (BBMB) ICTs. Moreover, high loading of 220kV Sonepat-Mohana lines is also being observed in real-time.

Haryana SLDC to provide update.

HP and Uttarakhand have shared their ATC/TTC assessment for summer 2022.

J&K

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

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

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

Since demand of most of the NR states has started increasing sharply, it is requested that the revised ATC/TTC limits for summer2022 along with anticipated generation scenario may be shared with NRLDC at the earliest***.***

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.

Members may like to discuss.

24. Grid operation related issues

(i) Long outage of transmission elements/ generating units

Reasons and revival date for elements under long outage are being discussed regularly in OCC meetings. Any update on the status of these elements from last OCC meeting may be shared with the forum (**Annexure-B.V**).

All utilities are requested to make it a practice to update status of elements under long outage in the NRLDC outage software portal. Utilities are requested to take necessary actions to revive elements which are under long outage.

Following generating had 3 or more forced outages from 20Apr-18May 2022:

Unit Name	Number of forced outages
Auraiya GPS Unit3	11
Auraiya GPS Unit4	10
Anta GPS Unit1	9
Anta GPS Unit3	8
Auraiya GPS Unit1	7
Anta GPS Unit2	6
Suratgarh TPS Unit3	6
Dadri GPS Unit2	5
Suratgarh TPS Unit6	5

Dadri GPS Unit1	4
Guru Gobind Singh TPS (Ropar) Unit5	4
Auraiya GPS Unit2	3
Guru Hargobind Singh TPS (Lehra Mohabbat) Unit1	3
Harduaganj_Ext Unit1	3
Suratgarh TPS Unit4	3

Revival of following critical transmission elements needs to be expedited:

- 400/220 kV 240 MVA ICT 3 at Moradabad(UP)
- 765 KV ANPARA_D-UNNAO (UP) CKT-1
- 400 KV Kadarpur (GPTL) - Bus 1
- 220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1
- 220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1
- 400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)
- 400/220 kV 315 MVA ICT 1 at bhilwara(rs)
- 400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)
- 400KV Bus 1 at Vishnuprayag(JP)

Members may please discuss.

(ii) Information about new transmission elements/ generating units to be commissioned in next 45 days

In 176th OCC meeting, it was discussed that first time charging procedure is not being diligently followed by some entities. The documents are being submitted at the last minute and thereafter it is being urged to NRLDC to give the code for charging. In the meeting it was also requested that utilities should inform about elements expected for first time charging in the next one month in advance in OCC meeting. This information would be helpful in carrying out studies, SPS requirement/modification etc in time.

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

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

Members may like to discuss.

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

As discussed in the 6th TeST meeting all SLDCs shall maintain its own drawal calculation (alternate calculation based on the SLDC drawal points) for proper monitoring and SLDC also shall be responsible for calculation of its own drawl based on their drawal points at their respective feeders/ICTS. SLDC shall use its own calculated value of monitoring real-time drawal from the grid along with ISTS drawal

to ensure the correctness and corrective measures shall be taken accordingly. UP and Delhi are using their end calculation as primary calculation for monitoring of drawal whereas Rajasthan is entirely dependent on STU data.

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

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

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

Accordingly, an email was circulated to respective SLDCs on 10.12.2021. However, response from SLDCs is yet to be received.

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

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

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

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

HP SLDC vide their letter dated 8th March 2022 has intimated that:

- For calculation purpose, interstate drawl points have been mapped in SCADA from both ends keeping in view healthiness of communication media at both ends and other end has been mapped for redundancy, which seems to be more purposeful.
- DISCOMs of HP is in process of installation of new RTUs at 48no.s locations and providing fibre optic communication media on 66kV and above stations. It is anticipated that with these installations, reliability of SCADA data at various

drawl points shall be maintained. Till such time the work is completed, it is proposed to utilise the SCADA end data of other end for calculation purpose. The existing work of installation of RTUs and Fibre Optic is likely to be completed within three months as confirmed from HPSEBL.

SLDCs are requested to provide update on the agenda point.

Members may please discuss.

(iv) Update of Important grid element document in line with IEGC

In line with section 5.2. (c) of IEGC, list of important grid elements in Northern region would be compiled by NRLDC shortly. Such elements shall be opened/closed only on instructions from NRLDC. NRLDC has requested utilities to submit the list of all elements with details charged under their jurisdiction from 1.4.2020 till date including those expected to be commissioned till May 2021 so that the same could be included in the list vide email dated 23rd March 2022.

However, response from most of the utilities is still pending. It is requested to provide details before 30th April 2022. Last updated document is available at following link https://nrldc.in/download/nr-important-grid-elements-may-2021/?wpdmdl=9167. Any other feedback related to inclusion/deletion of elements may also be provided.

Utilities may provide update at the earliest.

25. Frequent forced outages of transmission elements in the month of Apr'22

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

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1	3	POWERGRID
2	765 KV Jhatikara-Aligarh (PG) Ckt-1	3	POWERGRID
3	400 KV Muktsar-Makhu (PS) Ckt-2	5	Punjab
4	400 KV Agra-Unnao (UP) Ckt-1	4	UP
5	400 KV Nakodar(PSG)-Makhu(PS) (PS) Ckt-1	3	Punjab
6	400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-2	3	POWERGRID/Haryana
7	400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1	3	PKTL/HP
8	400 KV Kanpur-Ballabhgarh (PG) Ckt-1	3	POWERGRID
9	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	3	UP
10	400 KV Obra_B-Rewa Road (UP) Ckt-1	3	UP
11	400 KV Panchkula(PG)-Panipat(BB) (PG) Ckt-1	3	POWERGRID/BBMB
12	400 KV Singrauli(NT)-Allahabad(PG) (PG) Ckt-1	3	POWERGRID/NTPC
13	220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4	7	AREPRL/AHEJ4L

	HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1		
14	220 KV Badarpur(NT)-Alwar MIA(RS) (RS) Ckt-1	5	Rajasthan/NTPC
15	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	5	Rajasthan/POWERGRID

The complete details are attached at **Annexure-B.VI**. 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 trippings and share the remedial measures taken/being taken in this respect.

Members may like to discuss.

26. Multiple element tripping events in Northern region in the month of Apr'22

A total of **15** grid events occurred in the month of Apr'22 of which **12** are of GD-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.VII.**

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 1960ms in the event of multiple element tripping at 400/220kV Harduaganj on 25-Apr-22 at 22:38hrs.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **4** events out of **15** grid events occurred in the month. In 4 number of events, fault signature couldn't be captured from PMU data.

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.

27. Details of tripping of Inter-Regional lines from Northern Region for Apr'22

A total of 6 inter-regional lines tripping occurred in the month of Apr'22. The list is attached at **Annexure-B.VIII.** 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.

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

The status of receipt of DR/EL and tripping report of utilities for the month of Apr'2022 is attached at **Annexure-B.IX**. 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 CPCC2, Delhi, Rajasthan and Himachal Pradesh in Apr'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.

29. Frequency response characteristic

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

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
1	20-Apr-22	15:47hrs	At 15:47 Hrs Dated 20th-April-2022, As reported, due to loss of evacuation paths at 400kV SEIL_P2, unit-1 and 2 of 660 MW capacity each at SEIL_P2 got tripped and resulted in Generation loss of 1270MW. Same figure is considered for FRC Calculation.	49.72	49.66	-0.06
2	26-Apr-22	10:08hrs	At 10:08 Hrs/26.04.22, due to internal flashover on C-Bus R-Ph isolator rotary of 400KV HVDC-2 Bay, bus bar protection operated on 400 KV Bus 1 and Bus 2 at Padghe(MSETCL) causing black out of 400/220 KV Padghe(MSETCL). 400/220 Padghe(MSETCL) ICTs	49.93	50.06	0.13

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	*Δf*
			were feeding 1694MW of load at the time of tripping. The same considered as load loss for FRC computation.			
3	29-Apr-22	11:51hrs	At 11:51 Hrs Dated 29th-April-2022, As reported, 400kV Pavagada-BPS-1 tripped on LL fault and Line-2 is already under outage on fault. Due to this all the lines at Bellary Pooling station(BPS) tripped and resulted in the loss of evacuation lines for the YTPS station as 400kV Jagalur SS also went in to black out. Consequently generation loss of around 1536 MW occurred at 400kV YSTPS(1036 MW) and 400kV Jindal(500 MW) and same is considered in FRC Calculation.	49.82	49.76	-0.06

Status of Data received till date:

Status of Field Data received of FRC of Grid event occurred at SEIL_P2 (Southern Region) at 15:47 Hrs on 20.04.2022			
Data Received from		Data Not Received from	
Singrauli NTPC	Tehri HEP	Uttarakhand	Rihand NTPC
Kawai (Adani)	Nathpa Jhakri	Punjab	APCPL Jhajjar
BBMB	NHPC	Delhi	Koteshwar
Rajasthan	Rosa(Reliance)	Haryana	Rampur HEP
Tanda(NTPC)	Unchhahar(NTPC)	UP	Dadri NTPC
HP			AD Hydro HEP
			Others

Status of Field Data received of FRC of Grid event occurred at Padghe (MSETCL, Western Region) at 10:08 Hrs on 26.04.2022			
Data Received from		Data Not Received from	
Singrauli NTPC	Koteshwar HEP	Uttarakhand	Rihand NTPC
Kawai (Adani)	Dadri NTPC	Punjab	APCPL Jhajjar
Rosa Reliance	Rajasthan	Delhi	Unchahar TPS
NHPC	BBMB	Haryana	Nathpa Jhakri HEP
HP		UP	Rampur HEP
			Others

Status of Field Data received of FRC of Grid event occurred at YSTPS (Southern Region) at 11:51 Hrs on 29.04.2022			
Data Received from		Data Not Received from	
Singrauli NTPC	Nathpa Jhakri	Uttarakhand	Rihand NTPC
AD hydro	NHPC	Punjab	APCPL Jhajjar
Koteshwar	Rosa(Reliance)	Delhi	Rampur HEP
Tanda NTPC	Dadri (NTPC)	Haryana	Others
HP		UP	
		Rajasthan	

PFR as per NRLDC SCADA data and generators field data:

Primary Frequency Response by Generators during Grid Event at SEIL_P2 (Southern Region) at 15:47 Hrs on 20.04.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	Dehar BBMB	39%	25.1%	Unsatisfactory PFR Response
2	Bhakra BBMB	-1%	3.65%	
3	Kawai (Adani) Unit-1	Suspected SCADA data	101.9%	Satisfactory PFR Response
4	Kawai (Adani) Unit-2		0%	As reported, there is some issue in valve. Same will be resolved during over hauling.
5	Rosa TPS Unit-1,2,3,4,5&6	21%	0%	No response
6	Nathpa Jhakri Unit-2	120%	117.5%	Satisfactory PFR Response
7	Nathpa Jhakri Unit-4		110.7%	
8	Singrauli Unit-6	29%	19%	Unsatisfactory PFR Response
9	Singrauli Unit-7		39%	
10	Chamera I	31%	128%	Satisfactory PFR Response
11	Kalisindh TPS Unit-1	Suspected SCADA data	61%	Unsatisfactory PFR Response
11	Tehri Unit-1	58%	77%	Satisfactory PFR Response
13	Unchhahar Unit-1	29%	15.2%	Unsatisfactory PFR Response
14	Unchhahar Unit-2		34%	
15	Unchhahar Unit-3		20%	
16	Unchhahar Unit-4		12.3%	
17	Unchhahar Unit-5		15.8%	
18	Unchhahar Unit-6		40%	

Primary Frequency Response by Generators during Grid Event at Padghe (MSETCL, Western Region) at 10:08 Hrs on 26.04.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	Dehar BBMB	-7%	-13%	No Response
2	Bhakra BBMB	0%	0%	
3	Kawai (Adani) Unit-1	17%	35%	Unsatisfactory PFR Response
4	Kawai (Adani) Unit-2		-1%	As reported, there is some issue in valve. Same will be resolved during over hauling.
5	Rosa TPS Unit-1,2,3,4,5&6	-3%	0%	No response
6	Singrauli Unit-6	3%	20%	Unsatisfactory PFR Response
7	Singrauli Unit-7		7.4%	
8	Koteshwar Unit-4	0%	19%	Unsatisfactory PFR Response
9	Dadri TPS Unit-1	0%	27.22%	Unsatisfactory/Poor PFR Response
10	Dadri TPS Unit-2		3%	
11	Dadri TPS Unit-3		11%	
12	Dadri TPS Unit-4		0%	
13	Dadri TPS Unit-5		-11%	
14	Dadri TPS Unit-6		-9%	

Primary Frequency Response by Generators during Grid Event at YSTPS (Southern Region) at 11:51 Hrs on 29.04.2022

Sr. No	Generating stations	FRC as per NRLDC SCADA data (in %)	FRC as per generator data (in %)	Response category/Remark
1	**Nathpa Jhakri Unit-4**	123%	122%	Satisfactory PFR Response
2	**Chamera III**	162%	158.3%	Satisfactory PFR Response
3	**Dhauliganga HEP**	0%	13.21%	Unsatisfactory PFR Response
4	**Singrauli Unit-6**	24%	-11%	Poor Response
5	**Singrauli Unit-7**		49%	Unsatisfactory PFR Response
6	**Koteshwar Unit-4**	Suspected SCADA Data	19%	Unsatisfactory PFR Response

Characteristics of PFR of few of generating units is attached at **Annexure-B.X**.

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

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

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

In last 14 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.XI.**

It may be noted that Tehri HEP conducted PSS tuning/ Step response test of their units and submitted report. In UP Control area, Step response test of Rosa Unit#1 & Unit#4 done on 5th Oct, 2021, test of Lalitpur Unit#2 on 30th March 2021, unit#1 on 23rd February, 2022 & Unit#3 on 15th January 2022. Step response test of Bara Unit#2 done on 1st February, 2022, Anpara A unit#1 & Unit#2 done on 27th September, 2021, Harduaganj Unit#7 & Unit#9 done on 16th July, 2021.

In Rajasthan control area, Step response test of Unit#1, 3, 4, 5&6 of STPS, Suratgarh carried out on 05.02.22, 06.02.22 & 14.03.22 and step response test of Generators of Unit #1, 2,3,4,6 & 7 of KTPS, Kota carried out during the period 02.03.22 to 04.03.22.

Schedule has been received from Rajasthan and UP Control area. However, no further updates have been received from other utilities till date.

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

In 194th OCC meeting, 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 call for detail discussion on this matter.

Members may kindly discuss.

31. RE Issues in Rajasthan

In Northern region, at present, there are 3 major ISTS pooling station in Rajasthan from where bulk of RE energy (majority is solar generation) is being evacuated.

For registration and first-time charging (FTC) for RE at respective RLDC, POSOCO has formulated a procedure based on various regulations, procedure and guideline of CEA, CERC, MoP etc. and same is available on RLDC website. Based on this procedure, each RE has to ensure the compliances regarding protections, voltage, frequency limits, reactive power capabilities, power quality/harmonics etc. at point of interconnection (PoI). Various data, certificates and undertakings are being submitted by RE developers in order to meet the CEA and other necessary compliances. NRLDC is facilitating smooth integration of RE assuming all the data submitted by RE developers is correct as on field.

Recently in Jan-Feb'22, various trippings were experienced at 765/400/200 kV Fatehgarh-II pooling station.

Based on data and observation, NRLDC communicated vide letter reference no. (NRLDC\ RES\TS-108\06 dated 15th Feb'22, NRLDC\ RES\TS-108 dated 15th Feb' 22, NRLDC\ RES\TS-108\146 dated 25th Feb'22, NRLDC\ RES\TS-108\07 dated 15th Feb'22 and NRLDC\ RES\TS-108\04 dated 15th Feb'22) to all RE pooling at Fatehgarh-II regarding non-operation of HVRT at their stations during tripping in Jan-Feb'22.

Following are the observations:

1. **Observation of Non-compliance of RE Generation w.r.t. CEA technical standards**

a. High Voltage Ride Through (HVRT) non-compliance by RE Generators at interconnection point:

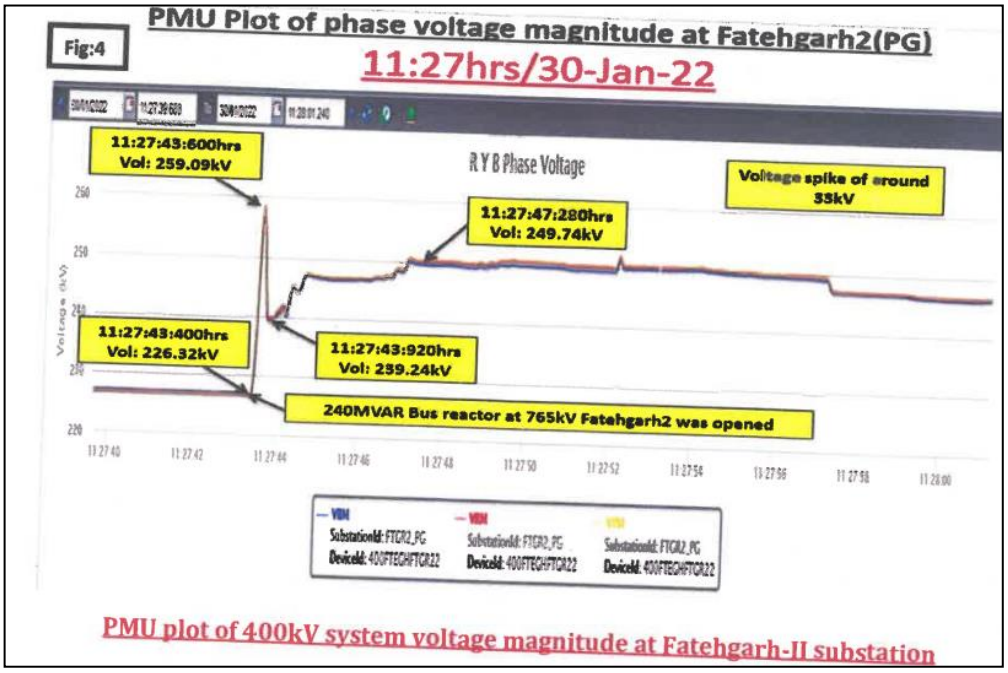
As per the CEA Regulation. "The generating station (Invertor based) connected to the grid, shall remain connected to the grid when the voltage at the interconnection point, on any or all phases (symmetrical or asymmetrical overvoltage condition) rises above the specified values given below for specified time."

High Voltage Ride Through (HVRT)

Over voltage (p.u.)	Minimum time to remain connected (Seconds)
1.30 < V	0 Sec (Instantaneous trip)
1.30 ≥ V > 1.20	0.2 Sec
1.20 ≥ V >1.10	2 Sec
V ≤ 1.10	Continuous

In recent tripping of Jan & Feb 2022, it has been experienced that voltage at interconnection point was less than 1.1.p.u. (as per PMU data) and as per the HVRT compliance, there should not be any disconnection of solar generation. However, in all the events, partial or large number of solar generation loss occurred due to non-compliance of HVRT as one of the main reasons. For example, in one of the event dated 11th Feb'22 during opening/switching of 765kV, 240 MVAr Bus reactor at Fatehgarh-II PS (to manage voltage during peak solar in day time), a sudden voltage spike of about 33kV was observed from PMU data. As per the data available at NRLDC and data shared by respective stations during this event, following are interpreted:

- As per CEA regulation, the solar generating station must remain connected to the grid upto 1.1 pu voltage level i.e. 242 kV in case of 220kV voltage bus. As per the disturbance records (DR) of Fatehgarh-II PS and other data, it seems that the solar/wind generators are not riding through the high voltage condition i.e. non – complaint to HVRT guidelines.
- In addition, at some of the stations, solar generators were disconnected from the system due to pessimistic low overvoltage settings at their end in 220 kV lines connecting the generators to ISTS (POWERGRID).
- Due to such 220kV line tripping and then consequent tripping of 220/33kV Transformers further aggravate the high voltage resulted in solar generation loss.
- During the incident, due to voltage rise, overvoltage protection operated in 765 kV Fatehgarh-II – Bhadla-II ckt-I and 400 kV Fatehgarh-II Fatehgarh-I (Adani) Ckt-I
- 765 kV Fatehgarh-II – Bhadla-II ckt-I: Voltage rise upto 825kV (Tripped on OV from Fatehgarh-2 (PG) end.
- 400kV Fatehgarh-II – Fatehgarh-I(Adani) Ckt-I: Voltage rise upto 432kV (Tripped on OV from Fatehgarh-I(Adani) end and DT received at Fatehgarh-II(PG) end



Based on the event analysis, RE generators are advised to review their protection settings so as to comply with HVRT requirement. NRLDC has communicated through email/letter to all RE for detail analysis and data sharing at Inverter and PPC end. Some of the RE generators shared the preliminary observations and analysis however, inverter level data has not been completely shared by any RE.

The modelling data submitted by REs at point of registration and first-time charging, is showing the HVRT & LVRT compliances which is in contradiction with real time events. In view of the above, off-line models also need to retune/corrected as per actual field data.

In this regard, Working Group consisting of CEA, CTU, POSOCO, SECI recommended the following:

The RE developer shall submit the final validated plant model with existing implemented settings within 03 months of commissioning of all such additional equipment/parameter tuning/setting changes.

For active power/frequency control & reactive power/voltage control, reactive power capability, and power quality this model shall be validated through field measurements/on-site testing. Further, for LVRT and HVRT, the model shall be validated preferably against field test results. In case the same is not possible within prescribed time-frame, the plant model shall be validated against grid event, if any, after complete plant commissioning and same shall be included in the validation reports.

RE developer may submit the final validated model from the plant end with existing setting of Controller/Inverter before 10th June 2022.

b. Dynamic varying Reactive power support in power factor range of +/- 0.95 lag and lead

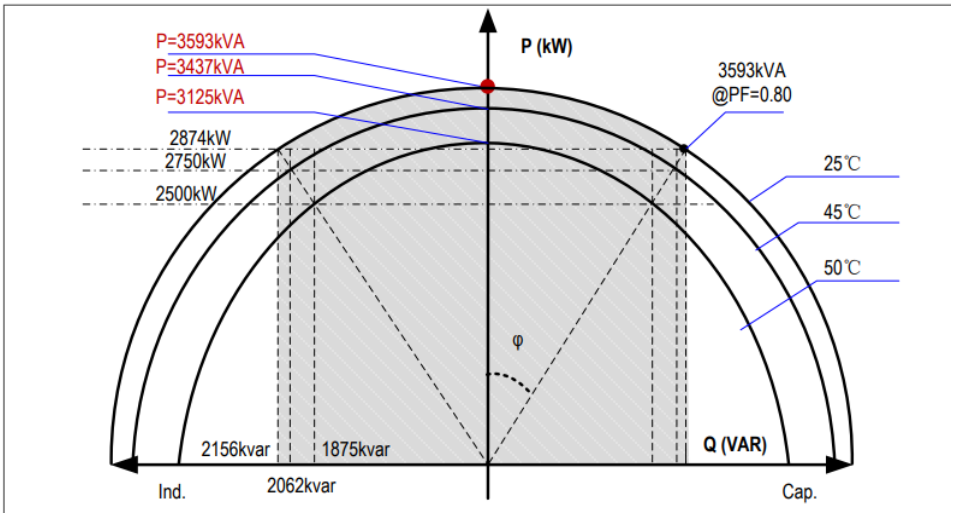
RE generators are required to meet CEA (Technical standard for connectivity to the grid) regulation for supplying dynamically varying reactive power support so as to maintain power factor within limits of 0.95 lagging to 0.95 leading.

Working Group consisting of CEA, CTU, POSOCO, SECI has also clarified that the RE generator should be able to demonstrate reactive power capability to operate at least up to 'V-curve' boundaries (0.95lag/lead level at the POI/PCC).

RE power is injected at unity power factor and generally **no reactive power support is available from solar generator bus at PCC/ISTS point**.

At the time of registration and FTC, RE generators are submitting the reactive power capability of inverter at different design temperatures. Typical graph of capability curve of one of the invertor of 3.125 MVA @50ºC is shown below. The shaded area in the figure below shows the inverter's P-Q capability. So, RE plant are registering the installed capacity as 3.125 MW (considering unity power factor in design itself at invertor terminal). For example, 300 MW plant comprising of this invertor model would have 96 invertor.

Thus, if plant is generating at its peak i.e. at rated installed capacity of 300 MW, solar generator are operating at unity power factor and the station is operating at leading MVAr i.e. drawing MVAr from the grid during peak generation scenario. The reactive power requirement from the invertor terminal to Invertor duty transformer (600V to 33kV), 33kV cables, 33/220kV ICTs, 220kV lines to pooling station would be drawn by grid only.



Qmax : +2156Kvar, when the power factor is +0.8, at 25°C;
Qmin : -2156Kvar, when the power factor is -0.8, at 25°C;

As per CEA guideline, this generator of 300 MW should be capable of providing reactive power in the range of 33% (based on 0.95 power factor) of active power in both lag & lead at rated installed capacity i.e. ~ 90 MVAr (0.9373 MVAr per invertor) at POI not at invertor terminal irrespective of temperature.

Following are the major operational issues:

i. Except winter, temperature in Rajasthan used to be greater than 40ºC during day time. Thus, in design itself, RE invertor /generator don't have reactive capability at higher temperature at rated peak generation.

ii. As the temperature in Rajasthan area has already above 45^{o}C, it is understood that reactive support margin (as required in line with CEA regulation) would reduce considerably. In such scenario, RE solar would mostly dependent on grid which would further aggravate the situation as there is no reactive margin left under any N-1 non-compliance at EHV pooling stations.

iii. During rated or maximum power generation only, reactive power drawn from the grid increases. All RE generators are advised to operate in voltage control mode however, most of the time invertor operating at unity power factor and plant as leading mode. After continuous follow up by NRLDC for voltage control mode, it has been observed that adequate reactive support is not available at hour of need.

iv. All RE solar usually draw reactive power during peak solar generation causing the low voltage at pooling station and any switching/tripping during such scenario are leading to inadvertent tripping/voltage fluctuations.

v. In Jan/Feb'22, there were numbers of tripping and solar generation loss in Rajasthan RE ISTS pooling stations, and it has been observed from the submitted data that inadequate reactive support attributes to such events.

In view of above, it is evident that adequate reactive support is required for normal operation as well as for stability under any switching/contingency. Insufficient reactive support/margin during design itself are imposing operational challenges. As such inverters would scale up in upcoming times, present experiences necessitates timely action of reactive planning (design temperature, LVRT/HVRT compliance, dynamic varying reactive power capability at 0.95 p.f at all points) for upcoming inverter (Inverters should have high capabilities for reactive support) integrating into the grid.

c. Injection of harmonics by wind/solar generators at injection point (Agenda by Power grid):

CEA Grid Standards stipulates a limit of current harmonic injections from RE plants as per IEEE 519 which is THD (Total Harmonic Distortion) of 1.5% and between 0.025% to 1% for individual harmonics.

Table 4—Current distortion limits for systems rated > 161 kV

Maximum harmonic current distortion in percent of I_L						
Individual harmonic order (odd harmonics)[a, b]						
I_{sc}/I_L	$3 \le h < 11$	$11 \le h < 17$	$17 \le h < 23$	$23 \le h < 35$	$35 \le h \le 50$	TDD
< 25[c]	1.0	0.5	0.38	0.15	0.1	1.5
$25 < 50$	2.0	1.0	0.75	0.3	0.15	2.5
≥ 50	3.0	1.5	1.15	0.45	0.22	3.75

[a]Even harmonics are limited to 25% of the odd harmonic limits above.

[b]Current distortions that result in a dc offset, e.g., half-wave converters, are not allowed.

[c]All power generation equipment is limited to these values of current distortion, regardless of actual I_{sc}/I_L.

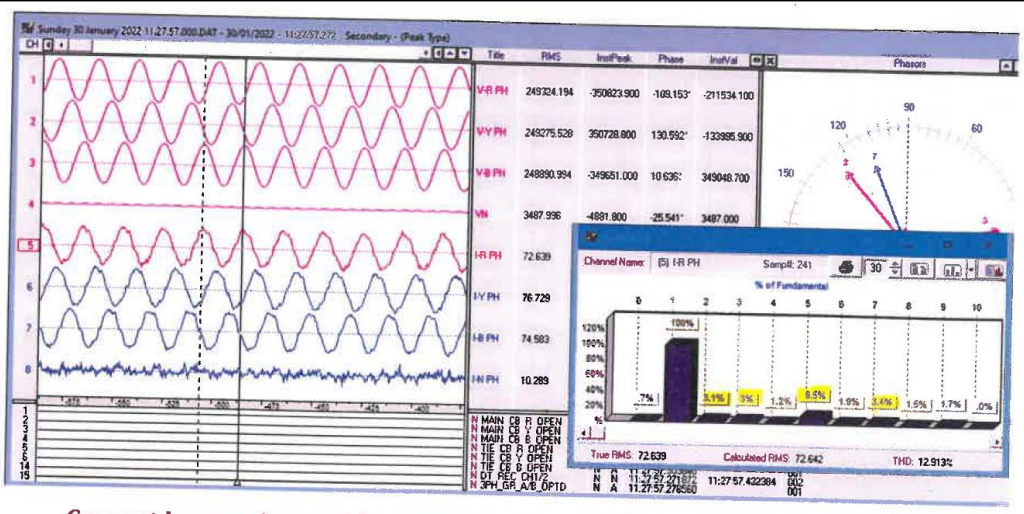
where

I_{sc} = maximum short-circuit current at PCC

I_L = maximum demand load current (fundamental frequency component) at the PCC under normal load operating conditions

The voltage generated by the wind and solar power sources contain harmonic content, which gets injected in the grid.

On analysis of the voltage and current data of Fatehgarh 1- Adani line, POWERGRID has observed that the individual harmonics are ranging in 3% to 9% as against the limit of 0.025% to 1% mentioned in the Standard. THD is around 7-13% as against the limit of 1.5%.



Current harmonics seen in 400kV Fatehgarh-1(Adani) Solar Generator

As per CEA technical Standards for connectivity to the Grid-2007 as amended, measurement of harmonic content, DC injection and flicker shall be done at least once in a year in presence of the parties concerned. However, no RE Generator has provided any such measurement report to CTU. Standard methodology may be taken into consideration for the measurement.

NRDLC has also requested to all RE to submit the CEA compliances regarding harmonic vide letter dated 13.04.2022.

d. Issues related to wrong settings kept in 220kV lines and 220/33kV kV ICTs:

In various tripping events it was also found that wrong setting were kept in 220kV lines and 220/33kV kV ICTs, a brief of tripping due to maloperation of any protection are as below:

- On 23rd Jan'22, EDEN solar tripped due to wrong over voltage setting in its 220kV line, NRLDC intimated and recommended to disable unnecessary over voltage setting of 220kV line.
- On 23rd, 25th & 29th Jan'22 Ayaana Solar power Pvt. Ltd. tripped due to maloperation of over current protection operation, later over current Protection was disabled.
- Several events occurred due to overvoltage tripping 220/33kV ICTs occurred in Adani and Renew plants.

On 14th Feb'22, NRLDC communicated to all the RE plants pooling at Fatehgarh-II(PG) to review the overvoltage settings of 220kV lines, 220/33kV ICTs and 33kV feeders and recommended to disable unnecessary settings as per RPC approved protection philosophy. After several follow up, protection settings were corrected and confirmed by Renew Sunwave Pvt. Ltd., Renew Sunbright Pvt. Ltd., RSUPL, and RSEJ3PL. However corrective actions taken by Adani Hybrid Plants (AHEJOL, AHEJ3L & AHEJ3L) and Eden Solar Power Pvt. Ltd. are yet to be confirmed.

Protection coordination and settings of all the lines/ICTs/IDTs and other elements of Plants are very important for secure evacuation of generation and to avoid any unwanted tripping. All RE plants are requested to submit the correct (Field implemented settings) at the time of FTC and before changing any setting in the filed kindly intimate the NRLDC/NRPC to get it reviewed.

e. Difference between response of model submitted and Actual response of Plant during event:

It has been observed that response of plants in real-time during events are not matching with the simulated response of Plant PSSE model submitted at the time of Registration. NRLDC communicated regarding this vide letter Ref no: NRLDC\ RES\TS-108\ dated 15th Feb'22 to Adani Hybrids Plants (AHEJOL, AHEJ3L & AHEJ3L) and vide letter Ref no: NRLDC\ RES\TS-108\04 dated 15th Feb'22 to Renew Plants (RSWPL, RSEJ3PL, RSBPL, RSUPL).

All RE plants are requested to submit the final validated plant model after tuning the model as per existing implemented settings of Controllers and Inverters at site.

Members may kindly discuss.

32. Review of Transmission Planning criteria for RE (N-0) to N-1 (Agenda by POWERGRID)

Continuous overloading of 400/220 kV Transformers at Bhadla in early stage of substation: The ICT in Bhadla substation generally run under full load

condition. In the initial period after commissioning (2019) the 03 ICTs (approx. 1470 MW) were running in overloaded condition. Sometimes, the loading went upto 110% loading with all fans & pumps operational. A sample datapoint for loading is exhibited below.

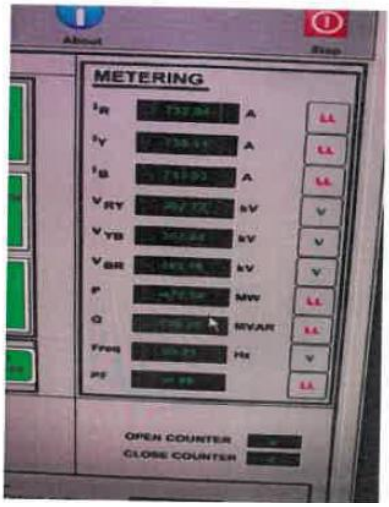
Loading pattern in one of the 500MVA (approx 490 MW*) ICT At Bhadla on 15-09-2020

Active Power(P) – 480MW

Reactive Power – 139 MVAr

HV side Current- 733 A

Power factor- -0.98



On 22/11/2020 the 3 Nos ICTs were carrying approximately 1200 MW, incidentally ICT-II tripped and remaining ICTs carried load of about 600 MW each (more than 120% overload) for more than 02 hours.

After this incident, rise in fault gasses were observed in ICT-I and ICT-III.

Dissolved gas analysis data of affected ICT-I and ICT-III is mentioned below:

Date	ICT	Gas Content									NEI (kJ/kL)	
		H2	CH4	C2H2	C2H4	C2H6	CO	CO2	CO2/CO	O2/N2	Oil	Paper
02/12/20	ICT-I	131	165	4.3	289	45	320	1118	3.49	0.16	2.16	2.96
16/11/20		68	06	0.9	146	27	332	1210	3.64	0.17	1.14	3.13
23/11/20	ICT-III	133	16	0	8	4	266	1187	4.46	0.14	0.11	2.8
22/08/20		90	13	0	7	3	254	1505	5.93	0.06	0.09	3.18

In Fatehgarh-II PS also similar loading levels are observed on 5 nos. 500 MVA ICTs. The overloading of transformers, variations in their loading throughout the day and heating/cooling cycle do affect the life of the transformer in the long run.

Therefore, it is proposed that high RE capacity substations must have N-1 compliance at 400/220 kV level i.e. Fatehgarh-II (both sections) / Fatehgarh-III PS, Bhadla-II PS etc. for which revised transmission planning criteria must have suitable provisions.

POSOCO has always advocating the N-1 compliance of ICTs, lines for evacuation of bulk RE power reliably and safely.

In addition, bus sectionalization at pooling station should have arrangements such that sharing on ICTs loading on each bus remain commensurate with underlying RE connected generation and ICTs on each bus should be N-1 compliant.

Recently, in NR, it has been observed that at 765/400/220kV Bhadla, bus sectionalization couldn't be utilized because of unequal sharing of load amongst ICTs. NRLDC has highlighted this issue vide NRLDC letter dated 26th April 2022 to CTU/CEA/PGCIL/NRPC.

Members may kindly discuss.

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:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Mar-2022
◎ HARYANA — Aug-2021
◎ HP — Jan-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Aug-2021
◎ RAJASTHAN — Mar-2022
◎ UP — Mar-2022
◎ UTTARAKHAND — Mar-2022
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:
◎ CHANDIGARH — Not Available
◎ DELHI — Mar-2022
◎ HARYANA — Mar-2022
◎ HP — Apr-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Mar-2022
◎ RAJASTHAN — Dec-2021
◎ UP — Dec-2021
◎ UTTARAKHAND — Mar-2022
◎ BBMB — Mar-2022
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:
◎ CHANDIGARH — Not Available
◎ DELHI — Not increased
◎ HARYANA — Increased
◎ HP — Not increased
◎ J&K and LADAKH — Not increased
◎ PUNJAB — Not increased</td></tr>
</table>

			◎	RAJASTHAN	Not increased
			◎	UP	Not increased
			◎	UTTARAKHAND*	Not increased
			◎	BBMB	Not increased
			All States/UTs are 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	Mar-2022
			◎	PUNJAB	Apr-2022
			◎	RAJASTHAN	May-2022
			◎	UP	Mar-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	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: July 2022 (90% supplies received from GE and rest is expected by Feb'22)
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection (delay due to pending supply of reactor bushings). GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under stage inspection (delay due to pending supply of rector bushings). GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Tender has been invited in first week of Jan'22.

xi	RAJASTHAN	Akal	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. 2nd instalment has been received on dt. 30.07.2021. The erection work of 3 Reactors is under progress and shall be commissioned by 30.06.2022.
xii	RAJASTHAN	Bikaner	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. 2nd instalment has been received on dt. 30.07.2021. The erection work of 3 Reactors is under progress and shall be commissioned by 30.06.2022.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	LOA placed on dt. 4.1.2021. Agreement signed on dt. 8.02.2021. 2nd instalment has been received on dt. 30.07.2021. The erection work of 3 Reactors is under progress and shall be commissioned by 30.06.2022.
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: 3 Unutilized: 3 (2 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	-	UPPTCL to update the status.
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG) – under commissioning	21.02.2022	Updated in 192nd OCC by UPPTCL.
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	Mar'22	Updated in 192nd 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: 4 Unutilized: 4	• 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.	-	RRVPNL to update the status.
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	-	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	-	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	-	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	-	HVPNL to update the status.
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	Jan'23	Updated in 192nd OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• 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.	-	HVPNL to update the status.
				• 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	-	HVPNL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	-	HVPNL to update the status.
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	HVPNL to update the status.
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status.
				• 220kV D/C for Sector78, Faridabad	-	HVPNL to update the status.
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	Jul'22	Updated in 192nd OCC
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)	Oct'22	In Tendering stage as updated in 192nd OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	RVPNL to update the status.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	-	PSTCL to update the status.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	-	PTCUL to update the status.
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	UPPTCL to update the status.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	-	UPPTCL to update the status.
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 4 bays	-	UPPTCL to update the status.
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	May'22	Updated in 194th OCC by HVPNL
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	-	PSTCL to update the status.
				• 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)	-	PSTCL to update the status.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	·• Bagpat - Modipuram 220kV D/c line	-	UPPTCL to update the status.
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.		HVPNL to update the status.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:6 Unutilized: 2	• Network to be planned for 2 bays.	-	RVPNL to update the status.
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 6	• Sohawal - Barabanki 220kV D/c line	-	UPPTCL to update the status.
				• Sohawal - New Tanda 220kV D/c line	-	UPPTCL to update the status.
				• Network to be planned for 2 bays	-	UPPTCL to update the status.
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	-	HVPNL to update the status
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	-	UPPTCL to update the status
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	-	PSTCL to update the status
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	-	HPPTCL to update the status
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	-	UPPTCL to update the status
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	-	PSTCL to update the status

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
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (21.03.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (12.04.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (06.05.2022)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (15.02.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (15.02.2022)
ANPARA-C TPS

HGPCL (21.03.2022)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (15.02.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (15.02.2022)
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: 31-12-2022), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022)

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2024), LALITPUR TPS U#2 (Target: 30-09-2024), LALITPUR TPS U#3 (Target: 30-06-2024)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-10-2024), PRAYAGRAJ TPP U#2 (Target: 31-10-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-12-2024), ROSA TPP Ph-I U#4 (Target: 31-12-2024)
RRVUNL	KOTA TPS U#5 (Target: 31-12-2022), KOTA TPS U#6 (Target: 31-12-2022), KOTA TPS U#7 (Target: 31-12-2022), SURATGARH TPS U#1 (Target: 31-12-2024), SURATGARH TPS U#2 (Target: 31-12-2024), SURATGARH TPS U#3 (Target: 31-12-2024), SURATGARH TPS U#4 (Target: 31-12-2024), SURATGARH TPS U#5 (Target: 31-12-2024), SURATGARH TPS U#6 (Target: 31-12-2024), SURATGARH SCTPS U#7 (Target: 31-12-2024), SURATGARH SCTPS U#8 (Target: 31-12-2024), CHHABRA TPP U#1 (Target: 31-12-2024), CHHABRA TPP U#2 (Target: 31-12-2024), CHHABRA TPP U#3 (Target: 31-12-2024), CHHABRA TPP U#4 (Target: 31-12-2024), CHHABRA SCPP U#5 (Target: 31-12-2024), CHHABRA SCPP U#6 (Target: 31-12-2024), KALISINDH TPS U#1 (Target: 31-12-2024), KALISINDH TPS U#2 (Target: 31-12-2024)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2023), 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.
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 / Not 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	UP has got offer from CPRI for study. The estimated time of study is 5 months from date of acceptance.		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Newly Proposed	UP has got offer from CPRI for study. The estimated time of study is 5 months from date of acceptance.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Newly Proposed	Visit of Rajasthan officials at NRLDC is awaited for finalization of feasibility study.	RVPN will propose to avail PSDF funding	-		-	-	-	-	-	-	-	-
4	Patiala-Nabha Power Rajpura IS	Punjab	Newly Proposed	Punjab has sent the offer to CPRI for study of Islanding Schemes. CPRI has asked for PSSE file for dynamic study which is being coordinated with NRLDC. Timeline: 6 months for implementation after CPRI study.		-		-	-	-	-	-	-	-	-
5	Pathankot-RSD IS	Punjab	Newly Proposed	Punjab has sent the offer to CPRI for study of Islanding Schemes. CPRI has asked for PSSE file for dynamic study which is being coordinated with NRLDC. Timeline: 6 months for implementation after CPRI study.		-		-	-	-	-	-	-	-	-
6	Talwandi Sabo IS	Punjab	Newly Proposed	Punjab has sent the offer to CPRI for study of Islanding Schemes. CPRI has asked for PSSE file for dynamic study which is being coordinated with NRLDC. Timeline: 6 months for implementation after CPRI study.		-		-	-	-	-	-	-	-	-
7	Dehradun IS	Uttarakhand	Newly Proposed	Matter is pending at Uttarakhand SLDC for finalization/rejection of scheme.		-	-	-	-	-	-	-	-	-	-
8	Jammu-Salal IS	J &K	Under Discussion	-		-	-	-	-	-	-	-	-	-	-
9	Suratgarh IS	Rajasthan	Under Discussion	Visit of Rajasthan officials at NRLDC is awaited for finalization of feasibility study.	RVPN will propose to avail PSDF funding	-		-	-	-	-	-	-	-	-
10	Chamba-Chamera IS	HP	Under Discussion	Transient study is being done at HP end.		-	-	-	-	-	-	-	-	-	-
11	Kangra-Chamba-Bairasuil IS	HP	Under Discussion	Transient study is being done at HP end.		-	-	-	-	-	-	-	-	-	-
12	Kullu-Dehar IS	HP	Under Discussion	HP has proposed Kullu-Manali-Mandi islanding scheme with Larji and Malana HEP and Shimla-Solan Islanding with Bhabha and other IPPs at Kotla. Fresh transient study with dynamic data is pending at HP end.		-	-	-	-	-	-	-	-	-	-
13	Butari-Jamsher-Verpal IS	Punjab	Under Discussion	-		-	-	-	-	-	-	-	-	-	-
14	Kargil-Ladakh IS	Ladakh	Under Discussion	-		-	-	-	-	-	-	-	-	-	-

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25/4/22

सत्यमेव जयते

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

No. CEA/OPM/DGR/2022/ 241-45 **Dated :** 20.04.2022

To,

Member Secretary, Northern Regional Power Committee 18-A, Qutab Institutional Area, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110 016 E-mail: ms-nrpc@nic.in	Member Secretary, Western Regional Power Committee, F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai – 400093 E-mail: ms-wrpc@nic.in
Member Secretary, Eastern Regional Power Committee 14, Golf Club Road Tollygunje Kolkata-700033 E-mail: mserpc-power@nic.in	Member Secretary, Southern Regional PowerCommittee, Central Electricity Authority, No. 29 Race Course Cross Road, Bengaluru-560 009 E-mail: mssrpc-ka@nic.in
Member Secretary, North Eastern Regional Power Committee NERPC Complex, Dong Parmaw Lapalang, Shillong – 793006 (Meghalaya) E-mail: ms-nerpc@gov.in, brieflee.lyngkhoi@gmail.com	

Sub: Requesting Generating companies to furnish Daily/Monthly Generation and outages Data online at National Power Portal (NPP) - regd.

Sir,

As you are aware, that as per relevant provisions of The Electricity Act, 2003, this office is entrusted with the responsibility to collect, compile & record the data concerning the generation of power and publish various reports like Daily Generation Report, Monthly Generation Report, PLF report etc. All these reports need to be prepared based on the information furnished by various generating stations/utilities on daily, monthly and yearly basis in a time bound manner.

To enable various Generating Companies to submit the aforesaid generation data to this office online, Login IDs and Passwords for the NPP Portal were issued a few years back to the nodal officers nominated by the respective Generating companies. Most of the Generating Companies have been submitting the generation data online. However, many of the Generating Company have still not switched over to online mode of submission of generation data despite repeated requests, leading to delay in preparation/issuance of related reports. The list of the plants which are not updating data online on the NPP portal is attached as **Annex-I.** Further, the power position across the regions are being monitored on daily basis at highest level in MoP, as such the submission of data online is need of hour and is very much required to assess the situation on demand vis-à-vis supply in various regions and take necessary policy decisions

As RPCs interact very frequently with the various utilities in their region, on various platforms, it is requested that the matter may be taken up with them and accordingly, generating stations may be directed to update the data online on NPP portal regularly.

Further in case generating stations are facing any problem in online data feeding into the NPP Portal, they may contact this Division (Sh. Satyam Soni, Asst. Director, Tel: 011-26732656) or NIC Officers, Sh. Ajay Badola, (Mob. No. 9899382669) or Sh. Akash, (Mob. No. 9810496775) or may send email at npp.suppoprt@nic.in for assistance.

End: As above

(वी. के. मिश्रा)
मुख्य अभियंता

सेवा भवन, 1-आर के पुरम, नई दिल्ली -110066 टेलीफैक्स : 011-26732633 वेबसाइट: www.cea.nic.in
Sewa Bhawan, R. K. Puram-1, New Delhi-110066 ई-मेल/E-mail : ceopm-cea@gov.in

List of Organizations not uploading Generation Data & Outages Online on National Power Portal

Northern Region

S. No.	Organization Name	organization_id	Station Name
1	BETA INFRATECH PVT. LTD.	1000769	BETA CCPP
2	DEPARTMENT OF ATOMIC ENERGY	1000679	DAE (RAJASTHAN)
3	GAMA INFRAPROP PVT. LTD.	1000768	GAMA CCPP
4	GMR BAJOLI HOLI HYDRO POWER PRIVATE LIMITED	1000815	BAJOLI HOLI HPS
5	HIMACHAL BASPA POWER COMPANY LIMITED (HBPCL)	1000779	KARCHAM WANGTOO HPS
6	HIMACHAL PRADESH STATE ELECTRICITY BOARD LIMITED	1000309	UHL-III HPS
7	HIMACHAL SORANG POWER CORPORATION LIMITED	1000427	SORANG HPS
8	IA ENERGY PRIVATE LTD	1000788	CHANJU-I HPS
9	INDRAPRASTHA POWER GENERATION COMPANY LIMITED	1000353	I.P.CCPP
10	J&K STATE POWER DEVELOPMENT CORPORATION	1000308	LOWER JHELUM HPS, BAGLIHAR HPS, UPPER SINDH-II HPS, BAGLIHAR II HPS, PAMPORE GPS (Liq.)
11	LARSEN & TOURBO LTD.	1000468	SINGOLI BHATWARI HPS
12	MEJA URJA NIGAM PRIVATE LIMITED	1000550	MEJA STPP
13	NEYVELI LIGNITE CORPORATION LIMITED	1000700	BARSINGSAR LIGNITE
14	NEYVELI UTTAR PRADESH POWER LIMITED	1000817	GHATAMPUR TPP
15	NHPC LIMITED	1000241	PARBATI-II HPS
16	NSL TIDONG POWER GENERATION PRIVATE LIMITED	1000789	TIDONG HPS
17	NTPC LIMITED	1000212	TAPOVAN VISHNUGAD HPS, KOLDAM
18	PRAGATI POWER CORPORATION LIMITED	1000354	PRAGATI CCPP, PRAGATI CCGT-III
19	PUNJAB STATE POWER CORP. LTD.	1000429	ANANDPUR SAHIB-1 HPS , MUKERIAN-IV HPS, MUKERIAN-II HPS, GH TPS (LEH.MOH.), ANANDPUR SAHIB-II HPS , MUKERIAN-III HPS, MUKERIAN-I HPS, SHANAN HPS
20	RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED	1000312	MAHI BAJAJ-II HPS, RAMGARH CCPP, JAWAHAR SAGAR HPS, DHOLPUR CCPP, KOTA TPS, SURATGARH STPS, R P SAGAR HPS, GIRAL TPS, MAHI BAJAJ-I HPS
21	SATLUJ JAL VIDYUT NIGAM LIMITED	1000310	NAITWAR MORI HPS
22	SRAVANTHI ENERGY PVT LTD.	1000775	KASHIPUR CCPP
23	TATA POWER DELHI DISTRIBUTION LIMITED	1000112	RITHALA CCPP
24	UTTARAKHAND JAL VIDYUT NIGAM LIMITED	1000111	MANERI BHALI-I HPS, VYASI HPS, KULHAL HPS, MANERI BHALI-II HPS, CHILLA HPS, RAMGANGA HPS, CHIBRO (YAMUNA) HPS, DHAKRANI HPS, KHODRI HPS, KHATIMA HPS, DHALIPUR HPS
25	UTTAR PRADESH JAL VIDYUT NIGAM LIMITED	1000358	MATATILA HPS, OBRA HPS, KHARA HPS, RIHAND HPS
26	UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LIMITED	1000116	PARICHHA TPS, ANPARA TPS, OBRA-C STPP, PANKI TPS EXT, JAWAHARPUR STPP

SPS implemented at 400kV S/Stn Mundka

The SPS at Mundka Substation is designed to take care of N-1 contingency of 2 nos. 315MVA ICTs running in parallel. SPS scheme is implemented to prevent the cascaded tripping of the 315MVA ICTs in case of contingency by providing load relief on 220kV level. SPS scheme is implemented on 220kV side of 315 MVA transformers using numerical relays.

There are 2nos. 315MVA ICTs running in parallel at Mundka S/Stn as on 19th April 2022 when the scheme was configured to implement. These two ICTs were feeding 220kV Peeragarhi and 220kV Wazirpur S/Stns through 220kV Peeragarhi Ckt. 1 & 2. The load of 66kV is also fed from these ICTs through 2 nos. 160MVA Transformers. The SLD of 400kV Mundka Substation is attached as Annexure-A.

The maximum load so far during the year for 220kV Peeragarhi & Wazirpur S/Stn is 192 and 149 MW respectively and that of both 160MVA Transformer is 146MW

Other Important values considered for SPS are as under:

Rating of each Transformer= 315 MVA
Full Load Current on 315MVA Transformer at 220kV level= 827A
Back-up Over-current setting on Transformer= 1000A (1.21 p.u)

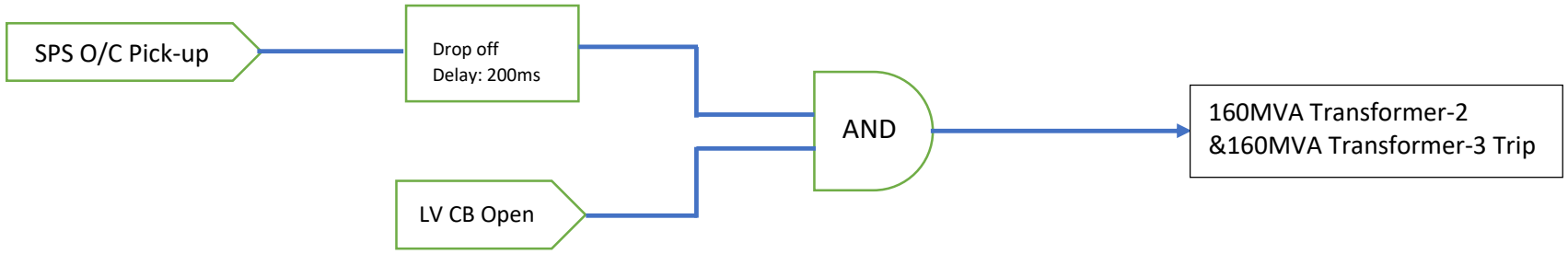
Triggering Criteria for SPS:

1) Threshold current on a 315MVA Transformer to arm the scheme for contingency of tripping of 1no. ICT is set at 480A (i.e 58% loading on 220kV Side), the SPS relay picks up and becomes vigilant to act promptly in case of any contingency.
2) In the above scenario, if a transformer trips on a fault or is switched off manually, and SPS relay receives the OPEN status of LV side Circuit Breaker, then SPS is triggered (AND logic of current threshold triggering & LV CB status) to issue command for load shedding to avoid cascaded tripping of the second transformer on overcurrent.

SPS Actions:

Tripping of 160MVA Transformer-2 & 160MVA Transformer-3, thus providing load relief of about 146MW at peak load.

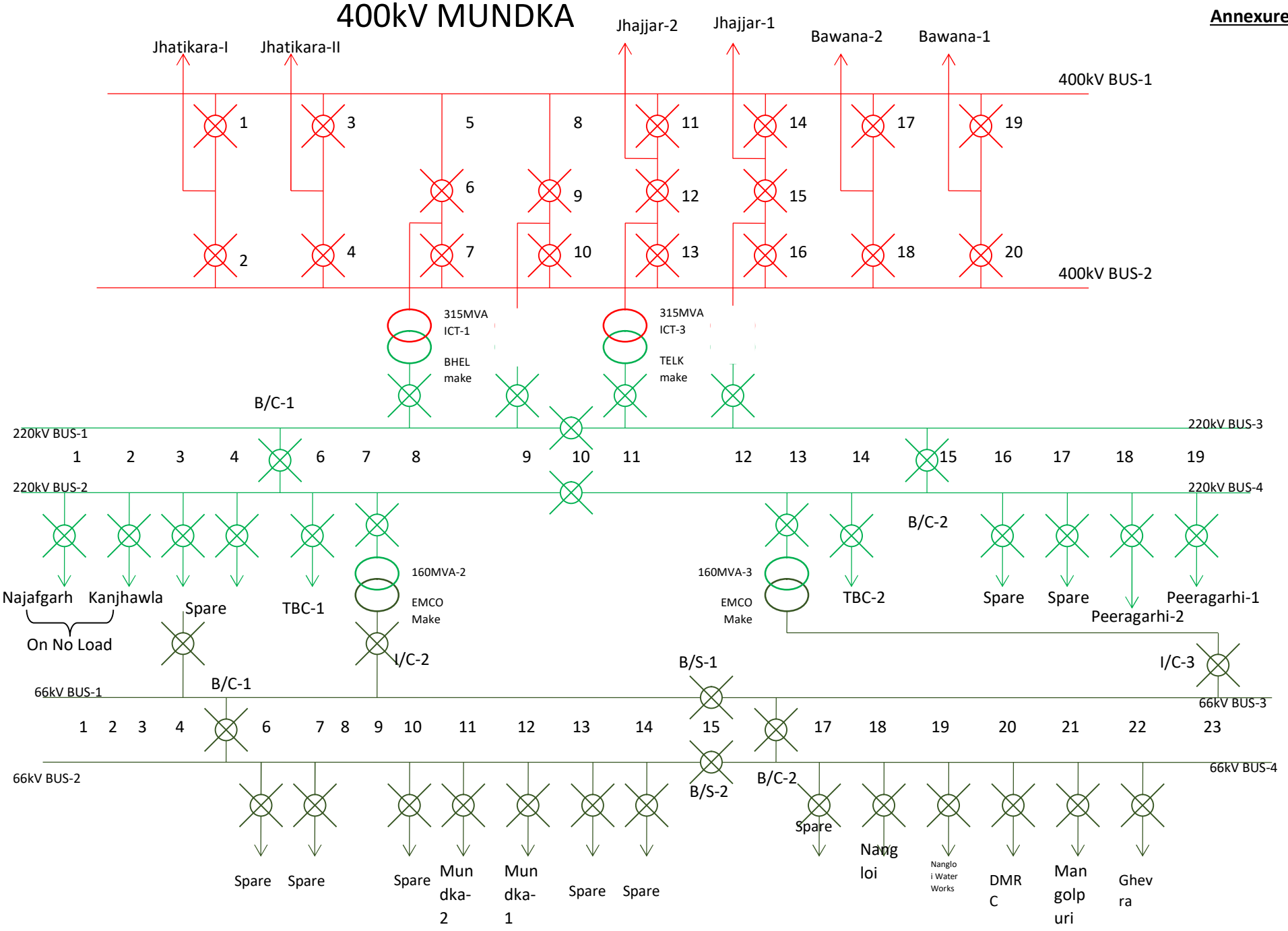
Logic in SPS Relay on 220kV Incomer-1 & 3 of 315MVA ICT-1 & 3 respectively:



Overview of SPS implemented at 400kV DTL S/StnTikrikalan

S.No.	Name of the Bays identified for SPS implementation	Relay Details for SPS Operation				Name of the bays identified for Load Shedding
		Relay Location	Relay Make	Type of Characteristics	Pick-up Setting in Ampere	
1	315MVA ICT-1	220kV Incomer-1	MiCOM P141	DT	480A	160MVA Transformer-2 & 3
2	315MVA ICT-3	220kV Incomer-3	MiCOM P442	DT	480A	160MVA Transformer-2 & 3

Annexure-A


400kV MUNDKA
Jhatikara-I
Jhatikara-II
Jhajjar-2
Jhajjar-1
Bawana-2
Bawana-1
400kV BUS-1
400kV BUS-2
315MVA ICT-1 BHEL make
315MVA ICT-3 TELK make
B/C-1
220kV BUS-1
220kV BUS-2
220kV BUS-3
220kV BUS-4
B/C-2
160MVA-2 EMCO Make
160MVA-3 EMCO Make
Najafgarh
Kanjhawla
On No Load
Spare
TBC-1
TBC-2
Spare
Spare
Peeragarhi-2
Peeragarhi-1
I/C-2
I/C-3
B/S-1
B/S-2
B/C-1
B/C-2
66kV BUS-1
66kV BUS-2
66kV BUS-3
66kV BUS-4
Spare
Spare
Spare
Munda-2
Munda-1
Spare
Spare
Spare
Nangloi
Nangloi Water Works
DMRC
Mangolpuri
Ghevra

AGENDA for NRPC MEETING

AA1 Regarding reduction of bus fault level on 220kV Bus at 765/400/220kV PGCIL Substation at Bhadla.

AA 1.1 Gist

An agenda regarding reduction of Bus fault level at 765/400/220kV PGCIL substation at Bhadla by opening 220kV Bus Coupler OPEN, which helps to reduce the short circuit current flowing through the transformer during fault, which caused to transformer failure due to heavy thermal & mechanical stresses as well as insulation failure. It is been observed during short circuit study & actual current flowing during fault through DR records that the fault level of 220kV Bus at PGCIL Bhadla – I substation reached to maximum design value of 220kV bus i.e. 40kA.

Saurya Urja Company of Rajasthan Limited ("SUCRL") is a 50:50 Joint Venture Company of Government of Rajasthan (GoR) and IL&FS Energy Development Company Limited (IEDCL). SUCRL has set up 1000 MW Bhadla III Solar Park infrastructure at Bhadla village, Jodhpur district. Park is connected with STU & CTU through separate 500 MW Pooling Substation (PSS) named as PSS-1(LHS) & PSS-2(RHS) respectively. Each PSS have five numbers of 125MVA Power transformer (ICT) to evacuate the power from Solar Power Developers (SPD) through 220kV Double Circuit Transmission Line.

Three ICTs have failed since May 2021, one of those has been repaired and placed back in service whereas one is under repair and the third one has failed recently. Summary of the failure for three ICTs are similar in nature i.e. Tripping of Incomer Feeder from solar plant initiated due to cable fault for ICT-01 & ICT-04 failure and CT fault in case of ICT-03 failure. Protection system successfully operated for Incomer & Outgoing Feeders. During fault & recovery period, transformer goes through mechanical & thermal pressure, which leads to transformer internal faults. Due to operation of Buchholz Relay, PRD and Differential Relay operations, Nitrogen Injection Fire System activated & Transformer failed.

SUCRL requested for reduction of fault current magnitude from the source side to reduce Fault current at SUCRL end as well as reduce possibility of SUCRL's ICT failure. Reduction of short circuit level by following methodology will helps to reduction of addition stresses on transformer & failure too.

Option (1):- Keeping Bus Coupler Breaker OPEN

Balance loading of each bus will reduce the short circuit level by around 50%.

Option (2):- Keeping Bus Section Breaker OPEN

Option (3):- Bus Segregation to provide dedicated ICT.

AA 1.2 Request Proposal

SUCRL is requesting NRPC's help to reduce the existing Short Circuit Level of 220kV Bus.

Option-1:- Immediate Solution

Keeping 220kV **Bus Coupler Breaker OPEN** at 765/400/220kV Bhadla Substation will be an immediate solution & will definitely help us to reduce bus fault level by around 50%.

POSOCO team suggested that the same should not be a permanent solution considering the reliability of substation. POSOCO team assured to consider it as the time being solution & asked SUCRL to confirm the time period.

SUCRL team evaluated the time required to take necessary precautionary action to reduce the cause of failure and it works out to around six months.

Kindly consider our request to keep Bus Coupler Breaker OPEN for six months, effective from the earliest possible date. SUCRL seeks your help to reduce bus fault level, which shall help to avoid failure of transformer & hence Generation loss as a consequent effect.

AA 1.3 Annexures

1) PPT on Reduction of bus fault level

Subject : Regarding certification of availability of assets under SLTS project since 31.10.2019

The Srinagar-Leh Transmission System (SLTS) is a prestigious flagship Project of Government of India which was aimed to improve the reliability of power supply in Ladakh Region by connecting with the National Grid. The Project was assigned to POWERGRID on consultancy basis by Ministry of Power. The scope of the project involved construction of 220 kV S/c transmission line from Alusteng (Srinagar) to Leh (approx.335 km.), construction of 4 nos. 220/66 kV GIS substations and 66 kV Lines for interconnection systems at Leh, Khalsti, Kargil & Drass.

The afore mentioned asset was commissioned on 31.01.2019 and dedicated to the nation by the Hon'ble PM on 03.02.2019. POWERGRID has been carrying out O&M services for the system since February, 2019.

MoP vide letter ref. No. 3/18/2011- Trans Vol (2) dated 23.03.2021 (copy attached at Annexure-) informed that 220 kV Srinagar-Leh Transmission System is re-designated as ISTS and was transferred to POWERGRID with effect from 31.10.2019, i.e. effective date of formation of the two UTs of J&K and Ladakh.

As these assets are now declared as ISTS assets and transferred to POWERGRID w.e.f. 31.10.2019. In view of above, it is submitted that Availability certification of these assets for period from 31.10.2019 upto till date needs to be done so that POWERGRID can claim O&M charges of these assets. The details of assets commissioned under SLTS are mentioned in next page:

Transmission Lines				
Sr No	Element Name	Voltage Level	Unit	Length/ Capacity
1	220KV Alusteng-Drass	220KV	Km	120.83
2	220KV Drass-Kargil	220KV	Km	61.06
3	220KV Kargil-Khalsti	220KV	Km	96.65
4	220KV Khalsti-Leh	220KV	Km	61.55
5	66 KV Leh(PG) - Leh (PDD)-I	66KV	Km	2.21
6	66 KV Leh(PG) - Leh (PDD)-II	66KV	Km	16.11
7	66 kV Leh(PG)-Kharu(PDD)	66KV	Km	16.11
8	66 kV Leh(PG)-Nimmo(PDD)	66KV	Km	2.21
9	66KV Khalsti(PG)-Khalsti(PDD) Interconnector	66KV	Km	0.20
10	66KV Kargil(PG)-BIU	66KV	Km	0.17
11	66KV Kargil(PG) Chutak	66KV	Km	0.20
12	66KV Kargil(PG)-Shargole	66KV	Km	0.20
13	66KV Drass(PG) Bus inter connector 1	66KV	Km	0.06
14	66KV Drass(PG) Bus inter connector 2	66KV	Km	0.06

Transformers				
1	ICT-1 at Leh	220KV	MVA	50.00
2	ICT-2 at Leh	220KV	MVA	50.00
3	ICT-1 at Khalsti	220KV	MVA	50.00
4	ICT-1 at Kargil	220KV	MVA	50.00
5	ICT-2 at Kargil	220KV	MVA	50.00
6	ICT-1 at Drass	220KV	MVA	50.00
Reactors				
1	Bus Reactor at Leh	220KV	MVAR	25.00
2	BUS REACTOR at Kargil	220KV	MVAR	25.00

MOP Order

No. 3/18/2011-Trans Vol (2)
भारत सरकार / Government of India
विद्युत मंत्रालय / Ministry of Power
(पारेषण प्रभाग / Transmission Division)
*****

श्रम शक्ति भवन, रफी मार्ग, नई दिल्ली- 110001
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001

दिनांक: 23rd March, 2021

To,

The CMD,
Power Grid Corporation of India Ltd (POWERGRID)
Gurugram, Harayana

Sub:- Maintenance of 220 kV Srinagar-Leh S/c Transmission System -regarding

Sir,

I am directed to say that the 220 kV Srinagar-Leh Transmission System (SLTS) was constructed by POWERGRID with 95% funding from Central Govt and 5% funding from State Government, and commissioned in 2019. As per agreement between POWERGRID and erstwhile Jammu and Kashmir Power Development Department (JKPDD), the said Srinagar Leh Transmission System (SLTS) was to be taken over by JKPDD after commissioning. However, JKPDD is yet to take over the system. Considering the importance of the System, POWERGRID is still maintaining the System, but it is not getting any maintenance charges.

2. The Technical Committee headed by CEA in the meeting held on 28.12.2020 (MoM at **Annex I**) inter-alia recommended that UT of J&K and UT Ladakh to communicate their consent regarding handing over the System as ISTS. UT of J&K and UT of Ladakh vide their letters 3.2.2021 (**Annex II**) and dated 7.1.2021 (**Annex III**) respectively have mentioned that they have no objection regarding declaration of 220 kV Srinagar – Leh Transmission System as Inter State Transmission System (ISTS).

3. In this regard, it may be noted that as per Section 2(36) of the Electricity Act 2003, definition of inter-state transmission system includes "any system for the conveyance of electricity by means of main transmission line from the territory of one State to another State" and accordingly, 220 kV Srinagar- Leh Transmission System has automatically become an inter-state System, after bifurcation of erstwhile State of Jammu and Kashmir into UT of J&K and UT of Ladakh.

23/3/2021.

4. Keeping in view the importance of the Srinagar-Leh Transmission System and recommendation received from Technical Committee headed by CEA, and also the fact that both these UTs have given their consents for declaring the System as ISTS, it is decided to transfer the 220kV Sringar-Leh Transmission System to POWERGRID as ISTS. The O&M charges prior to date of transfer would be shared between two UTs in proportion of respective line length in the UTs. POWERGRID is advised to approach CERC for determination of tariff, so that CERC can decide tariff and other terms and conditions for the Srinagar-Leh Transmission System from the date of transfer, after hearing all the related parties including UT of J&K and UT of Ladakh, after considering POWERGRID's operation and maintenance charges, as well as UT of J&K and UT of Ladakh's contribution in the construction of the line. Date of formation of the two UTs of J&K and Ladakh i.e. 31st October,2019 will be construed as date of transfer of above asset as ISTS to POWERGRID.

5. This issues with the approval of Hon'ble Minister of State (Independent Charge) for Power and NRE and Minister of State for Skill Development and Entrepreneurship.

Encl: As above.

Yours faithfully,

23/3/2021.

(Bihari Lal)
Under Secretary to the Govt. of India
E-mail: transdesk-mop@nic.in
Tele-fax: 23325242

To

1. Chairperson (CEA), R K Puram, New Delhi.
2. Secretary (CERC), New Delhi
3. Commissioner/ Secretary Power Dev. Department, UT of J&K.
4. Commissioner/ Secretary (Power, New & Renewable Energy) to Government of UT of Ladakh.

अल्का उपाध्याय, आईएएस
अध्यक्ष
ALKA UPADHYAYA, IAS
CHAIRPERSON

सत्यमेव जयते

भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
सड़क परिवहन और राजमार्ग मंत्रालय
National Highways Authority of India
MINISTRY OF ROAD TRANSPORT & HIGHWAYS

DO No. NHAI/DVE/Pkg-I-V/11006/US/PGCIL/2022/e-144394
April 18, 2022

Dear Sir

National Highways Authority of India (NHAI) had been entrusted the implementation of ambitious project "Delhi-Vadodara-Mumbai" as Greenfield Expressway. This expressway is being developed with 8-lane configuration having provisions to expand up to 12-lanes in the future, with a design speed of 120 km/hr. This corridor will be completely access controlled with closed tolling system.

2. NHAI is shifting/raising various Transmission lines including that of PGCIL to meet out safety requirements for this Expressway. NHAI is continuously perusing with Utility Owing Agencies for arranging Deemed Availability Certificate for the shutdown period. In this matter a meeting was also held with Secretary (Power) on 11.08.2021 and the minutes of the same was circulated by Ministry of Power, GoI, vide letter no. 2/7/2017-Trans-Pt(1) dated 16.08.2021 (copy enclosed). As per para 5.4 of the minutes of the meeting, following was decided for arranging Deemed Availability Certificate for the shutdown:

Para 5.4:

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

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

Office of Member (Power System) Dy. No. 352 Date 19/4/22

3. Accordingly, Field unit of NHAI (PIU-Sohna) vide letter dated 01.04.20222 has requested PGCIL for refund of charges against shutdown. However, PGCIL has intimated that "*the concern regarding refund of amount deposited against revenue loss shall be taken after issue of necessary directive from CEA.*"

4. I shall be grateful if necessary directives may be issued by CEA to PGCIL and other utility owing agencies to get the reconciliation done at an early date.

With regards

Yours sincerely,

Encl.: As above.

(Alka Upadhyaya)

O/o MEMBER (GO) Dy. No. 242 Dated 19/4/22

Shri B. K. Arya
Chairperson,
Central Electricity Authority (CEA),
Sewa Bhawan, Sector -1,
R.K Puram, New Delhi.

The issue pertains to NRPC & WRPC for certifying the deemed availability. As such the RLDC, working under Powergrid etc. re-enforcement if required.

Member (GO), CEA 19/4/22

NHAI, G-5&6, Sector-10, Dwarka, New Delhi-110075
Tel.: +91-11-25076503, Fax : +91-11-25093605, E : chairman@nhai.org / www.nhai.gov.in

ग्रिड प्रबंधन प्रभाग, के.वि.प्रा. डायरी सं...110..... दिनांक 25/Apr/2022

CE/SM
M. Sec

Annexure - A.VIII

	Sr. No.	Element Name	Outage Date Time	Restoration Date Time	Outage Hours	Outage Reason
NHAI Sohna	1	765KV AGRA-JHATIKALA	20/02/22 09:20	04/03/22 10:25	289:05	Shutdown for diversion work by NHAI due to construction of Delhi-Vadodara Expressway (NH148N).
	2	500KV HVDC BALIA-BHWD POLE-II	01/04/22 09:53	17/04/22 13:09	387:16	Shutdown taken for diversion of line due to construction work of Delhi-Vadodara Expressway by NHAI
	3	500KV HVDC BALIA-BHWD POLE-I	01/04/22 09:49	17/04/22 12:50	387:01	Shutdown taken for diversion of line due to construction work of Delhi-Vadodara Expressway by NHAI
	4	765KV ALIGARH-JHATIKARA	**30/04/22 08:57**	13-05-2022		Shutdown taken for diversion of line due to construction work by NHAI
	5	400KV LUCKNOW-SULTANPR	07/02/22 08:16	17/02/22 00:25	232:09	Shutdown taken for diversion of line due to construction work of Outer Ring Road by NHAI.
	6	400KV LUCKNOW-LKO(UP)	07/02/22 08:49	17/02/22 00:26	231:37	Shutdown taken for diversion of line due to construction work of Outer Ring Road by NHAI.
	7	400KV LUCKNOW-BASTI(UP)-II	20/02/22 09:41	04/03/22 21:26	299:45	Shutdown taken for diversion of line due to construction work of Outer Ring Road by NHAI.
	8	400KV LUCKNOW-BASTI(UP)-I	20/02/22 09:41	04/03/22 20:19	298:38	Shutdown taken for diversion of line due to construction work of Outer Ring Road by NHAI.
	9	400KV AGRA-JAIPUR(S)-I	20/03/22 09:22	04/04/22 17:30	368:08	Shutdown for line diversion works for NHAI road project.
	10	400KV AGRA-JAIPUR(S)-II	20/03/22 09:23	04/04/22 18:11	368:48	Shutdown for line diversion works for NHAI road project.
	11	765KV MEERUT-MOGA	07/03/22 08:41	22-03-2022 17:38	368:57	Shutdown for diversion work by NHAI due to construction of ISMAILABAD-NAURNAL (NH152D). Under Bharatmala project.
	12	400KV LUCKNOW-JEHTA(UP)-II	06/03/22 09:02	14/03/22 20:11	203:09	Shutdown taken for diversion of line due to construction work of Outer Ring Road by NHAI.
	13	400KV LUCKNOW-JEHTA(UP)-I	06/03/22 09:01	14/03/22 19:25	202:24	Shutdown taken for diversion of line due to construction work of Outer Ring Road by NHAI.
	14	400KV JEHTA(UP)-UNNAO(UP)-II	30/03/22 09:02	08/04/22 22:37	229:35	S/D taken for diversion of Line due to construction of Outer Ring road by NHAI.
	15	400KV JEHTA(UP)-UNNAO(UP)-I	30/03/22 09:02	08/04/22 22:35	229:33	S/D taken for diversion of Line due to construction of Outer Ring road by NHAI.

पावरग्रिड
POWERGRID

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:- 17th May'2022

Executive Director (NLDC),
18A Shaheed Jeet Singh Marg,
Katwaria Sarai, New Delhi-110016

Subject: ***Regarding PTCC clearance of existing transmission lines after modification / route diversion on request of other government agencies.***

Dear Sir,

This is to bring to your kind attention that massive diversion works of 765kV & 400kV Transmission Lines are being carried out by POWERGRID on request of various utilities like NHAI, DFCCIL, NCRTC, UPEIDA etc. These projects of National Importance are to be completed in scheduled time manner and monitored by PRAGATI (Pro-Active Governance and Timely Implementation), Govt. of India.

Mostly Transmission Lines are modified in the existing corridor by raising height of Towers and in few cases transmission Line is diverted in close proximity of 50Mtr from the existing corridor resulting increase of line length between 50-100Mtrs which is very nominal in respect to total line length. Further, ground clearance of diverted route is generally more than 14 Meters which further reduces the interference in telecom lines, if any.

In view of above, it may be understood that no significant change in course of Transmission Lines as well as power flow due to line diversion is envisaged. Therefore, PTCC clearance is not required in line with clause 2.0 of advisory ref. No. PTCC/MISC/2022/391-393 dated 06.05.2022 issued by CEA (Copy attached for ready reference).

Thanking you,

17/05/2022
(A. K. Behera)
Chief GM(AM), NR1

Copy :-

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

ii) **Chief GM(I/C), NRLDC**
18A Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016

Copy for kind information please:-

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

File No.CEA-PS-17-11(19)/1/2022-PCD Division

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत संचार विकास प्रभाग
Power Communication Development Division

No. PTCC/Misc/2022/391-*******393

Subject: Clarifications regarding submission of PTCC clearance for FTC of existing transmission lines after modification/route diversion and safety clearance for FTC of existing power system elements after any modification/replacement – regd.

Reference: Your letter no. POSOCO/NLDC/FTC/2022/01/232 dated 08.04.2022

The matter stated in your letter under reference has been examined and submissions from PCD Division on requirement of PTCC clearance of existing transmission lines after modification/route diversion are as under:

1. The referred CEA letter dated 18.01.2019 does not mention "new transmission line" but advises, in general, to seek documentary evidence of PTCC clearance from the concerned transmission licensee before issuing charging code/permission.
2. PTCC clearance for existing transmission line is not required for increase in tower height, provided that other factors like course of transmission line and nature of power flow remain unaltered, as the interference with communication system will be further reduced.
3. In cases involving change in course of transmission line or change in nature of power flow, induction on nearby telecom assets may change and Induced Voltage may exceed the safe limit. Such cases may be forwarded to CEA for examination and issuing suitable advisory on requirement of fresh PTCC clearance.

This issues with the approval of Chief Engineer, PCD.

राघवेन्द्र प्रताप सिंह
06.05.22
Director

To:-
1. Executive Director, NLDC, B-9, First Floor, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110016

Copy to:-
1. Principal Chief Engineer-I, Central Electricity Authority
2. Member (Power System), Central Electricity Authority

एन आर पी सी परिसर, कटवारिया सराय, नई दिल्ली-110016 टेलीफैक्स: 011-26565214 ईमेल: cepcd.cea@gov.in वेबसाइट: www.cea.nic.in
NRPC Complex, Katwaria Sarai, New Delni-110016 Telefax: 011-26565214 Email: cepcd.cea@gov.in Website: www.cea.nic.in

पावरग्रिड POWERGRID

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:- 17th May'2022

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

Subject:- **Request for consideration of outage of transmission lines due to forest / bush fire as deemed available.**

Dear Sir,

The kind reference is invited to trippings of transmission lines due to forest / bush fire (i.e. due to external reasons), which were beyond the control of POWERGRID and requested to be considered as deemed available. Details of tripping occurred in April'2022 in POWERGRID, NR1 as under: -

Details of outage of transmission lines due to Fire for April -2022

Sr No	*Name of line/ICT/BR*	*Tripping DATE TIME*	*Restoration DATE TIME*	*Duration HRS MIN*	*Brief Cause of tripping*
1	400KV Bhiwadi-Neemrana-II	07/04/22 12:00	07/04/22 14:21	02:21	Forest fire
2	400KV Bhiwani-Jind-I	10/04/22 13:40	10/04/22 19:20	05:40	Stubble burning
3	400KV Koteshwar-KHEP-II	14/04/22 15:16	14/04/22 15:54	00:38	Forest fire
4	765KV Koteshwar-Meerut-II	21/04/22 08:10	21/04/22 08:33	00:23	Forest fire
5	400KV Neemrana-Sikar-II	28/04/22 11:00	28/04/22 12:34	01:34	Forest fire
6	400KV Bawana-Bahadurgarh	29/04/22 12:09	29/04/22 14:02	01:53	Stubble burning
7	765KV Aligarh-Jhatikara	29/04/22 13:51	29/04/22 17:37	03:46	Stubble burning
			Total outage (HRS)	16:15	

** Detailed report with photographs are placed at Annexure-'A'.*

In view of above, it is requested to kindly consider aforesaid outages as deemded available while issuing the availability certificate w.r.t. POWERGRID.

Thanking your with reagrds,

17/05/2022
(A. K. Behera)
Chief GM(AM), NR1

Copy for kind information please :-

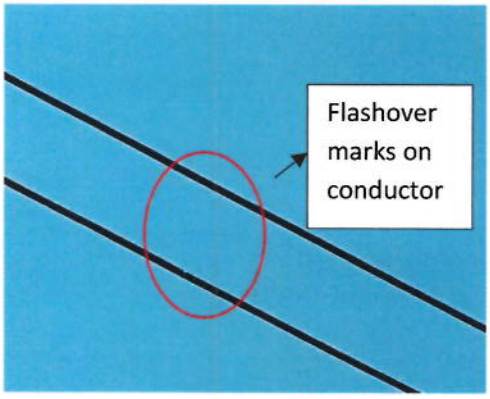
i) ED, NR1
ii) ED(AM), CC

Detailed report w.r.t. trippings of lines due to forest / bush fire in the month of April'2022 in POWERGRID, NR1

1. **400KV Bhiwadi-Neemrana-II**
Outage time :- 07-04-2022 {12:00HRS to 14:21HRS}

Prelude: 400 KV Bhiwadi-Neemrana-II line tripped on dt. 07/04/2022 at 12:00HRS on B-N fault due to bush fire under line corridor found during patrolling.

Justification: An unwanted / wild fire spread across the line corridor due to wind. 400KV Bhiwadi-Neemrana-II had tripped due to high flames, high density of smoke and particles beneath line causing a flashover between Bottom conductor (B-ph) and ground. Burn/ flash marks are also spotted on conductor.



Photographs of burning of crops between tower span 16 to 17

2. **400KV Jind – Bhiwani-I**
Outage time :- 10-04-2022 {13:40HRS to 19:20HRS}

Prelude: 400KV D/C Jind- Bhiwani Ckt-1 line tripped on dt 10/04/22 at 13:40Hrs on B-N (Bottom) fault due to stubble burning under line corridor.

Justification: Local farmer set fire on stubble/ agricultural waste beneath line, due to wind fire got extended to nearby trees outside line corridor. A tall tree nearby caught fire and a burnt branch fell on the line bottom conductor, causing tripping.

Photographs of stubble burning between tower span 150 to 151

3. **400KV Koteshwar – KHEP -II**
Outage time :- 14-04-2022 {15:16HRS to 15:54HRS}

Prelude: 400 KV Koteshwar-KHEP-II line Auto reclose at 15:14 Hrs and then tripped at 15:16 Hrs on dt. 14/04/2022 on B-N (Bottom). Forest fire had been observed along the line corridor during patrolling.

Justification: 400 KV Koteshwar-KHEP line is running through hills & forest. Due to fire in forest the line got engulfed with smoke and ash particles which further causes tripping of line.

Forest Fire between tower span 5 to 6

4. **765KV Koteshwar – Meerut-II**
Outage time :- 21-04-2022 {08:10HRS to 08:33HRS}

Prelude: 765KV Koteshwar-Meerut-II line tripped on dt. 21/04/22 at 08:10 Hrs on B-N (Left). Forest fire had been observed under line corridor during patrolling.

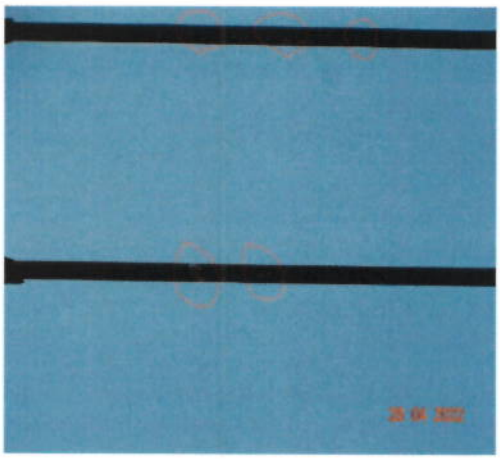
Justification: 765KV S/C Koteshwar-Meerut-II line is running through hills & forest. Due to fire in forest the line got engulfed with smoke and ash particles which further causes tripping of line.

Forest Fire between tower span 41 to 42

5. **400KV Neemrana- Sikar-II**
Outage time :- 28-04-2022 {11:00HRS to 12:34HRS}

Prelude: 400KV Neemrana-Sikar-II line tripped on dt. 28/04/22 at 11:00 Hrs on R-N (Bottom) fault. Fire in bushes and small trees under line corridor found during emergency patrolling.

Justification: When wild fire in bushes coming along the forest land, passes across the line corridor, due to smoke and high flames line had tripped. Flash marks had been found on bottom (R-ph) conductor

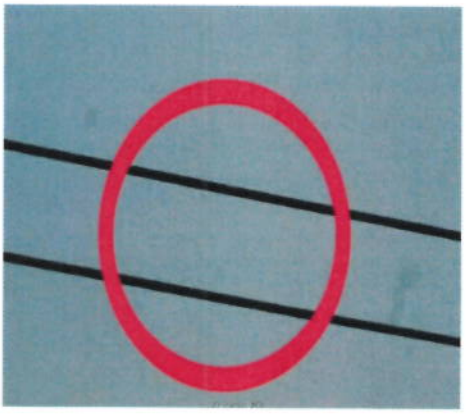



Photographs of forest fire between tower span 152 to 153

6. **400KV Bawana- Bahadurgarh**
Outage time :- 29-04-2022 {12:09HRS to 14:02HRS}

Prelude: 400 KV Bawana- Bhadurgarh line tripped on dt 29.04.2022 at 12:09 Hrs on B-N (Bottom) fault. Fire in bushes under line corridor found during emergency patrolling.

Justification: After harvesting the wheat crop local farmer set fire to agricultural waste /stubble in field, due to severe wind the fire got extended to nearby bushes on forest land under line corridor, which causes extended high flames, dense smoke and further tripping of line. Also Burn/ flash marks had been observed on bottom (B-N) conductor.

Photographs of stubble fire between tower span 19 to 20

7. **765KV Aligarh- Jhatikara**
Outage time :- 29-04-2022 {13:51HRS to 17:37HRS}

Prelude: 765KV S/C Aligarh-Jhatikara line had tripped on dt 29.04.22 at 13:51 Hrs on R-N (Left) Fault. Fire in bushes under line corridor found during emergency patrolling.

Justification: After harvesting the wheat crop local farmer set fire to agricultural waste /stubble in field, due to severe wind the fire got extended to nearby bushes on forest land under line corridor, which causes extended high flames, dense smoke and further tripping of line.

Photographs of stubble fire between tower span 1016 to 1017

State		May-22	Jun-22	Jul-22	Aug-22	Sep-22
Chandigarh	Availability	140	170	190	220	170
	Requirement	120	160	200	190	150
	Surplus/Shortfall (MU)	20	10	-10	30	20
	Surplus/Shortfall (%)	16.67%	6.25%	-5.00%	15.79%	13.33%
Delhi	Availability	2700	2750	2800	2770	2630
	Requirement	3550	4100	4000	3750	3700
	Surplus/Shortfall (MU)	-850	-1350	-1200	-980	-1070
	Surplus/Shortfall (%)	-23.94%	-32.93%	-30.00%	-26.13%	-28.92%
Haryana	Availability	5520	5580	5720	5680	5450
	Requirement	5620	6610	6660	6680	6860
	Surplus/Shortfall (MU)	-100	-1030	-940	-1000	-1410
	Surplus/Shortfall (%)	-1.78%	-15.58%	-14.11%	-14.97%	-20.55%
Himachal Pradesh	Availability	1300	1910	2230	2210	1770
	Requirement	920	1030	1180	1080	1000
	Surplus/Shortfall (MU)	380	880	1050	1130	770
	Surplus/Shortfall (%)	41.30%	85.44%	88.98%	104.63%	77.00%
Jammu & Kashmir and Ladakh	Availability	1860	2050	2140	2160	1670
	Requirement	1780	1660	1690	1330	1580
	Surplus/Shortfall (MU)	80	390	450	830	90
	Surplus/Shortfall (%)	4.49%	23.49%	26.63%	62.41%	5.70%
Punjab	Availability	5900	6280	6480	6600	6150
	Requirement	4760	7250	8590	8670	8170
	Surplus/Shortfall (MU)	1140	-970	-2110	-2070	-2020
	Surplus/Shortfall (%)	23.95%	-13.38%	-24.56%	-23.88%	-24.72%
Rajasthan	Availability	9310	9450	9290	9640	8710
	Requirement	8590	8560	8630	8820	8810
	Surplus/Shortfall (MU)	720	890	660	820	-100
	Surplus/Shortfall (%)	8.38%	10.40%	7.65%	9.30%	-1.14%
Uttar Pradesh	Availability	13320	13540	13840	14100	13230
	Requirement	14570	14700	14890	14570	14500
	Surplus/Shortfall (MU)	-1250	-1160	-1050	-470	-1270
	Surplus/Shortfall (%)	-8.58%	-7.89%	-7.05%	-3.23%	-8.76%
Uttarakhand	Availability	1130	1320	1440	1590	1360
	Requirement	1070	1250	1400	1360	1270
	Surplus/Shortfall (MU)	60	70	40	230	90
	Surplus/Shortfall (%)	5.61%	5.60%	2.86%	16.91%	7.09%
Total NR	Availability	41180	43050	44130	44970	41140
	Requirement	40980	45320	47240	46450	46040
	Surplus/Shortfall (MU)	200	-2270	-3110	-1480	-4900
	Surplus/Shortfall (%)	0.49%	-5.01%	-6.58%	-3.19%	-10.64%

Ex-Bus Peak Demand and Availability for 2022-23 (in MW)

State		May-22	Jun-22	Jul-22	Aug-22	Sep-22
Chandigarh	Availability	350	340	370	360	360
	Demand	360	380	440	360	410
	Surplus/Shortfall (MW)	-10	-40	-70	0	-50
	Surplus/Shortfall (%)	-2.80%	-10.50%	-15.90%	0.00%	-12.20%
Delhi	Availability	5840	5860	5850	5800	5770
	Demand	6900	7500	8200	7050	6900
	Surplus/Shortfall (MW)	-1060	-1640	-2350	-1250	-1130
	Surplus/Shortfall (%)	-15.40%	-21.90%	-28.70%	-17.70%	-16.40%
Haryana	Availability	11490	11650	11620	11580	11590
	Demand	9870	12030	12700	11990	12160
	Surplus/Shortfall (MW)	1620	-380	-1080	-410	-570
	Surplus/Shortfall (%)	16.40%	-3.20%	-8.50%	-3.40%	-4.70%
Himachal Pradesh	Availability	3180	3220	3250	3230	3230
	Demand	1510	1660	1680	1670	1640
	Surplus/Shortfall (MW)	1670	1560	1570	1560	1590
	Surplus/Shortfall (%)	110.60%	94.00%	93.50%	93.40%	97.00%
Jammu & Kashmir	Availability	3480	3490	3510	3480	3460
	Demand	2880	2810	2610	2400	2660
	Surplus/Shortfall (MW)	600	680	900	1080	800
	Surplus/Shortfall (%)	20.80%	24.20%	34.50%	45.00%	30.10%
Punjab	Availability	11890	12080	12080	12040	12050
	Demand	8930	15500	15320	14700	14340
	Surplus/Shortfall (MW)	2960	-3420	-3240	-2660	-2290
	Surplus/Shortfall (%)	33.10%	-22.10%	-21.10%	-18.10%	-16.00%
Rajasthan	Availability	18830	18870	18080	18270	18680
	Demand	14000	14300	14790	15500	14650
	Surplus/Shortfall (MW)	4830	4570	3290	2770	4030
	Surplus/Shortfall (%)	34.50%	32.00%	22.20%	17.90%	27.50%
Uttar Pradesh	Availability	25560	25670	26900	26790	26690
	Demand	24500	26210	27380	26130	27090
	Surplus/Shortfall (MW)	1060	-540	-480	660	-400
	Surplus/Shortfall (%)	4.30%	-2.10%	-1.80%	2.50%	-1.50%
Uttarakhand	Availability	2910	2890	3080	3070	3060
	Demand	1800	2250	2300	2350	2100
	Surplus/Shortfall (MW)	1110	640	780	720	960
	Surplus/Shortfall (%)	61.70%	28.40%	33.90%	30.60%	45.70%
Total NR	Availability	77140	77230	76380	78410	77970
	Demand	65300	75900	77000	76100	75300
	Surplus/Shortfall (MW)	11840	1330	-620	2310	2670
	Surplus/Shortfall (%)	18.10%	1.80%	-0.80%	3.00%	3.50%

Government of India
Ministry of Earth Sciences
India Meteorological Department

Press Release
Date: 17th May, 2022
Time of Issue: 1315 hrs IST

Subject:

i) Advancement of Southwest Monsoon into some more parts of South Bay of Bengal, entire Andaman Sea & Andaman Islands and some parts of Eastcentral Bay of Bengal during next 2 days.

ii) Heavy to very heavy falls over Kerala, coastal & south interior Karnataka, Assam & Meghalaya and Arunachal Pradesh during next 3 days.

iii) A fresh spell of heat wave conditions likely over northwest & central India from 19th May, 2022.

Weather observed during past 24 hours:

- Isolated **heavy to very heavy rainfall with extremely heavy falls** occurred over Meghalaya; **heavy to very heavy rainfall** at isolated places over Bihar, Assam, South Interior Karnataka and **heavy rainfall** at isolated places over Sub-Himalayan West Bengal, Arunachal Pradesh, Tripura, Tamilnadu, Rayalaseema, Coastal & North Interior Karnataka, Kerala and Lakshadweep. **(for rainfall amount refer Annexure I)**
- **Heat Wave conditions** prevailed in isolated pockets over Punjab, Himachal Pradesh, South Uttar Pradesh, Bihar, Vidarbha and Northeast Madhya Pradesh.

(i) Advancement of Southwest Monsoon (Annexure II)

- The Northern Limit of Southwest Monsoon continues to pass through 5°N/80°E, 8°N/85°E, 11°N/90°E, Long Islands and 14.8°N/97.5°E.
- Conditions are favourable for further advance of Southwest Monsoon into some more parts of South Bay of Bengal, entire Andaman Sea & Andaman Islands and some parts of Eastcentral Bay of Bengal during next 2 days. **Due to strong cross equatorial flow from Bay of Bengal to Andaman Sea in lower tropospheric levels;**
  - ✓ Widespread rainfall very likely over Andaman & Nicobar Islands during next 5 days.
  - ✓ Isolated **heavy falls** & **thunderstorm/lightning/gusty winds** very likely over Andaman & Nicobar Islands 3 days.
  - ✓ **Squally weather** with wind speed reaching 40-50 kmph gusting to 60 kmph likely over Andaman Sea, southeast Bay of Bengal and adjoining central Bay of Bengal during next 3 days.

(ii) Rainfall/thunderstorm Forecast & Warnings for rest parts of country:

- **Due to strong southwesterly winds from Bay of Bengal to northeast & adjoining East India and an east-west trough from northwest Rajasthan to west Assam at lower tropospheric levels;**
  - ✓ Widespread light/moderate rainfall with isolated **heavy to very heavy falls** very likely over Arunachal Pradesh, Assam-Meghalaya and Sub-Himalayan West Bengal & Sikkim during next 5 days. Isolated **extremely heavy falls** very likely over Meghalaya on 17th & 18th May.
  - ✓ Widespread light/moderate rainfall with isolated **heavy falls** very likely over Mizoram & Tripura on 17th & 18th May.

- ✓ Isolated to scattered light rainfall with isolated **thunderstorm/lightning/gusty winds** likely over Bihar, Jharkhand, Gangetic West Bengal and Odisha during next 4 days.

- **A cyclonic circulation lies over Kerala & neighbourhood in lower & middle tropospheric levels and a north-south trough runs from west Vidarbha to north Kerala in lower tropospheric levels. Under the influence of these systems:**
  - ✓ Fairly widespread to widespread light/moderate rainfall with isolated **thunderstorm/lightning/gusty winds** very likely over Kerala-Mahe, Tamilnadu, Karnataka, Lakshadweep and Rayalaseema during next 5 days.
  - ✓ Isolated **heavy to very heavy falls** very likely over Kerala-Mahe, Tamilnadu, Coastal & South Interior Karnataka during next 3 days and isolated heavy for subsequent 2 days.
  - ✓ Isolated **heavy rainfall** also very likely over Rayalaseema during 17th to 19th May and over Lakshadweep area on 17th & 18th May.

- **Under the influence of a Western Disturbance over central Pakistan & adjoining West Rajasthan:**
  - ✓ Scattered to fairly widespread light/moderate rainfall with isolated **thunderstorm/lightning/gusty winds & hailstorm** very likely over Jammu-Kashmir, Himachal Pradesh and Uttarakhand on 17th May.
  - ✓ Isolated light rainfall with **thunderstorm/lightning/gusty winds** very likely over Punjab, Haryana and West Uttar Pradesh on 17th May.
  - ✓ **Duststorm/Thunderstorm** at isolated places very likely over Punjab, Haryana and West Rajasthan on 17th May.
- **Under the influence of a fresh Western Disturbance affecting Western Himalayan region from 19th May:**
  - ✓ Scattered to fairly widespread light/moderate rainfall with isolated **thunderstorm/lightning/gusty winds & hailstorm** very likely over Jammu-Kashmir during 19th-21st and over Himachal Pradesh & Uttarakhand on 20th & 21st May.
  - ✓ Isolated light rainfall with **thunderstorm/lightning/gusty winds** very likely over Punjab, Haryana and Uttar Pradesh on 20th & 21st May.
  - ✓ **Duststorm/Thunderstorm** at isolated places very likely over Punjab, Haryana and West Rajasthan on 20th & 21st May.

(iii) Heat wave spells over Northwest & Central India

Maximum Temperature forecast:

- ✓ No significant change in maximum temperatures very likely over many parts of Northwest India during next 24 hours; rise by 2-3°C during subsequent 2 days and fall by 2-3°C thereafter.
- ✓ No significant change in maximum temperatures very likely over many parts of Central India during next 48 hours and rise by about 2°C thereafter.
- ✓ No significant change in maximum temperatures very likely over rest parts of the country.

Heat wave warnings:

- **Heat wave** conditions in isolated pockets very likely over
  - ✓ southwest Uttar Pradesh during 17th to 19th;
  - ✓ Bihar, Himachal Pradesh, Jammu division and north Madhya Maharashtra on 17th;
  - ✓ north Madhya Pradesh and Vidarbha on 17th, 20th & 21st;
  - ✓ south Punjab and south Haryana on 19th & 20th;
  - ✓ West Rajasthan during 18th to 21st and over East Rajasthan on 20th & 21st May, 2022.

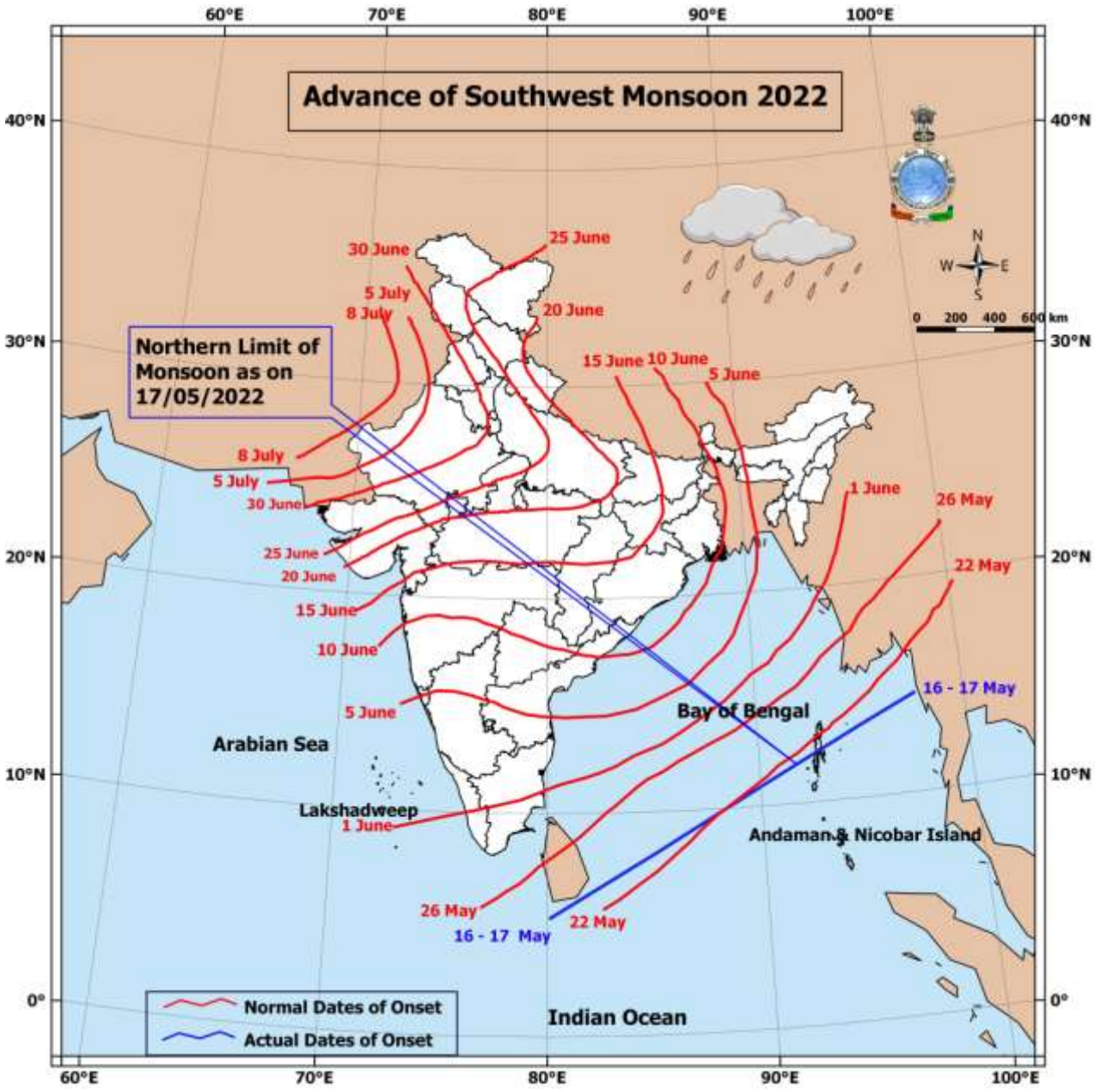
For more details refer: https://mausam.imd.gov.in/imd_latest/contents/subdivisionwise-warning.php

Annexure I

Chief amount of rainfall (in cm):

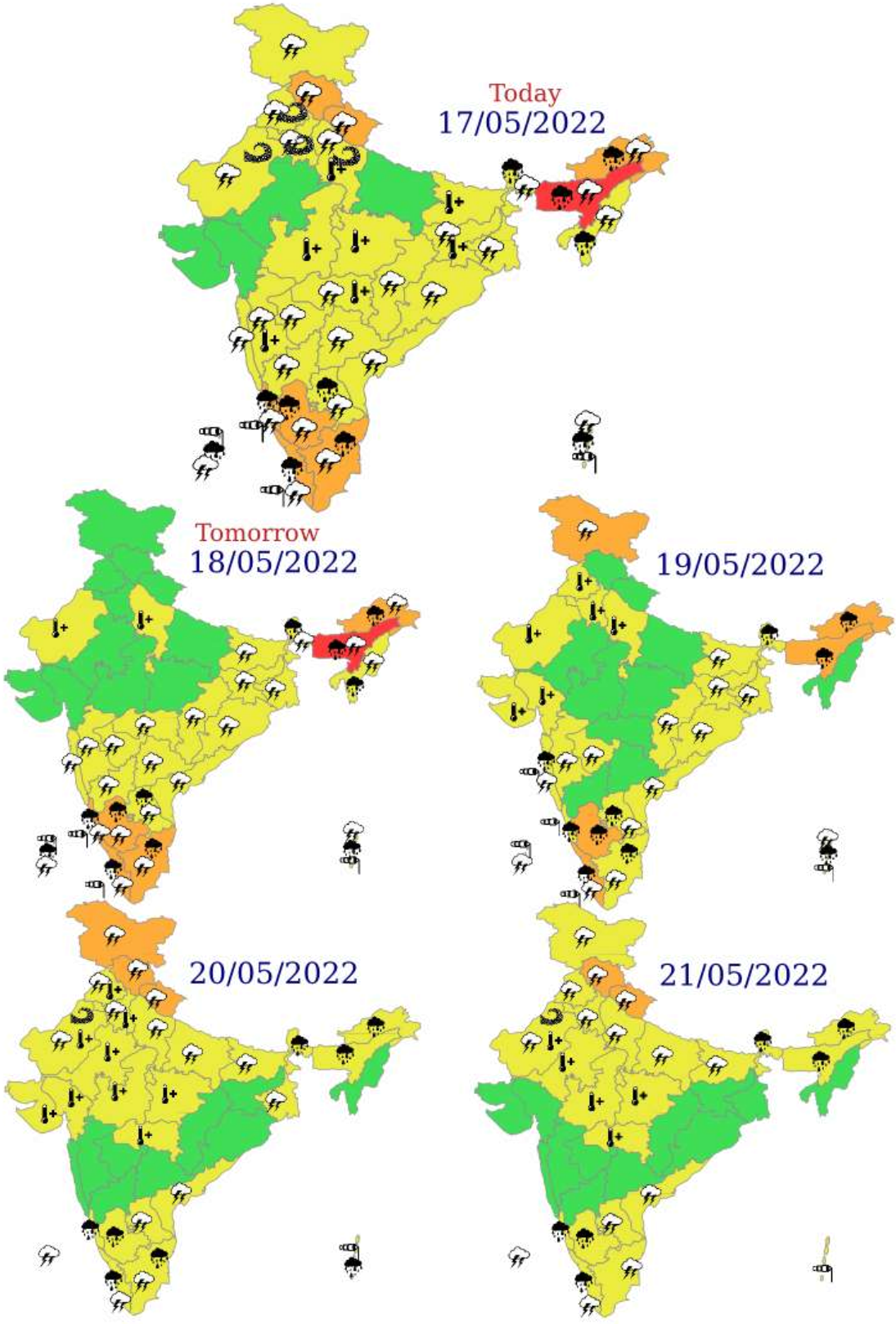
Assam-Meghalaya: Cherrapuji-37, Mawsynram-32, Mawkyrwat-22, Williamnagar-16, A P ghat-14, Jowai, B P ghat, Gosaigaon-13 each, Silchar, Goalpara-12 each, Baksa, Lakhipur, Bahalpur, Haflong, Matunga, majbat-9 each, Manash, Tura, Dhemaji-8 each, Dhubri, Kokrajhar-7 each
South Interior Karnataka: Narasipur-12, Naganahalli-11, Bangluru-8, Yagati, Krishnarajasagara, Srirangapatna, Katikere-8 each, Honnur-7
Bihar: Kadwa-12, Dhengraghat-10, Purnea-9
Arunachal Pradesh: Naharlagun-11, Itanagar-8, Pasighat-7
Sub-Himalayan West Bengal: Barobhisha-11; Cooch behar-9, Chepan-8, Alipurduar-7
Kerala: Kodungallur-11, Piravom-8, Vadakkancherry-7
Coastal Karnataka: Mudubidre, Bantwal-11 each, Mangluru-9, Karkala-8, Manki, Yellapur-7 each
North Interior Karnataka: Haveri: Kelvarkop-8
Tamilnadu: Nilgiris-10, Krishnagiri-8, Shoolagiri-7
Lakshadweep: Minicoy-8, Amini-7
Rayalaseema: YSR district: Badvel, Duvvur-7 each, Chittoor: Kuppam-7
Tripura: Tamenglongi-9, Tenig-7

Annexure II



Advance of Southwest Monsoon 2022

Annexure III



EXPECTED IMPACT & ACTION SUGGESTED due to heavy to very heavy/extremely heavy rainfall over Assam-Meghalaya, Arunachal Pradesh, coastal & south interior Karnataka and Kerala-Mahe during next 3 days.

Impact Expected

- Localized Flooding of roads, water logging in low lying areas and closure of underpasses mainly in urban areas of the above region.
- Occasional reduction in visibility due to heavy rainfall.
- Disruption of traffic in major cities due to water logging in roads leading to increased travel time.
- Minor damage to kutcha roads.
- Possibilities of damage to vulnerable structure.
- Localized Landslides/Mudslides
- Damage to **horticulture and standing crops** in some areas due to inundation.
- It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC)

Action Suggested

- Check for traffic congestion on your route before leaving for your destination.
- Follow any traffic advisories that are issued in this regard.
- Avoid going to areas that face the water logging problems often.
- Avoid staying in vulnerable structure.

Legends:

Heavy Rain: 64.5 to 115.5 mm; **Very Heavy Rain:** 115.6 to 204.4 mm; **Extremely Heavy Rain:** >204.4 mm.

Region wise classification of meteorological Sub-Divisions:

1) **Northwest India:** Western Himalayan Region (Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand); Punjab, Haryana-Chandigarh-Delhi; West Uttar Pradesh, East Uttar Pradesh, West Rajasthan and East Rajasthan.

2) **Central India:** West Madhya Pradesh, East Madhya Pradesh, Vidarbha and Chhattisgarh.

3) **East India:** Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim; Gangetic West Bengal, Odisha and Andaman & Nicobar Islands.

4) **Northeast India:** Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.

5) **West India:** Gujarat Region, Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra and Marathwada.

6) **South India:** Coastal Andhra Pradesh & Yanam, Telangana, Rayalaseema, Coastal Karnataka, North Interior Karnataka, South Interior Karnataka, Kerala & Mahe, Tamil Nadu, Puducherry & Karaikal and Lakshadweep.

SPATIAL DISTRIBUTION (% of Stations reporting)

% Stations	Category	% Stations	Category
76-100	Widespread (WS/Most Places)	26-50	Scattered (SCT/ A Few Places)
51-75	Fairly Widespred (FWS/ Many Places)	1-25	Isolated (ISOL)

Heavy Rain

Strong Winds

WARNING

WARNING (TAKE ACTION)
ALERT (BE PREPARED)
WATCH (BE UPDATED)
NO WARNING (NO ACTION)

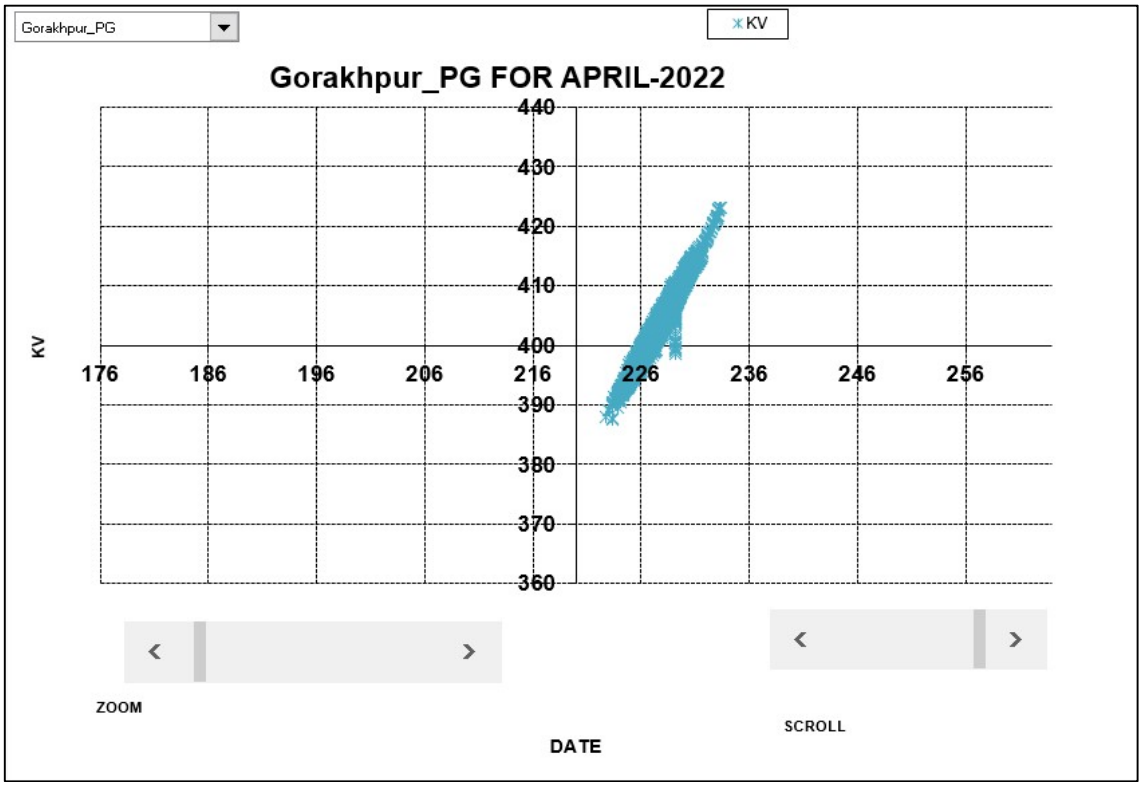
Probabilistic Forecast

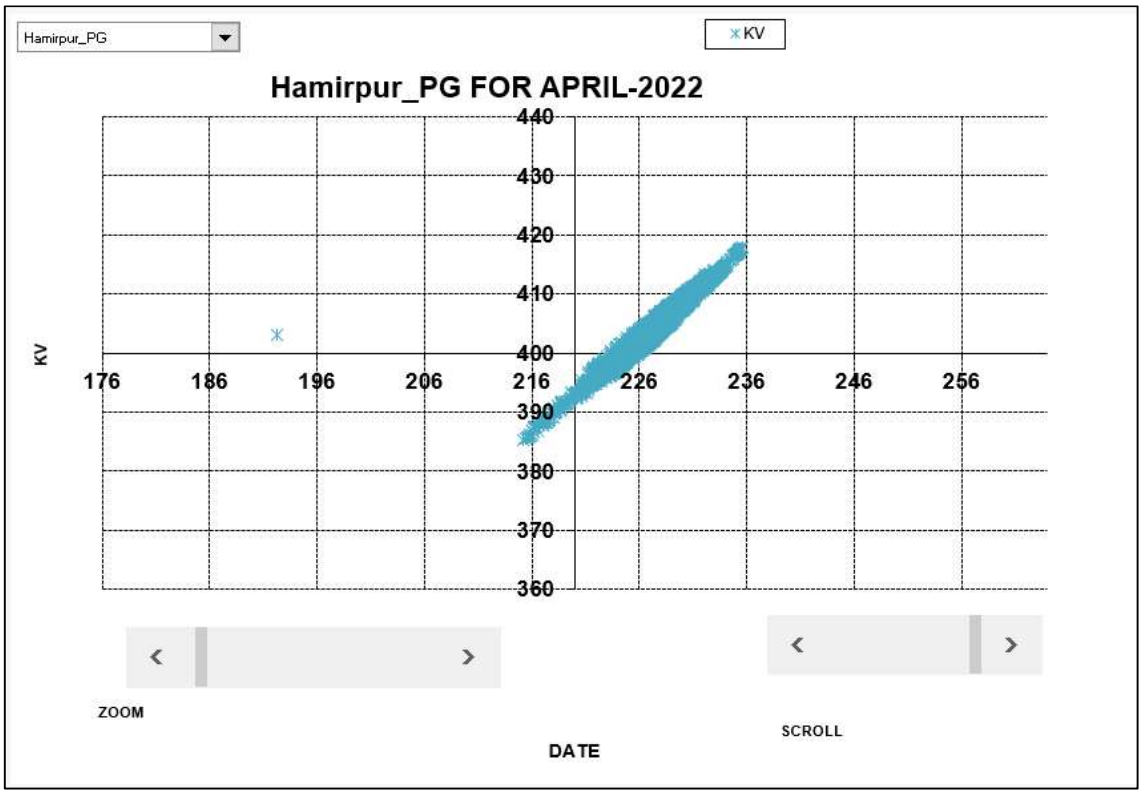
Terms	Probability of Occurrence (%)
Unlikely	< 25
Likely	25 - 50
Very Likely	50 - 75
Most Likely	> 75

Thunderstorm with Lightning

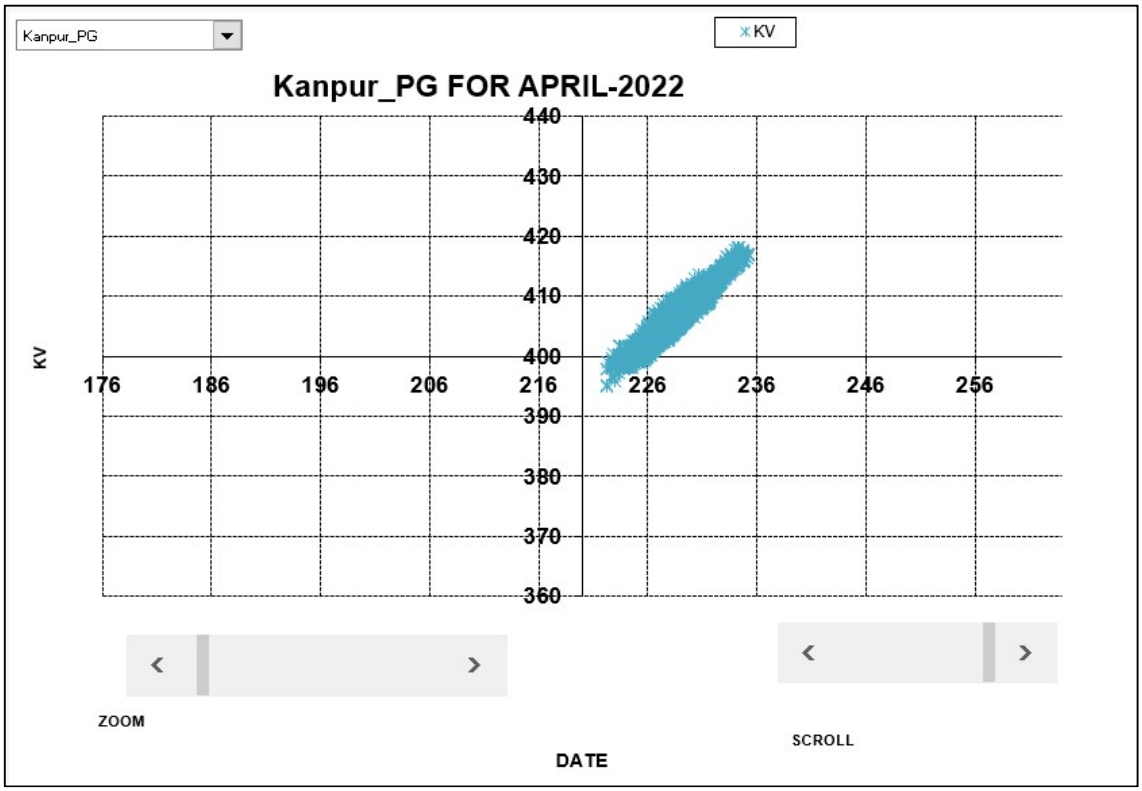
Heat Wave

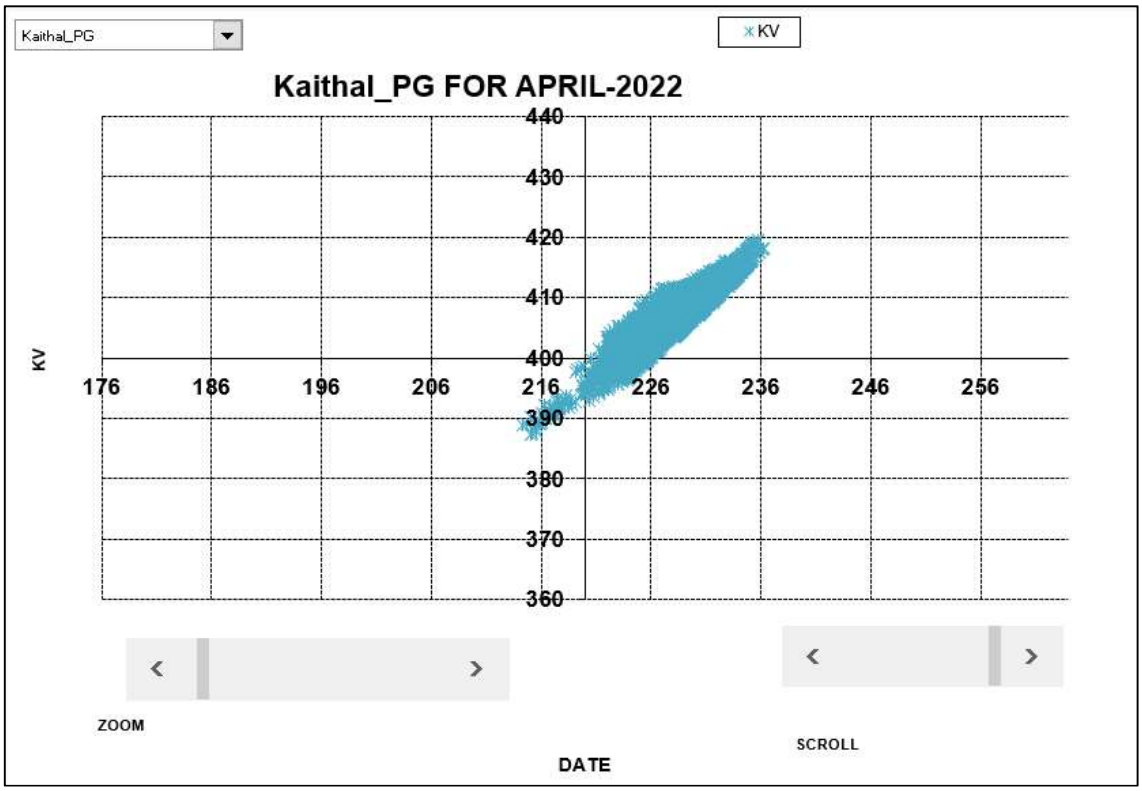
Scatter Plots of stations for which tap position is to be increased by 2 steps



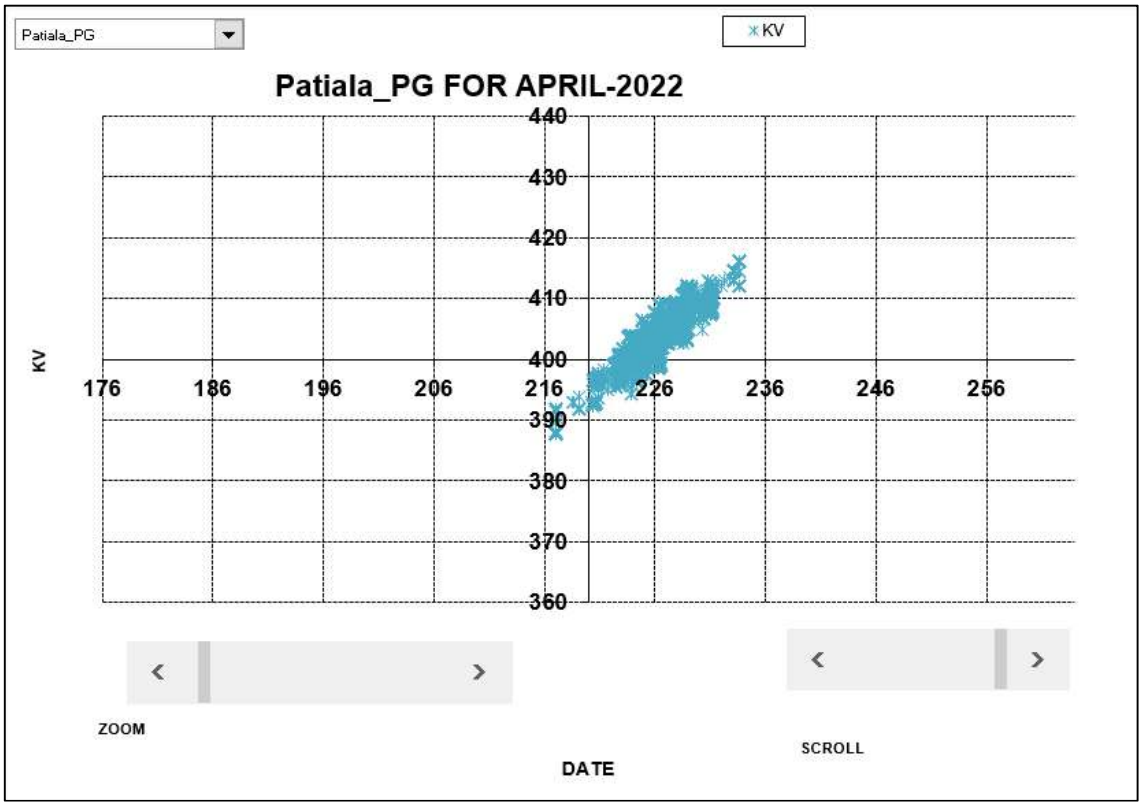


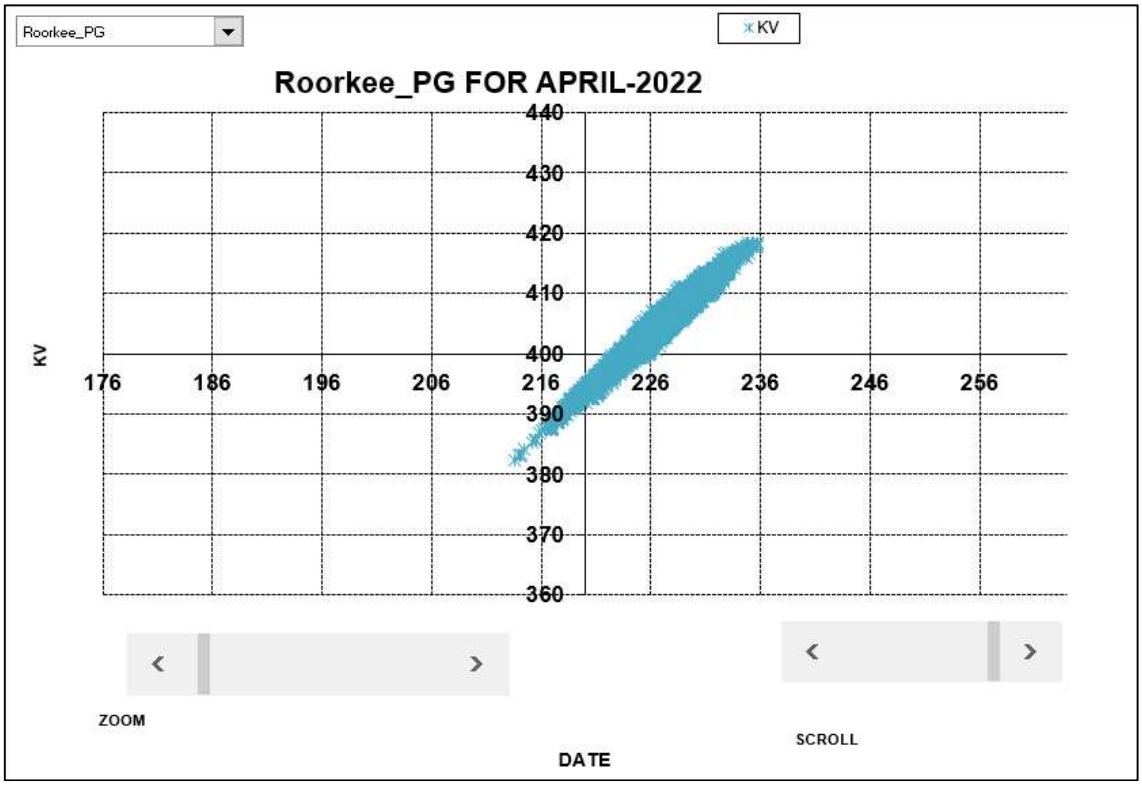
Scatter Plots of stations for which tap position is to be increased by 2 steps



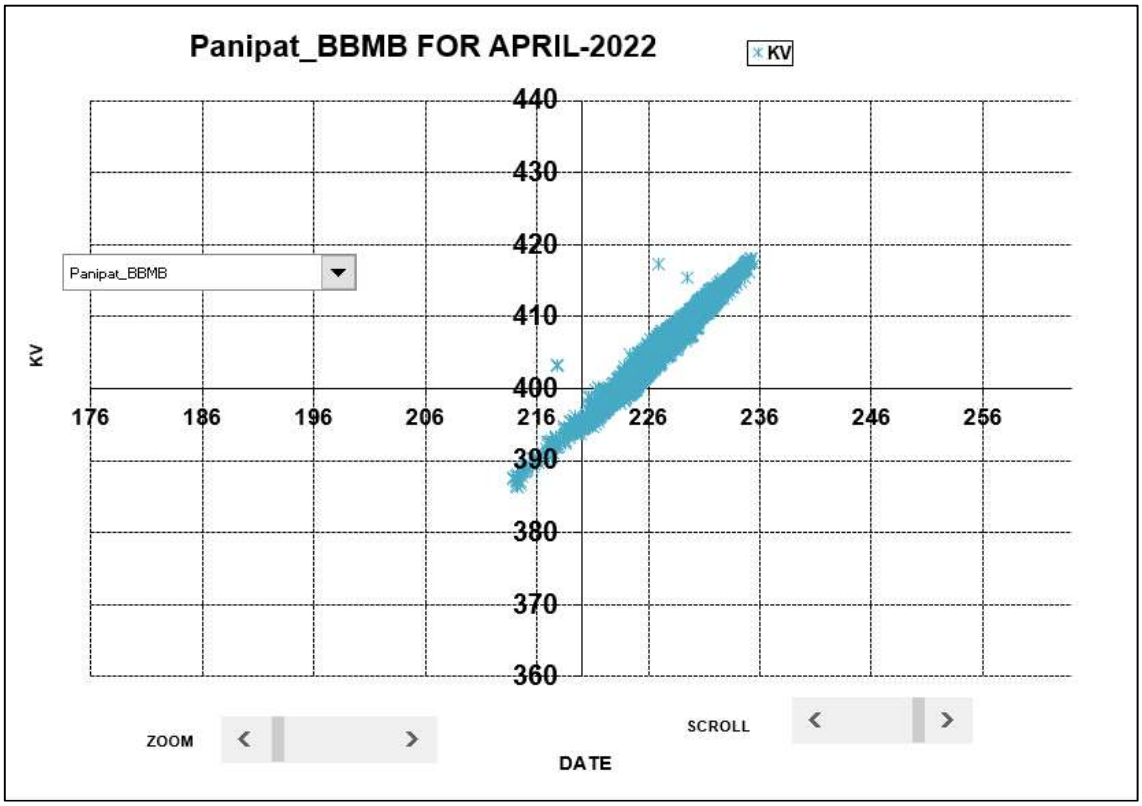


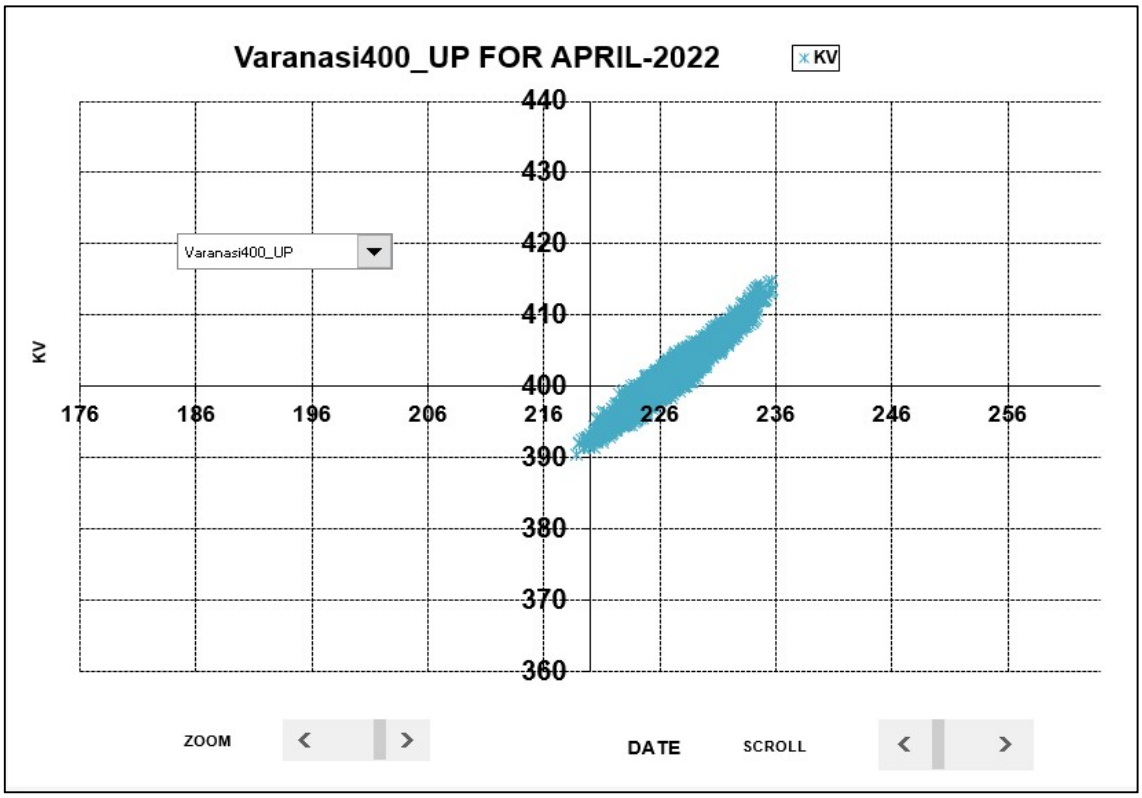
Scatter Plots of stations for which tap position is to be increased by 2 steps





Scatter Plots of stations for which tap position is to be increased by 2 steps





National Load Despatch Centre
Import Capability of Uttar Pradesh for June 2022

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 June 2022 to 30th June 2022	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 June 2022

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 June 2022 to 30th June 2022	00-24	6200	300	5900	3400	2500		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Chittorgarh, Jodhpur, Bikaner, Ajmer, Merta 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 June 2022

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 June 2022 to 30th June 2022	00-24	8500	600	7900	3000	4900		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 June 2022

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 June 2022 to 30th June 2022	00-24	6800	300	6500	4150	2350		
Limiting Constraints		N-1 contingency of 400/220kV Mundka and Bamnauli ICTs.						

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

National Load Despatch Centre
Import Capability of HP for June 2022

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 June 2022 to 30th June 2022	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

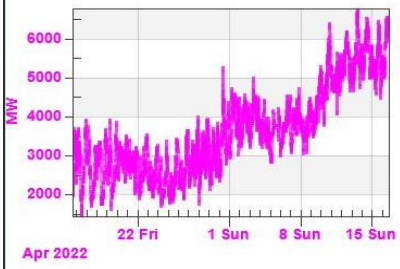
National Load Despatch Centre
Import Capability of Uttarakhand for June 2022

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

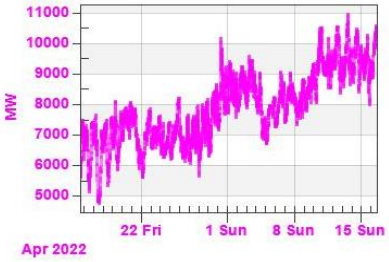
Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Long Term Access (LTA)/ Medium Term Open Access (MTOA) (MW)	Margin Available for Short Term Open Access (STOA) (MW)	Changes in TTC w.r.t. Last Revision	Comments
1st June 2022 to 30th June 2022	00-24	1600	100	1500	1020	480		- 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

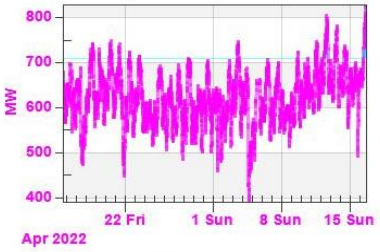
Punjab Import



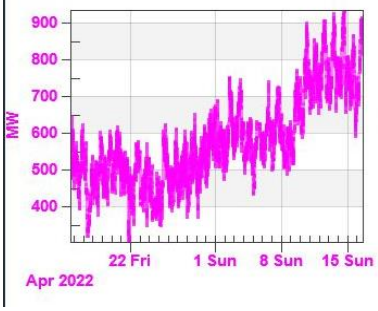
Punjab load



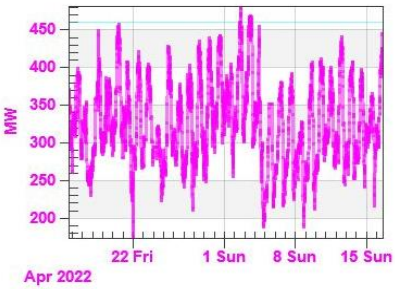
Rajpura ICT load



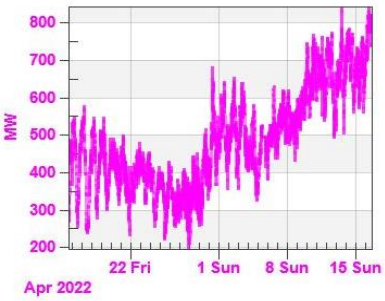
Ludhiana ICT load



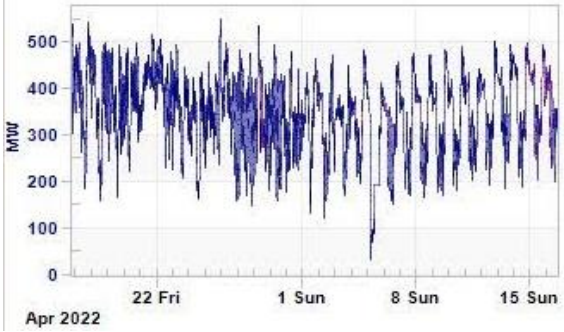
Nakodar ICT load



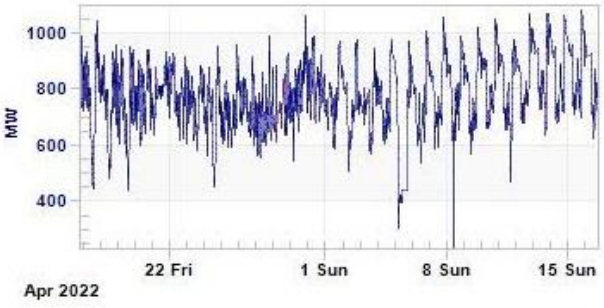
Moga ICT load



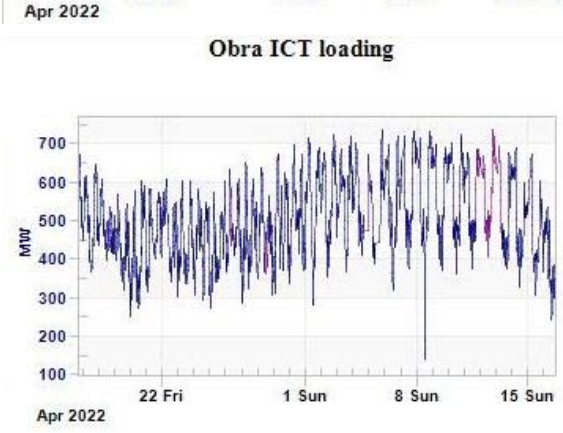
Azamgarh ICT loading



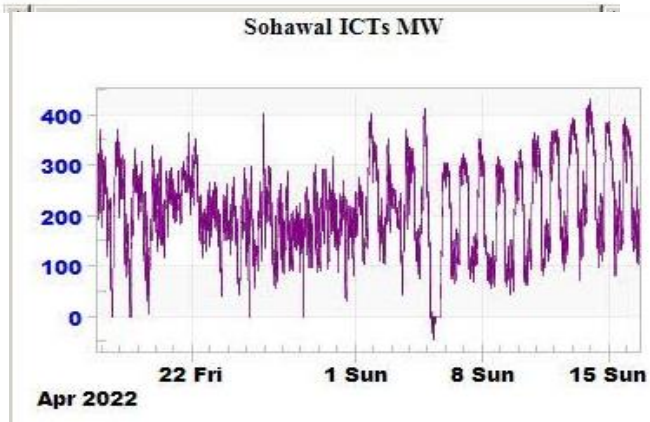
Sarnath ICT loading



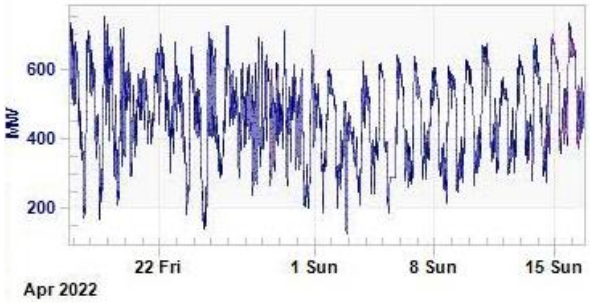
Obra ICT loading



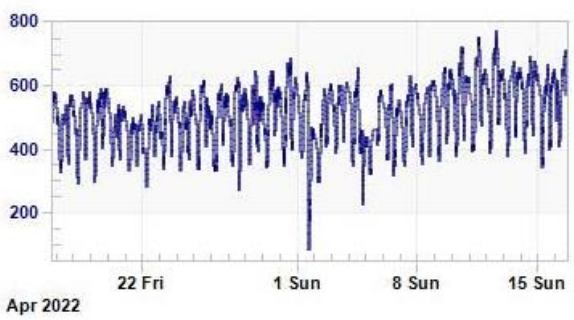
Sohawal ICTs MW



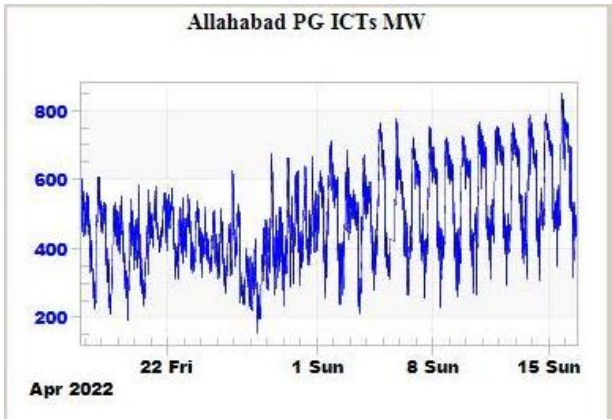
Gorakhpur UP ICT loading



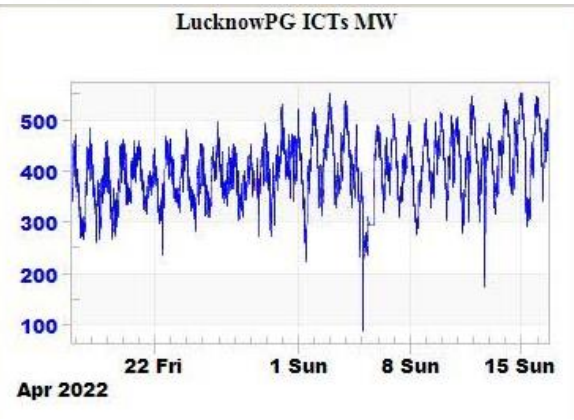
Agra UP ICT loading



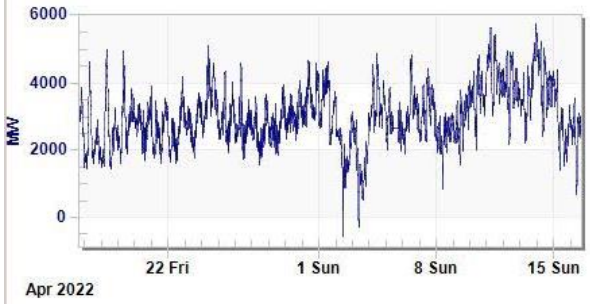
Allahabad PG ICTs MW



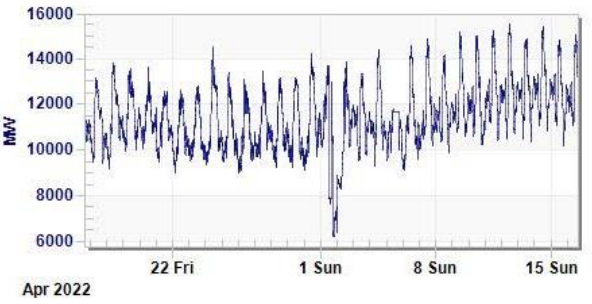
LucknowPG ICTs MW



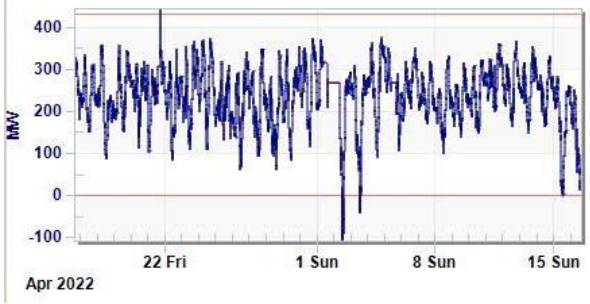
Rajasthan import



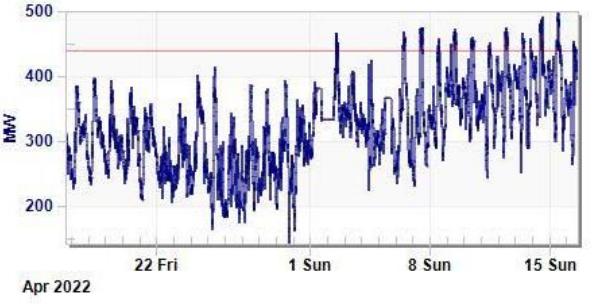
Rajasthan Load



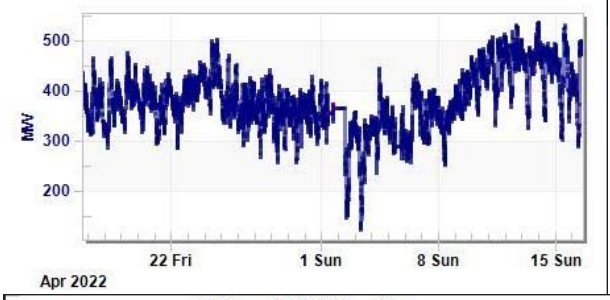
Jodhpur ICT loading



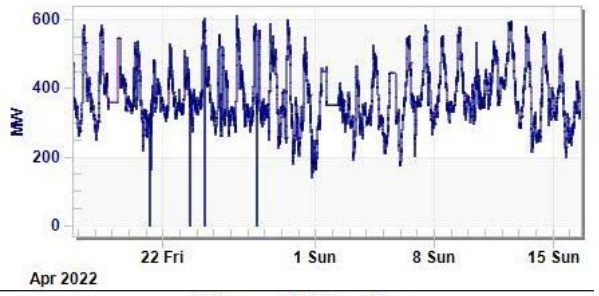
Merta ICT loading



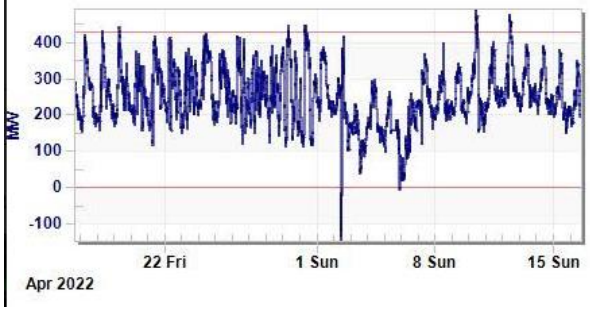
Ajmer ICT loading



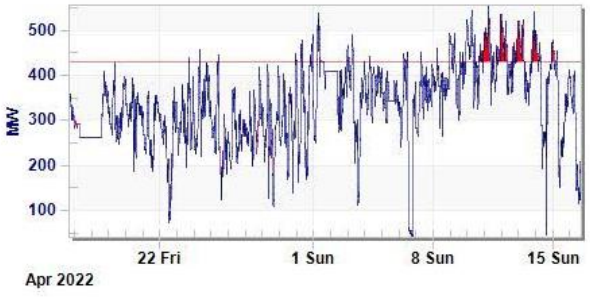
Chittorgarh ICT loading



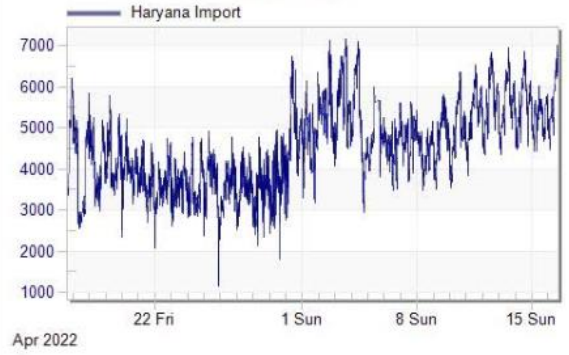
Bhinmal ICT loading



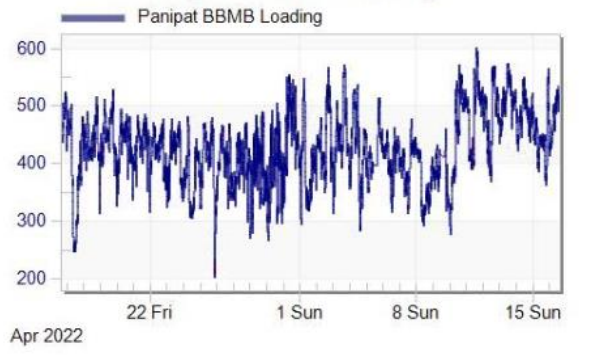
Bikaner ICT loading



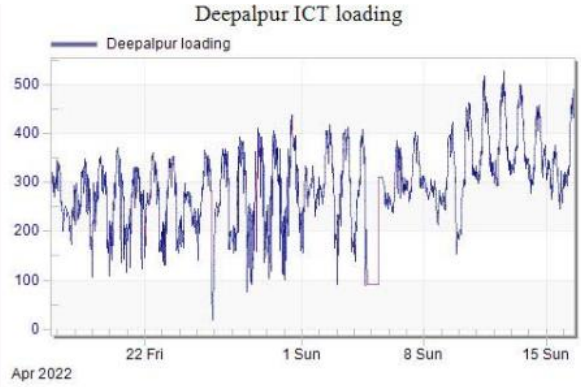
Haryana Import



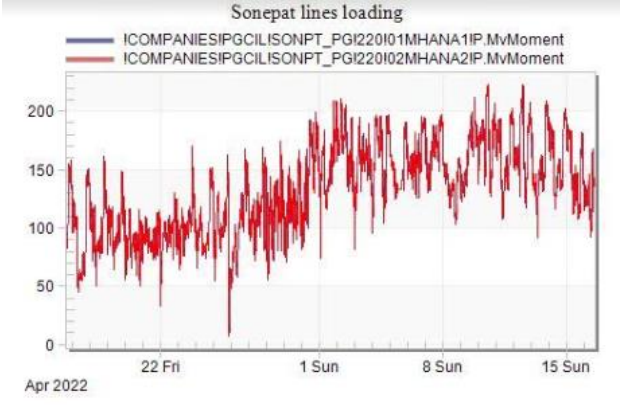
Panipat BBMB ICT loading



Deepalpur ICT loading



Sonepat lines loading



A. Details of Long Duration Transmission Elements Outage :-

S.No	Element Name	Type	Owner	Outage			Reason / Remarks	Status updated during last OCC
1	400/220 kv 315 mva ict 1 at bhilwara(rs)	ICT	RRVPNL	12-05-2019	23:42	1100	oil leakage in transformer	
2	400/220 kV 315 MVA ICT 2 at Mundka(DV)	ICT	DTL	20-09-2019	00:19	970	Due to fire in ICT	31.05.2022
3	80 MVAR Bus Reactor No 1 at 400KV Nathpa Jhakri(SJ)	BR	SJVNL	17-10-2019	12:58	942	Flashover/Fault in 80MVAR Bus Reactor cleared by Bus Bar Protection.	31.05.2022
4	400/220 kV 315 MVA ICT 1 at Muradnagar_1(UP)	ICT	UPPTCL	13-03-2020	02:46	795	Buccholz relay alarm and Local Breaker Backup protection operated. Tripped along with Hapur-Muradnagar line. Flags are not reset because of cable flashover.	TWC approved on 09.12.2021 for replacement with 500MVA new ICT .
5	400/220 kV 500 MVA ICT 2 at Noida Sec 148(UP)	ICT	UPPTCL	19-08-2020	08:12	636	ICT tripped on REF protection. Transformer caught fire and got damaged.	30 June 2022
6	400 KV Kadarpur (GPTL) - Bus 1	BUS	GPTL	17-04-2021	13:18	394	E/S/D taken due to abnormal humming sound observed from 400KV B-phase BUS-1 CVT at Kadarpur.	31.05.2022
7	220 KV Sohawal(PG)-Gonda(UP) (UP) Ckt-1	Line	UPPTCL	12-08-2021	09:00	278	Emergency shutdown of line taken, as tower no. 34 is affected by flood.	30 May 2022
8	220 KV Sohawal(PG)-Bahraich(UP) (UP) Ckt-1	Line	UPPTCL	12-08-2021	09:12	278	Emergency shutdown of line taken, as tower no. 34 is affected by flood.	30 May 2022
9	50 MVAR Non-Switchable LR on Agra-Unnao (UP) Ckt-1 @Agra(UP)	LR	UPPTCL	28-10-2021	22:27	200	R and Y phase bushing damaged at Agra(UP).	31.05.2022. Bushing damaged , concerned written to OEM for inspection of reactor.
10	765/400 kV 1500 MVA ICT 2 at Gr.Noida_2(UPC)	ICT	UPPTCL	12-11-2021	14:22	185	PRV- 1 & 2 Trip, Differential protection and Buchholz Trip. inspected our 1500 MVA ICT-2 (R-Ph), During inspection it is found that the IV Bushing got damaged and oil flowed out from the bushing. During complete internal inspection by OEM M/s BHEL winding found faulty	18 May 2022. PRV- 1 & 2 Trip, Differential protection and Buchholz Trip. inspected our 1500 MVA ICT-2 (R-Ph), During inspection it is found that the IV Bushing got damaged and oil flowed out from the bushing. During complete internal inspection by OEM M/s BHEL winding found faulty. Replacement of Rph unit with new unit under processing. FTC process taken up with NRLDC.
11	220 KV AGRA(PG)-FEROZABAD(UP) (UP) CKT-1	Line	UPPTCL	27-11-2021	09:55	171	Jumpering work for making Lilo point of 220 kv Firozabad(400)-Agra(765) PG line at 220 kv Tundla	30 Apr 2022. Jumpering work for making Lilo point of 220 kv Firozabad(400)-Agra(765) PG line at 220 kv Tundla. FTC process completed but yet to be charged due to PLCC issue at Tundla end.
12	400KV Bus 1 at Vishnuprayag(JP)	BUS	JPVL	02-12-2021	14:42	130	Bus bar protection operated at Vishnuprayag.	30 Sep 2022
13	50 MVAR Bus Reactor No 1 at 400KV Moradabad(UP)	BR	UPPTCL	03-12-2021	22:22	164	R-phase bushing damaged.	
14	400/220 kV 240 MVA ICT 3 at Moradabad(UP)	ICT	UPPTCL	13-12-2021	22:38	154	Due to high DGA values, Hydrogen gas is above permissible limit.	30 Dec 2022. It has been informed that 315MVA ICT has been
15	220/33 kV 125 MVA ICT 4 at Saurya Urja Solar(SU)	ICT	Saurya Urja	20-12-2021	20:15	147	ICT-4 tripped due to operation of of PRD, REF, Differential and Buchholz relay.	
16	50 MVAR BUS REACTOR NO 1 AT 400KV PANKI(UP)	BR	UPPTCL	29-01-2022	08:56	108	Replacement of 50 MVAR Bus reactor by new 125 MVAR Bus Reactor.	18.05.2022
17	125 MVAR BUS REACTOR NO 1 AT 400KV RATANGARH(RS)	BR	UPPTCL	22-04-2022	20:04	26	High increase in fault gases has been observed	31.05.2022
18	765 KV ANPARA_D-UNNAO (UP) CKT-1	Line	UPPCL	08-02-2022	10:06	98	Shifting of Line Reactor from Anpara-D to Obra-C S/S (OCC 190)	30.05.2022. LILO of the line at Obra C under processing.
19	220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1	Line	PDD JK	19-02-2022	21:45	86	Tower no. 170 collapsed.	31.05.2022
20	400 KV Parbati_3(NH)-Sainj(HP) (PKTCL) Ckt-1	Line	PKTCL	11-03-2022	03:21	67	Phase to earth fault R-N , Zone-1 from Parbati_3(NH). R-phase XLPE cable has been punctured between GIS and Pothead yard of Parbati-III PS.	
21	220/33 kV 125 MVA ICT 3 at Saurya Urja Solar(SU)	ICT	Saurya Urja	13-03-2022	18:37	64	Failure of Transformer Bucholz relay and Differential Operated	
22	400/21 kV 776 MVA GT 7 at Suratgarh SCTPS(RVUN)	ICT	RRVPNL	15-03-2022	01:32	63	Due to failure of R-phase bushing of GT-7A.	31.05.2022
23	400/220 KV 315 MVA ICT 2 AT LUDHIANA(PG)	ICT	POWERGRID	28-03-2022	09:49	50	For augmentation of 315 MVA ICT-2 with 500 MVA transformer as approved in NRPC.	
24	703 MAIN BAY - 240 MVAR BUS REACTOR NO 1 AT 765KV AGRA FATEHBAD(UP)	BAY	UPPTCL	30-03-2022	10:02	48	Due to planned shutdown of 765kV bus 2 at 765 kV Agra Fatehabad.	
25	220 KV Charkhi Dadri(BB)-Khetri(RS) (BB) Ckt-1	Line	BBMB	04-04-2022	06:32	43	Bus-bar protection operated at Khetri(RS) due to B-phase CT burst of 220kV Khetri-Charkhi Dadri Ckt-I at Khetri(RS).	
26	220 KV KUNIHAR(HP)-PINJORE(HV) (HV) CKT-1	Line	HVPNL	04-04-2022	09:05	43	Destringing of conductor between towers T-331 to T-334 and T-338 to T-339 of 220 kV Kunihar-Pinjore ckt and stringing & sagging of conductor between T-331 to T-1 of 220kV Baddi-Kunihar ckt. and stringing & sagging of conductor between T-339 to T-5 of 220kV Baddi-Pinjore ckt for LILOing of 220kV Kunihar-Pinjore ckt. to 220/66/33/11kV Substation Baddi	
27	220 KV UNCHAHAR(NT)-FATEHPUR(UP) (UP) CKT-2	Line	UPPTCL	07-04-2022	09:50	40	for LILO of 220KV Fatehpur -Unchahar-II at newly constructed 220KV S/s Malwan	
28	411 TIE BAY - 400KV AGRA FATEHBAD-MATHURA (UP) CKT-1 AND 125 MVAR BUS REACTOR NO 1 AT 400KV AGRA FATEHBAD(UP)	BAY	UPPTCL	08-04-2022	18:22	38	To attend CT faulty alarm observed 411 tie bay CT.	
29	220 KV DEHAR(BB)-KANGOO(HP) (HP) CKT-1	Line	HPPTCL	11-04-2022	11:13	36	To replace 3 nos. 245 KV CTs between Bus Isolator No. 210 and extended Bus 220 Kv Bus Section II.	
30	220 KV Gazipur(DTL)-Shahibabad(UP) (UP) Ckt-2	Line	UPPTCL	30-04-2022	19:30	16	Line remains charge at No load from UP end. Manually open at 19:30 on 30/04/22 due bending of tower no. 4	
31	220 KV Gazipur(DTL)-Noida Sec62(UP) (UP) Ckt-1	Line	UPPTCL	30-04-2022	22:55	16	Tower tilted on one side at tower no 10 from Gazipur (DTL) end.	
32	FSC of 400 kV Meerut- Bareilly – II at Bareilly						Due to low current	
33	FSC of 765 KV Koteshwar-Meerut (PG) Ckt-1 at Meerut(PG)						FSCs were to be Upgraded to 765kV after upgradation of lines. FTC process completed by Apr-2021, however,	
34	FSC of 765 KV Koteshwar-Meerut (PG) Ckt-2 at Meerut(PG2						FSCs not yet taken into service. Expected revival status awaited from PG-NR1.	
35	FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri(PG)						Due to low current. Requested PG-NR3 for taking FSC into service but not yet charged. Revival status awaited. As per NRLDC instrcution while attempting charging of FSC-2 (Fathepur Mainpuri line-2) at Mainpuri, VME protection system was blocking the FSC back to in service. Due to that FSC-2 could not be taken in service.	
36	FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri(PG)							
37	FSC of 400 kV Meerut- Bareilly – I at Bareilly						Due to low current	

B. Details of Long Duration Generating Units Outage :-

S.No	Element Name	Type	Owner	Outage			Reason / Remarks	
1	600 MW RGTPP(Khedar) - UNIT 2		HVPNL	02-03-2021	00:00	441	Existing turbine to be replaced. Issue of delivery of turbine from China.	01.09.2022
2	66 MW Pong HPS - UNIT 4		BBMB	28-07-2021	15:00	292	Failure of compress air system	
3	250 MW Chhabra TPS - UNIT 4		RRVPNL	09-09-2021	00:47	250	Due to Electrostatic precipitators (ESP) structure damage	
4	100 MW Koteshwar HPS - UNIT 1		THDC	04-11-2021	22:58	193	due to fault in GT	
5	108 MW Bhakra HPS - UNIT 1		BBMB	15-12-2021	12:05	152	Renovation Modernization and upgradation of capacity to 126MW	
6	200 MW Obra TPS - UNIT 13		UPPTCL	08-01-2022	06:36	129	High bearing vibration in turbine	
7	660 MW Meja TPS - UNIT 2		UPPTCL,NTPC	07-02-2022	18:59	98	Boiler tube leakage Boiler water wall under major repairs in progress.	15.06.2022

8	34 MW Delhi Gas Turbines - UNIT 9		DTL	12-02-2022	20:00	93	STG Governor oil leakage	
9	30 MW Delhi Gas Turbines - UNIT 5		DTL	12-02-2022	21:04	93	due to tripping of associated STG at 20:00 hrs	
10	660 MW Suratgarh SCTPS - UNIT 7		RRVPNL	15-03-2022	01:32	63	FAILURE OF R PHASE BUSHING OF GT-7A.	31.05.2022
11	126 MW Bhakra HPS - UNIT 5		BBMB	21-03-2022	10:03	57	Runner Modifications	
12	200 MW Singrauli STPS - UNIT 2		NTPC	22-03-2022	23:20	55	Capital overhauling & subsequently issues detected in HP turbine.	
13	135 MW VSLPP (IPP) - UNIT 1		RRVPNL	01-04-2022	10:00	46	Boiler Refractory failure.	
14	600 MW Kalisindh TPS - UNIT 2		RRVPNL	08-04-2022	19:18	38	Due to Primary air (PA) Fan 2B high vibration problem. Hydrogen leakage problem in generator since 18.04.2022	18.05.2022
15	154.51 MW Dadri GPS - UNIT 6		NTPC	13-04-2022	20:44	33	Boiler tube leakage	

Sr No	Element Name	Outage Date
1	765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1	13-Apr-22
		19-Apr-22
		25-Apr-22
2	765 KV Jhatikara-Aligarh (PG) Ckt-1	14-Apr-22
		25-Apr-22
		29-Apr-22
3	400 KV Muktsar-Makhu (PS) Ckt-2	09-Apr-22
		10-Apr-22
		11-Apr-22
		12-Apr-22
		19-Apr-22
4	400 KV Agra-Unnao (UP) Ckt-1	03-Apr-22
		04-Apr-22
		23-Apr-22
		27-Apr-22
5	400 KV Nakodar(PSG)-Makhu(PS) (PS) Ckt-1	20-Apr-22
		21-Apr-22
		23-Apr-22
6	400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-2	09-Apr-22
		11-Apr-22
		25-Apr-22
7	400 KV Kala Amb(PKTL)-Wangto_GIS(HP) (HPPTCL) Ckt-1	09-Apr-22
		16-Apr-22
		28-Apr-22
8	400 KV Kanpur-Ballabhgarh (PG) Ckt-1	01-Apr-22
		03-Apr-22
		09-Apr-22
9	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	02-Apr-22
		06-Apr-22

		07-Apr-22
10	400 KV Obra_B-Rewa Road (UP) Ckt-1	03-Apr-22
		08-Apr-22
		09-Apr-22
11	400 KV Panchkula(PG)-Panipat(BB) (PG) Ckt-1	11-Apr-22
		24-Apr-22
		25-Apr-22
12	400 KV Singrauli(NT)-Allahabad(PG) (PG) Ckt-1	03-Apr-22
		09-Apr-22
		09-Apr-22
13	220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1	09-Apr-22
		10-Apr-22
		11-Apr-22
		11-Apr-22
		13-Apr-22
		14-Apr-22
		21-Apr-22
14	220 KV Badarpur(NT)-Alwar MIA(RS) (RS) Ckt-1	07-Apr-22
		17-Apr-22
		19-Apr-22
		21-Apr-22
		28-Apr-22
		02-Apr-22

15	220 KV Duni(RS)-Kota(PG) (RS) Ckt-1	04-Apr-22
		24-Apr-22
		25-Apr-22
		28-Apr-22

Outage Time
16:45
13:16
19:23
20:11
21:24
13:51
14:38
20:39
17:17
15:57
23:14
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13:10
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03:03
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12:58
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22:04
00:40
03:27
16:45
23:02
01:37
12:43
12:40
15:06
09:21
11:32
12:50

14:50
18:40
19:18
12:22

Reason
Tripped during heavy wind storm in the Bhadla_II area. Zone-2, R-N fault, Dist. 260 km, Fault current 1.89kA from Fatehgarh_2 & Zone-1, R-N fault, Dist. 2km from Bhadla_2. As per PMU, R-N fault in reclaim time with delayed clearance of 400ms observed.
Tripped only from FATEHGARH_II on 86A relay (master-trip) operated while on-going work of new (720) Tie Bay. Line remain charged from Bhadla-II end. As per PMU, No fault observed.
R-N fault, Dist. 134km, Fault current 2.38kA from Fatehgarh_2 & R-N fault, Zone-1, Fault current 11kA, Dist. 0.0228km from Bhadla_2. As per PMU, R-N fault occured, no auto-reclosing observed.
Y-N fault, Dist. 32.90km, Fault current 12.22kA from Jhatikara end. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
Y-N fault. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
R-N fault. As per PMU, R-N fault followed by B-N fault occured, no auto-reclosing observed.
R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
Y-N fault. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
B-N fault. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
B-N fault. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
Y-N fault. As per PMU, Y-N fault occured, no auto-reclosing observed.
B-N fault. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
Y-N fault. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
B-N fault. As per PMU, B-N fault occured, no auto-reclosing observed.
B-N Fault, Dist. 27km, Fault current 7.29kA from Makhu end. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
B-N fault. As per PMU, B-N fault occured, no auto-reclosing observed.
B-N fault, Zone-1, Dist. 11.1km, Fault current 13.3kA from Daulatabad end. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
B-N fault. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
B phase fault, Zone-1, Dist. 13.64km from Daulatabad end. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
Y-B fault. As per PMU, Y-B fault is observed.
R-Y Fault, Fault current Ir 10.26KA, Iy 10.25KA, Dist. 16.65km from Wangtoo end. Conductor snapped in between tower no. 47-48. As per PMU, R-Y fault is observed.
Y-B fault. As per PMU, Y-B fault is observed.
R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
R-N fault. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
R-N fault, Dist. 273.829km, Fault current 1.587kA from Kanpur. As per PMU, R-N fault and unsuccessful auto-reclosing observed.
DT received from Noida Sec 123 (UP) end due to problem in control cable. As per PMU, No fault observed.
DC Source-I failed at 400kV S/S Noida Sector-148. As per PMU, No fault observed.

R-N fault, Zone-1, Dist. 13.08km, Fault current 8.78KA from Noida Sec-148 end. As per PMU, R-N fault occured, no auto-reclosing observed.
B-N fault. As per PMU, B-N fault is observed.
B-N fault. As per PMU, B-N fault occured, no auto-reclosing observed.
Y-N fault, Zone-1, Fault current 1.8kA, Dist. 86.9km from Rewa Road. As per PMU, Y-N fault occured, no auto-reclosing observed.
Tripped due to mal-operation of master-trip relay 86A at Panipat(BBMB). As per PMU, No fault observed.
Y-N fault, Fault current 0.924KA, Dist. 149.9km from Panipat end. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
R-N fault. As per PMU, B-N fault and unsuccessful auto-reclosing observed. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
Y-N fault.As per PMU, Y-N fault is observed.
Y-N fault. As per PMU, Y-N fault and unsuccessful auto-reclosing observed.
B-N fault, Dist. 93.36km, Fault current 3.442kA from Allahabad end. As per PMU, B-N fault and unsuccessful auto-reclosing observed.
Tripped due to mal-operation of master-trip relay 86A at AREPRL. As per PMU, No fault observed.
Tripped due to mal-function of BRC (broken conductor) alarm optd. (as per relay indication), 86 A&B operated at AREPRL. As per PMU, No fault observed.
Tripped due to mal-function of BRC (broken conductor) alarm optd. (as per relay indication), 86 A&B operated at AREPRL. As per PMU, No fault observed.
Tripped due to mal-function of BRC (broken conductor) alarm optd. (as per relay indication), 86 A&B operated at AREPRL. As per PMU, No fault observed.
Tripped alongwith 765 KV BHADLA_2 (PG)-FATEHGARH_II(PG) (PFTL) CKT-1 and 2. As per PMU, R-N fault in reclaim time with delayed clearance of 400ms observed. But fault was at 765kV level.
Due to BRC (Broken Conductor) protection optd. at AREPRL. As per PMU, No fault observed.
R-N fault, Zone-1, Fault current 1.124kA, Dist. 17.99 Km from AHEJ4L. As per PMU, B-N fault occured, no auto-reclosing observed.
R-N fault, Zone-1, Dist. 51km, Fault current 2.598kA from Alwar MIA. As per DR of Alwar end, R-N fault and unsuccessful auto-reclosing observed.
R-N fault, Dist. 104.5km from Alwar MIA. As per DR of Alwar end, R-N fault and no auto-reclosing observed.
R-N fault, Dist. 128.2km, Fault current 1.626kA from Alwar MIA end. As per PMU and DR of Alwar end, R-N fault occurred and delayed clearance of 320ms with no auto-reclosing observed.
B-N fault, Dist. 114.5km, Fault current 1.205kA from Alwar MIA. As per DR of Alwar end, Y-N fault occured, no auto-reclosing observed.
B-N fault, Zone-1, Dist. 76.52km, Fault current 1.746kA from Alwar MIA. As per DR of Alwar end, Y-N fault and no auto-reclosing observed.
B-N fault, Zone-1, Dist. 8.331km, Fault current 10.825kA from Duni & Dist. 85.32km, Fault current 2.016kA from Kota(PG). As per PMU, No fault observed.

B-N fault, Zone-1, Fault current 1.611kA, Dist. 35.07km from Dooni end & Fault current 2.87kA, Dist. 65.91km from Kota end. As per PMU, B-N fault occured, no auto-reclosing observed.
B-N Fault, Zone-1, Dist. 73.13km, Fault current 1.322kA from Dooni end. As per PMU, B-N fault occured, no auto-reclosing observed.
B-N fault, Zone-1, Dist. 47.98km, Fault current 1.568kA from Dooni end & Dist. 45.75km, Fault current 4.07kA from Kota(PG). As per PMU, B-N fault and unsuccessful auto-reclosing observed.
B-N fault, Zone-1, Dist. 31.31km, Fault current 1.659kA from Duni(RS) & Zone-1, Dist. 69.55km from Kota(PG). As per PMU, R-N fault occured, no auto-reclosing observed.

S.No.	Region	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Generation Loss(MW)	Load Loss(MW)	Category as per CEA Grid Standards	Energy Unserved (in MU)	Preliminary Report receipt status			DR/EL receipt status			Detailed Report receipt status		Fault Clearance time (in ms)
					Date	Time						within 24Hours	after 24Hours	Not Received	within 24Hours	after 24Hours	Not Received	Received	Not Received	
1	NR	1) 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-2 2) 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1	UTTAR PRADESH	UPPTCL	2-Apr-22	12:12	As reported, 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1 & 2 tripped due to DT received from Noida Sec 123 (UP) end due to problem in control cable. As per PMU, no fault is observed in the system.	0	0	GI-2	0	Y(UP)			Y(UP)			Y(UP)		NA
2	NR	1) 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-2 2) 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1 3) 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-2 4) 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1	UTTAR PRADESH	UPPTCL	6-Apr-22	21:22	As reported, 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1 & 2 and 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1 & 2 tripped due to failure of DC Source-I at 400kV S/S Noida Sector-148.As per PMU, no fault is observed in the system. In antecedent conditions, 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1 & 2 carrying 126MW & 127MW respectively.	0	0	GI-2	0	Y(UP)			Y(UP)			Y(UP)		NA
3	NR	1) 400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-1 2) 400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-2	HARYANA	HVPNL	9-Apr-22	12:47	As reported, 400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-2 tripped on R-N phase to earth fault after unsuccessful A/R operation, fault distance was 11.1km & fault current was 13.3kA from Daulatabad end. At the same time, 400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-1 also tripped from Daulatabad end only. As per PMU, R-N phase to earth fault with unsuccessful A/R observed. As per SCADA, change in demand of approx. 150MW is observed in Haryana control area. In antecedent condition, 400 KV Gurgaon(PG)-Daulatabad(HV) (HV) Ckt-1 & Ckt-2 were carrying approx. 206MW & 208MW respectively.	0	150	GD-1	0.25	Y(PG)	Y(Har)		Y(PG)	Y(Har)		Y(PG) Y(Har)		80
4	NR	1) 250 MW Karcham Wangtoo HPS - UNIT 3 2) 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 3) 250 MW Karcham Wangtoo HPS - UNIT 1 4) 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 5) 400/220 kV 315 MVA ICT 2 at Wangto_GIS(HP) 6) 400/220 kV 315 MVA ICT 1 at Wangto_GIS(HP) 7) 400 KV Baspa(JP)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 8) 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-1 9) 250 MW Karcham Wangtoo HPS - UNIT 1 10) 250 MW Karcham Wangtoo HPS - UNIT 3	HIMACHAL PRADESH	HPPTCL, HPSEB, JSW	9-Apr-22	16:33	As reported at 16:25 Hrs, 400kV Kala Amb-Wangtoo ckt tripped on Y-B phase to phase fault. As 400 KV Wangto_GIS(HP)-Sorang(Greenko) (Greenko) Ckt-1 & 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 were already under shutdown, all the power of Karcham and Baspa generation was evacuating from 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 and 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-1 & Ckt-2 (via 400/220 kV 315 MVA ICT 1&2 at Wangto_GIS(HP)). Further at 16:33 Hrs, 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 tripped on R-Y phase to phase fault. Due to loss of evacuation path, all the running units of Karcham and Baspa HEP tripped and 400kV Karcham Wangtoo S/s became dead. As per PMU, R-Y phase to phase fault is observed. As per SCADA, loss of generation of approx. 440MW at Karcham Wangtoo HEP and 180MW at Baspa HEP and change in load of approx. 100MW is observed in HP control area. In antecedent condition, 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-2 and 400 KV Karcham Wangtoo(JSW)-Wangto_GIS(HP) (HPPTCL) Ckt-1 & Ckt-2 were carrying 615MW, 16MW & 15MW respectively.	620	100	GD-1	0.13	Y(SJVN) Y(HP)	Y(KARCHAM)		Y(SJVN) Y(KARCHAM)			Y(HP	Y(KARCHAM)	80
5	NR	1) 220 KV Manesar(PG)-Mau(HV) (HVPNL) Ckt-1 2) 220 KV Manesar(PG)-Mau(HV) (HVPNL) Ckt-2	HARYANA	HVPNL	11-Apr-22	17:21	As reported, 220 KV Manesar(PG)-Mau(HV) (HVPNL) Ckt-1 & Ckt-2 both tripped on B-N phase to earth fault, fault distance was 8.3km & fault current was 8.8kA from Mau end. As per PMU, multiple B-N fault is observed. as per SCADA, change in demand of approx. 165MW is observed in Haryana control area. In antecedent condition, 220 KV Manesar(PG)-Mau(HV) (HVPNL) Ckt-1 & Ckt-2 were carrying 50Mw & 115MW respectively.	0	165	GD-1	0.49	Y(PG)	Y(Har)		Y(PG)	Y(Har)		Y(PG) Y(Har)		80
6	NR	1) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 2) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1	UTTRAKHAND		13-Apr-22	16:23	As reported, 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 tripped on R-Y phase to phase fault. At the same time, 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 also tripped on PLCC maloperation. Further, 33MW Unit-1 & Unit-3 at Singoli Bhatwari also tripped due to loss of evacuation path. As per PMU, R-Y phase to phase fault is observed. As per SCADA, change in generation of approx. 70MW is observed at Singoli Bhatwari HEP. In antecedent condition, 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 & Ckt-2 were carrying 35MW each.	70	0	GD-1	0.04		Y(SINGOLI) Y(Utt)		Y(SINGOLI)	Y(Utt)		Y(SINGOLI) Y(Utt)		80
7	NR	1) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt-1 2) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 3 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1 3) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1 4) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 5) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1	RAJASTHAN	AREPRL, POWERGRID	13-Apr-22	16:45	As reported, 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 tripped on R-N fault during heavy wind storm, fault distance was 2km from Bhadla_2 end. At the same time, 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 also tripped on R-N fault along with 220kV Fatehgarh2-Renew Sunbright Solar Ckt-1 from Renew Sunbright end, 220 KV Adani Renew Solar Park - PSS3 & PSS4_ckt. As per PMU, R-N & Y-N fault with delayed clearance in 400ms is observed. As per SCADA SOE, it seems that 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 tripped on R-N fault with unsuccessful A/R operation from Bhadla_2 end & no A/R operation from Fatehgarh_2 end, further after 600ms 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 tripped on R-N fault with delayed clearance of approx. 400ms. As per SCADA, change in solar generation of approx. 140MW is observed due to tripping of 220kV Fatehgarh2-Renew Sunbright Solar Ckt-1. In antecedent condition, 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 & Ckt-2 were carrying 421MW & 424MW respectively.	140	0	GD-1	0.06		Y(PG) Y(ADANI) Y(RENEW)			Y(PG) Y(ADANI) Y(RENEW)	Y(RENEW)	Y(PG) Y(ADANI)	400
8	NR	1) 220 KV Charkhi Dadri(BB)-Mahindergarh(HV) (HVPNL) Ckt-1 2) 220 KV Charkhi Dadri(BB)-Lulahir(HV) (HVPNL) Ckt-1	HARYANA	BBMB	20-Apr-22	09:13	As reported, 220 KV Charkhi Dadri(BB)-Mahindergarh(HV) (HVPNL) Ckt-1 & 220 KV Charkhi Dadri(BB)-Lulahir(HV) (HVPNL) Ckt-1 both tripped on df/dt relay operation. As per PMU, no fault observed and no rate of change of frequency in the range of 0.2Hz/sec observed. As per SCADA, change in load of approx. 80MW is observed in Haryana control area. In antecedent condition, 220 KV Charkhi Dadri(BB)-Mahindergarh(HV) (HVPNL) Ckt-1 & 220 KV Charkhi Dadri(BB)-Lulahir(HV) (HVPNL) Ckt-1 were carrying 83MW & 8MW respectively.	0	80	GD-1	0.18		Y(Har) Y(BBMB)				Y(BBMB)	Y(BBMB)		NA
9	NR	1) 220 KV Kishenganga(NH)-Wagoora(PG) (PG) Ckt-1 2) 220 KV Kishenganga(NH)-Wagoora(PG) (PG) Ckt-2	J & K	POWERGRID	21-Apr-22	03:59	220 KV Kishenganga(NH)-Wagoora(PG) (PG) Ckt-2 tripped on R-N phase to earth fault after unsuccessful A/R operation, fault distance was 9.6km & fault current was 12.26kA. At the same time, 220 KV Kishenganga(NH)-Wagoora(PG) (PG) Ckt-1 also tripped on B-N phase to earth fault after unsuccessful A/R operation, fault distance was 9.6km & fault current was 12.26kA. As per PMU, R-N phase to earth fault with unsuccessful A/R operation followed by B-N phase to earth fault with unsuccessful A/R operation is observed. As per SCADA, change in load of approx. 90MW is observed in J&K(UT) control area. In antecedent condition, 220 KV Kishenganga(NH)-Wagoora(PG) (PG) Ckt-1 & Ckt-2 were carrying approx. 60MW each.	0	90	GD-1	0.1		Y(NHPC) (PG)		Y(NHPC)	(PG)		Y(NHPC) (PG)		80

S.No.	Region	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Event (As reported)	Generation Loss(MW)	Load Loss(MW)	Category as per CEA Grid Standards	Energy Unserved (in MU)	Preliminary Report receipt status			DR/EL receipt status			Detailed Report receipt status		Fault Clearance time (in ms)
					Date	Time						within 24Hours	after 24Hours	Not Received	within 24Hours	after 24Hours	Not Received	Received	Not Received	
10	NR	1) 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-1 2) 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-2	HARYANA	HVPNL	24-Apr-22	18:00	As reported, 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-1 & Ckt-2 both tripped on R-Y phase to phase bus fault. Lines tripped on Z-4 distance protection operation at Badshahpur end as bus bar protection is not in service there. 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-1 tripped from Sohna Road end on DT received from Badshahpur end but 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-2 didn't trip from Sohna Road end. As per PMU, R-Y phase to phase fault with delayed clearance in 240ms is observed. As per SCADA, change in load of approx. 270MW is observed in Haryana control area. In antecedent condition, 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-1 & 220 KV Sohna Road (GPTL)-Badshahpur(HV) (HVPNL) Ckt-2 were carrying approx. 134MW each.	0	270	GD-1	0.11	Y(INDIGRID)	Y(Har)		Y(INDIGRID)	Y(Har)		Y(INDIGRID) Y(Har)		240
11	NR	1) 400 KV Deepalpur(JHKT)-Kabulpur(HV) (HVPNL) Ckt-1 2) 400 KV Deepalpur(JHKT)-Kabulpur(HV) (HVPNL) Ckt-2	HARYANA	HVPNL	25-Apr-22	19:09	As reported, 400 KV Deepalpur(JHKT)-Kabulpur(HV) (HVPNL) Ckt-1 & Ckt-2 both tripped during burning of wheat waste parali by farmers in between mid span of tower no. 53-54. As per PMU & SOE, 400 KV Deepalpur(JHKT)-Kabulpur(HV) (HVPNL) Ckt-1 tripped on B-N phase to earth fault after unsuccessful A/R operation. Further after 22 secs, 400 KV Deepalpur(JHKT)-Kabulpur(HV) (HVPNL) Ckt-2 also tripped on B-N phase to earth fault after unsuccessful A/R operation. In antecedent condition, 400 KV Deepalpur(JHKT)-Kabulpur(HV) (HVPNL) Ckt-1 & Ckt-2 were carrying 44MW each.	0	0	GI-2	0		Y(Har)			Y(Har)		Y(Har)		80
12	NR	1) 110 MW Harduaganj-C TPS - UNIT 7 2) 400/220 kV 315 MVA ICT 1 at Harduaganj (UP), 3) 250 MW Harduaganj-D TPS - UNIT 8 4) 250 MW Harduaganj-D TPS - UNIT 9	UTTAR PRADESH	UPPTCL, UPRVUNL	25-Apr-22	22:38	As reported, there was a R-Y-B bus fault at 220kV Harduaganj on which all 220kV feeders emanating from Harduanganj tripped on Z-4 distance protection operation. As fault was still persisting, 400/220 kV 315 MVA ICT 1 at Harduaganj (UP) tripped on over current protection operation. With the tripping of ICT & all 220kV feeders, 220kV bus at Harduaganj became dead which resulted into tripping of 110 MW Harduaganj-C TPS - UNIT 7, 250 MW Harduaganj-D TPS - UNIT 8 & UNIT-9. As per PMU, R-Y-B three phase fault with delayed clearance in 1960ms is observed. As per SCADA, generation loss of approx. 500MW at Harduaganj TPS and change in load of approx. 180MW in UP control area is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1 at Harduaganj (UP), 110 MW Harduaganj-C TPS - UNIT 7, 250 MW Harduaganj-D TPS - UNIT 8 & UNIT-9 were carrying 17MW, 62MW, 223MW & 223MW respectively.	500	180	GD-1	1.29	Y(UP)			Y(UP)			Y(UP)		1960
13	NR	1) 220 KV Bassi(PG)-Dausa(RS) (PG) Ckt-1 2) 220 KV Sawaimadhopur(RS)-Dausa(RS) (PG) Ckt-1, 3) 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 4) 220 KV Bassi(PG)-Dausa(RS) (PG) Ckt-2	RAJASTHAN	POWERGRID	28-Apr-22	12:51	As reported, 220 KV Bassi(PG)-Dausa(RS) (PG) Ckt-2 tripped on B-N phase to earth fault, fault distance was 43km and fault current was 3.28kA from Bassi end. At the same time, 220 KV Sawaimadhopur(RS)-Dausa(RS) (PG) Ckt-1 also tripped and 220 KV Bassi(PG)-Dausa(RS) (PG) Ckt-1 & 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 both tripped from remote end only on Z-2 distance protection operation. As per PMU, B-N phase to earth fault with delayed clearance in 360ms is observed. As per SCADA, change in load of approx. 185MW is observed in Rajasthan control area. In antecedent condition, 220 KV Bassi(PG)-Dausa(RS) (PG) Ckt-1 & Ckt-2, 220 KV Sawaimadhopur(RS)-Dausa(RS) (PG) Ckt-1 and 220 KV Lalsote(RS)-Dausa(RS) (PG) Ckt-1 were carrying 99MW, 99MW, 2MW & 1MW respectively.	0	185	GD-1	0.21		Y(Raj)	Y(PG)		Y(Raj)	Y(PG)	Y(Raj)		360
14	NR	1) 400 KV Dadri(NT)-Loni Harsh Vihar(DV) (NT) Ckt-2 2) 400/220 kV 315 MVA ICT 3 at Loni Harsh Vihar(DV)	NEW DELHI	DTL, NTPC	29-Apr-22	14:43	As reported at 14:29 Hrs, 400 KV Dadri(NT)-Loni Harsh Vihar(DV) (NT) Ckt-1 tripped on B-N phase to earth fault. Further at 14:43 Hrs, 400 KV Dadri(NT)-Loni Harsh Vihar(DV) (NT) Ckt-2 tripped from Dadri end only on B-N phase to earth fault. At the same time, 400/220 kV 315 MVA ICT 3 at Loni Harsh Vihar(DV) tripped on over current protection operation from LV side and 220kV Patparganj-Preet Vihar Ckt-1 tripped on E/F protection operation. With the tripping of 00 KV Dadri(NT)-Loni Harsh Vihar(DV) (NT) Ckt-1 & Ckt-2 400/220kV Loni Harsh Vihar became dead. As per PMU, B-N phase to earth fault with no A/R operation is observed. As per SCADA, change in load of approx. 440MW is observed in Delhi control area. In antecedent condition, 400 KV Dadri(NT)-Loni Harsh Vihar(DV) (NT) Ckt-2 & 400/220 kV 315 MVA ICT 3 at Loni Harsh Vihar(DV) were carrying 441MW & 150MW respectively.	0	440	GD-1	0.2		Y(DTL) Y(NTPC)		Y(DTL)	Y(NTPC)		Y(DTL)		80
15	NR	1) 220 KV Dehar-Ganguwal (BB) Ckt-2 2) 400/220 kV 315 MVA ICT 1 at Dehar(BB) 3) 220 KV Dehar(BB)-Kangoo(HP) (HP) Ckt-1 4) 220KV Bus 2 at Dehar(BB) 5) 400/220 kV 315 MVA ICT 1 at Dehar(BB) 6) 220 KV Dehar-Ganguwal (BB) Ckt-2	PUNJAB	BBMB, HPPTCL	30-Apr-22	11:16	As reported at 11:16 Hrs, 220 KV Dehar(BB)-Kangoo(HP) (HP) Ckt-1 tripped on R-N fault, Z-1 from Dehar end. At the same time, 220 KV Dehar-Ganguwal (BB) Ckt-2, 400/220 kV 315 MVA ICT 1 at Dehar(BB) and 220/132kV 40MVA ICT at Dehar also tripped. Again at 15:24 Hrs, bus bar protection of 220KV Bus 2 at Dehar(BB) operated which led to tripping of 220 KV Dehar-Ganguwal (BB) Ckt-2 and 400/220 kV 315 MVA ICT 1 at Dehar(BB). As per PMU, no fault observed at 11:16 Hrs & 15:24 Hrs. As per SCADA, change in load of approx. 60MW is observed in HP control area at 11:16 Hrs. In antecedent condition, 220 KV Dehar(BB)-Kangoo(HP) (HP) Ckt-1, 220 KV Dehar-Ganguwal (BB) Ckt-2 and 400/220 kV 315 MVA ICT 1 at Dehar(BB) were carrying 92MW, 52M & 97MW respectively.	0	60	GD-1	0.08		Y(HP)	Y(BBMB)			Y(BBMB)		Y(BBMB)	NA

Northern Regional inter regional lines tripping for April-22

Annexure-I

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Load Loss/ Gen. Loss	Brief Reason (As reported)	Category as per CEA Grid standards	Restoration		# 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				Date	Time						
1	500 KV HVDC Mahindergarh(APL)-Adani Mundra(APL) (ATIL) Ckt-1	APL	2-Apr-22	10:33	Nil	VCS pump tripped(Valve cooling system) at Mahindergarh(APL) end.	NA	2-Apr-22	11:35	NA	Yes(After 24Hrs)	Yes(After 24Hrs)			From PMU, No AC system fault observed.
2	500 KV HVDC Mahindergarh(APL)-Adani Mundra(APL) (ATIL) Ckt-2	APL	2-Apr-22	10:36	Nil	VCS pump tripped(Valve cooling system) at Mahindergarh(APL) end.	NA	2-Apr-22	11:28	NA	Yes(After 24Hrs)	Yes(After 24Hrs)			From PMU, No AC system fault observed.
3	765 KV Orai-Jabalpur (PG) Ckt-1	POWERGRID	4-Apr-22	18:02	Nil	Y-N fault.	NA	4-Apr-22	22:25		Yes(After 24Hrs)	Yes(After 24Hrs)	A/R was off due to OPGW stringing under live line condition.		From PMU, Y-N fault is observed in the system.
4	765 KV Varanasi-Gaya (PG) Ckt-1	POWERGRID	15-Apr-22	14:58	Nil	R-N fault.	NA	15-Apr-22	15:43		Yes(After 24Hrs)	Yes(After 24Hrs)			From PMU, R-N fault is observed in the system and line tripped due to persistent fault.
5	500 KV HVDC Mahindergarh(APL)-Adani Mundra(APL) (ATIL) Ckt-1	APL	23-Apr-22	00:29	Nil	Pole-1 tripped as Electrode Line protn. 60EL- Pre warning alarm raised in Pole-1 which was followed by ELECTRODE LINE PROT 60EL_HR-2 FORCED RET.	NA	23-Apr-22	03:04	NA	Yes	Yes			From PMU, No AC system fault observed.
6	800 KV HVDC Kurukshetra(PG) Pole-4	POWERGRID	26-Apr-22	22:35	Nil	Pole-4 got blocked due to the Group relay burn out at Kurukshetra(PG) end.	NA	27-Apr-22	00:30	NA	NO	NO		Details of the tripping yet to be received.	From PMU, No AC system fault 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.

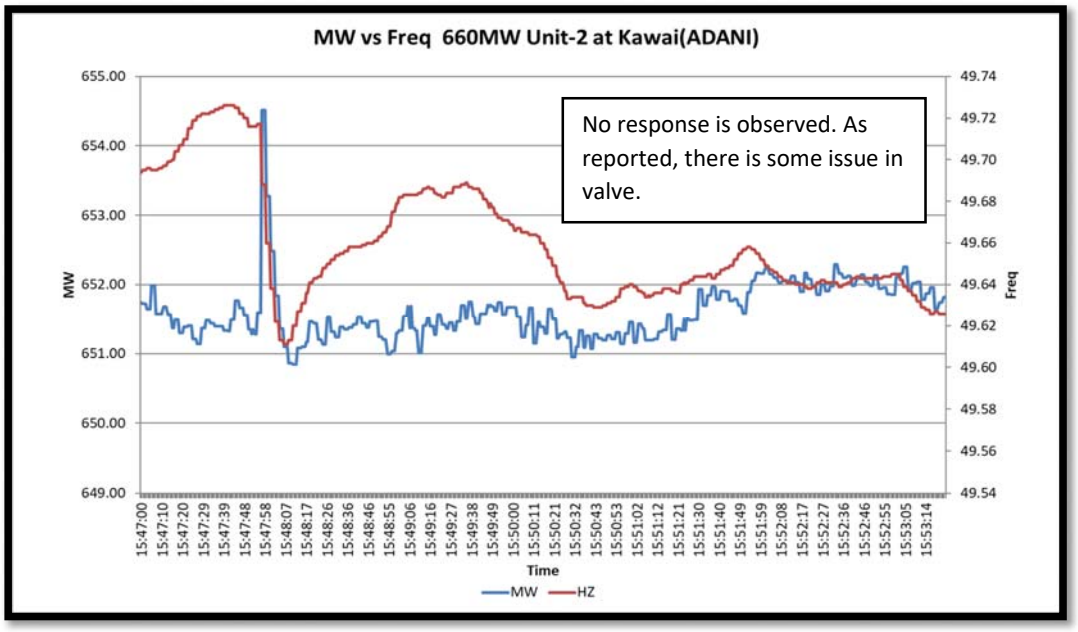
Reporting of Violation of Regulation for various issues for above tripping

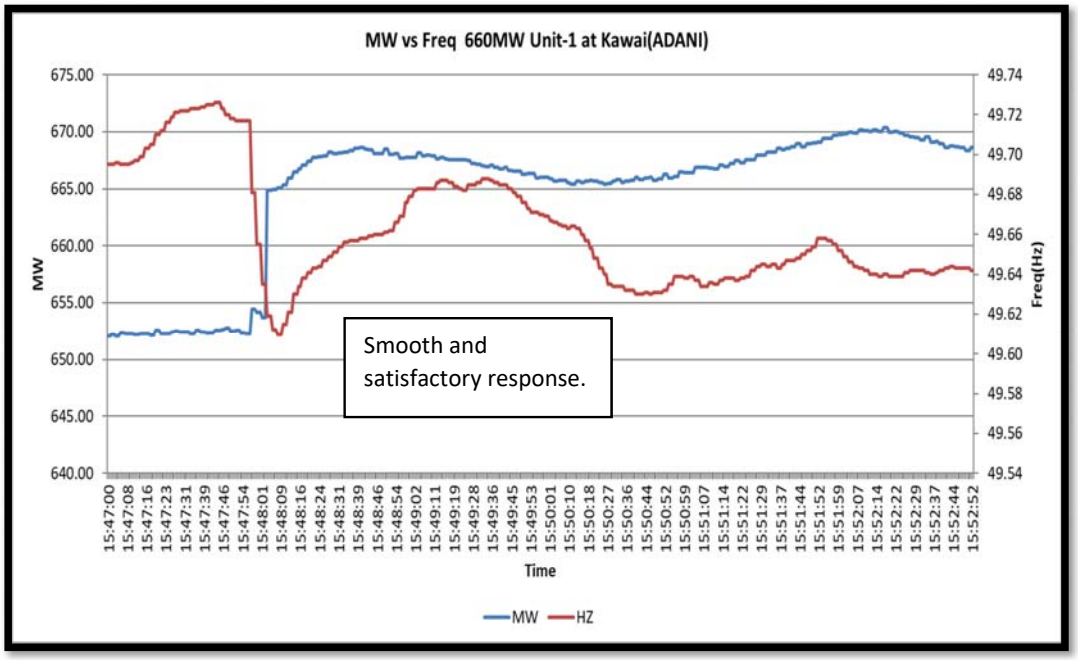
1	Fault Clearance time(>100ms for 400kV and >160ms for 220kV)	1. CEA Grid Standard-3.e 2. CEA Transmission Planning Criteria
2	DR/EL Not provided in 24hrs	1. IEGC 5.2(r) 2. CEA Grid Standard 15.3
3	FIR Not Furnished	1. IEGC 5.9.6.a 2. CEA Grid Standard 12.2 (Applicable for SLDC, ALDC only)
4	Protection 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

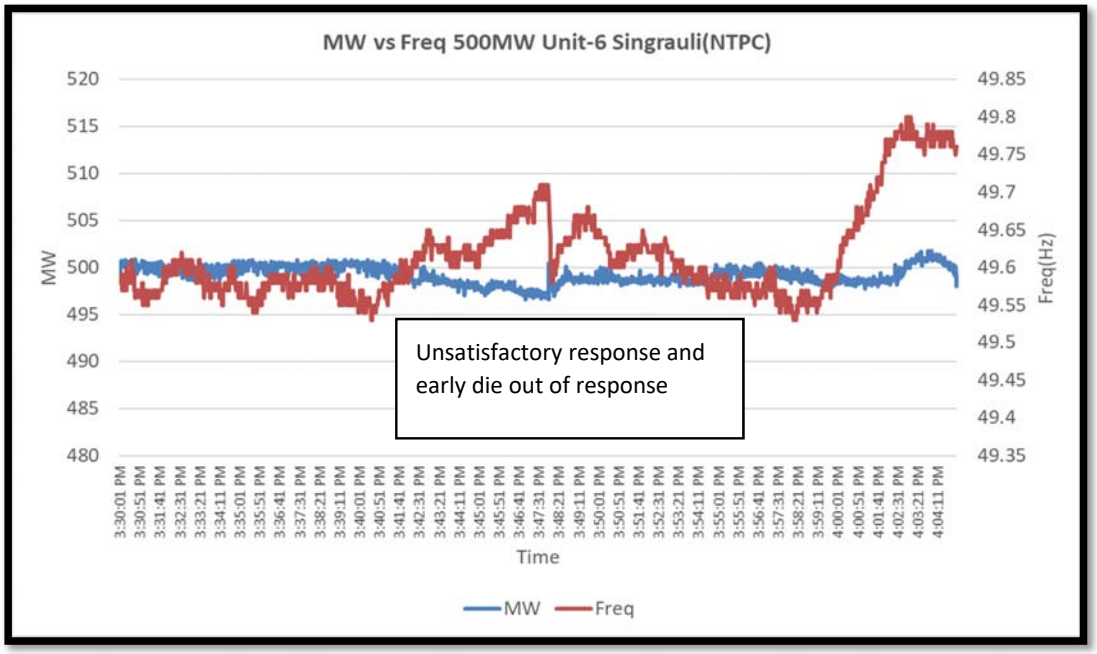
S. No.	Utility	1st Apr 2022 - 30th Apr 2022											
		Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)
			Value	%	Value		%	Value		%	Value		%
1	ACME	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
2	AHEJ4L	7	7	**100**	7	0	**100**	7	0	**100**	7	0	**100**
3	ANTA-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
4	APL	3	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
5	APMPL	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
6	AREPRL	8	7	**88**	4	0	**50**	4	0	**50**	8	0	**100**
7	AVAADA RJHN	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
8	BAIRASUIL-NH	2	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
9	BBMB	56	17	**30**	20	11	**44**	18	21	**51**	19	2	**35**
10	CHAMERA-I-NH	2	0	**0**	0	2	**0**	0	2	**0**	0	0	**0**
11	CLEANSOLAR_JODHPUR	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
12	CPCC1	83	22	**27**	23	8	**31**	25	9	**34**	23	6	**30**
13	CPCC2	52	4	**8**	4	5	**9**	4	4	**8**	22	0	**42**
14	CPCC3	34	10	**29**	9	0	**26**	9	0	**26**	9	0	**26**
15	DADRIGAS-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
16	DADRI-NT	8	0	**0**	1	0	**13**	0	0	**0**	0	0	**0**
17	FARIDABAD-NT	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
18	INDIGRID	2	2	**100**	0	0	**0**	0	0	**0**	2	0	**100**
19	JHAJJAR	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
20	KARCHAM	12	3	**25**	5	3	**56**	5	1	**45**	12	0	**100**
21	KISHENGANGA-NH	2	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
22	KOTESHWAR	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
23	MAHINDRA	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
24	NAPP	3	1	**33**	1	0	**33**	1	0	**33**	1	0	**33**
25	NJPC	4	0	**0**	0	0	**0**	0	0	**0**	4	0	**100**
26	PKTSL	2	2	**100**	2	0	**100**	2	0	**100**	1	0	**50**
27	RAMPUR	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
28	RAPPA	6	2	**33**	6	0	**100**	6	0	**100**	6	0	**100**
29	RAPPB	2	0	**0**	0	0	**0**	0	0	**0**	2	0	**100**
30	RAPPC	2	2	**100**	0	0	**0**	0	0	**0**	0	0	**0**
31	SALAL-NH	2	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
32	SEWA-2-NH	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
33	SINGOLI	4	1	**25**	1	0	**25**	1	0	**25**	4	0	**100**
34	SINGRAULI-NT	5	5	**100**	5	0	**100**	5	0	**100**	5	0	**100**
35	SLDC-DV	29	0	**0**	10	3	**38**	10	3	**38**	10	0	**34**
36	SLDC-HP	16	0	**0**	0	12	**0**	0	12	**0**	0	0	**0**
37	SLDC-HR	40	26	**65**	29	1	**74**	28	0	**70**	26	0	**65**
38	SLDC-JK	7	1	**14**	7	0	**100**	7	0	**100**	7	0	**100**
39	SLDC-PS	29	1	**3**	4	1	**14**	4	0	**14**	7	0	**24**
40	SLDC-RS	72	0	**0**	35	0	**49**	35	0	**49**	36	0	**50**
41	SLDC-UK	14	4	**29**	6	0	**43**	9	5	**100**	5	0	**36**
42	SLDC-UP	114	20	**18**	27	12	**26**	28	4	**25**	24	1	**21**
43	SORANG	1	0	**0**	0	1	**0**	0	1	**0**	1	0	**100**
44	STERLITE	7	2	**29**	1	0	**14**	1	0	**14**	2	1	**33**
45	TANAKPUR-NH	1	0	**0**	0	1	**0**	0	0	**0**	0	0	**0**
46	TANDA-NT	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
47	TATAPOWER	1	1	**100**	1	0	**100**	1	0	**100**	1	0	**100**
48	UNCHAHAR-NT	1	1	**100**	0	0	**0**	0	0	**0**	0	0	**0**
49	URI-I-NH	1	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**

Primary Frequency Response characteristic of generating units as per field data:

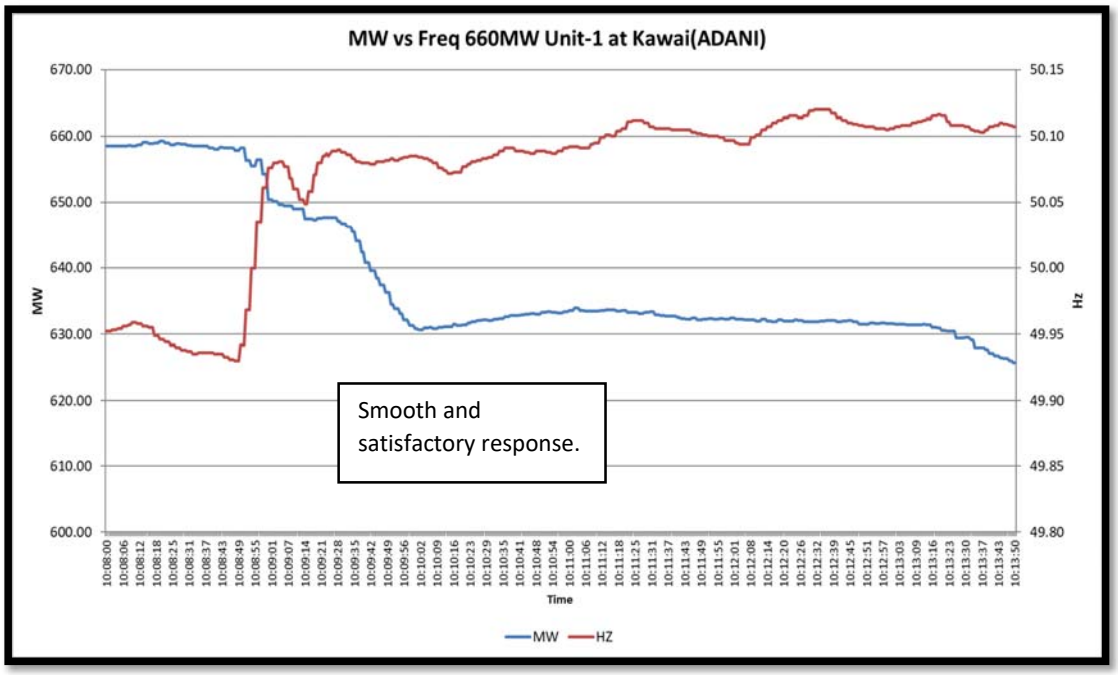
A.) During grid event on dated 20th April 2022 at 15:47 Hrs:

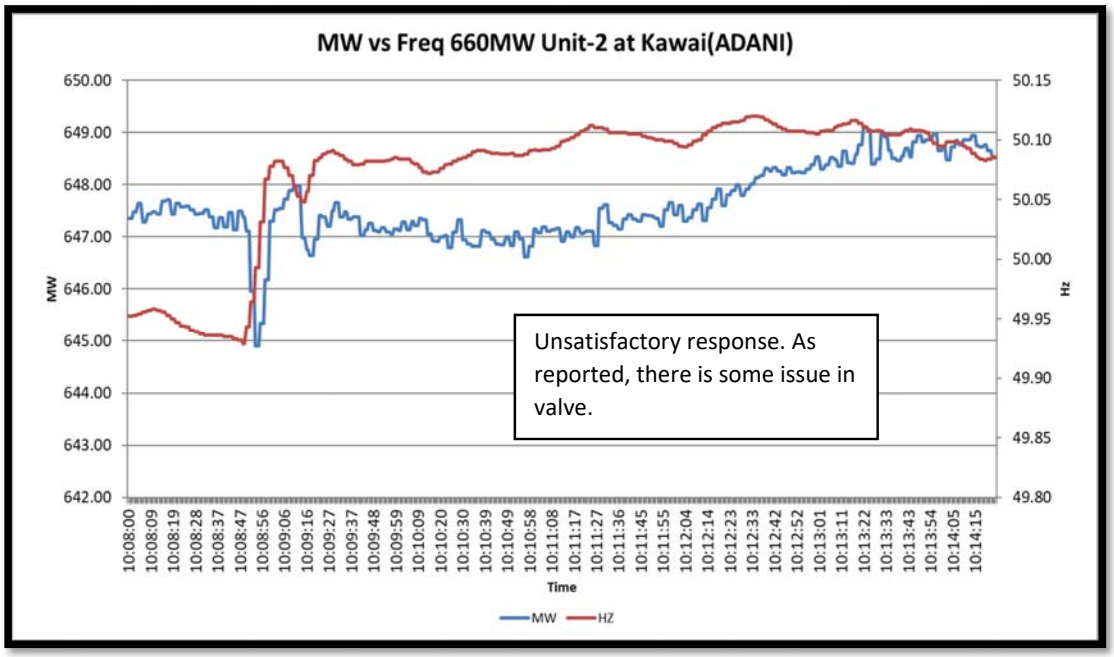






B.) During grid event on dated 26th April 2022 at 10:08 Hrs:




MW vs Freq 660MW Unit-2 at Kawai(ADANI)
650.00
649.00
648.00
647.00
646.00
645.00
644.00
643.00
642.00
MW
50.15
50.10
50.05
50.00
49.95
49.90
49.85
49.80
Hz
10:08:00
10:08:09
10:08:19
10:08:28
10:08:37
10:08:47
10:08:56
10:09:06
10:09:16
10:09:27
10:09:37
10:09:48
10:09:59
10:10:09
10:10:20
10:10:30
10:10:39
10:10:49
10:10:58
10:11:08
10:11:17
10:11:27
10:11:36
10:11:45
10:11:55
10:12:04
10:12:14
10:12:23
10:12:33
10:12:42
10:12:52
10:13:01
10:13:11
10:13:22
10:13:33
10:13:43
10:13:54
10:14:05
10:14:15
Time
MW
HZ
Unsatisfactory response. As reported, there is some issue in valve.

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 in FY 2021-22
1	**THDC**					
	TEHRI HPS(4 * 250)	07/01/2019 to 10/01/2019	07/01/2019 to 10/01/2019	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 existing excitation system is very old and obsoleted forwhich support for PSS tuning is not available from OEM (Mls Voith Hydro), although NJHPS, SJVN has placed work order on 08/12/201 5. Further being the critical component, it is not possible"io get the PSS tuning done from any other vender except OEM (Mls Voith Hydro) being the system and software specific job. Therefore, prpposal for upgradation of the excitation system of this unit is under process and PSS tuning shall be carried out during upgradation of excitation system.	3rd Quarter
	NATHPA-JHAKRI HPS(Unit3 #250)	03.03.2020	-	No	Excitation system upgraded in 2020	
	NATHPA-JHAKRI HPS(Unit4 #250)	14.03.2013	-	NO	The existing excitation system is very old and obsoleted forwhich support for PSS tuning is not available from OEM (Mls Voith Hydro), although NJHPS, SJVN has placed work order on 08/12/201 5. Further being the critical component, it is not possible"io get the PSS tuning done from any other vender except OEM (Mls Voith Hydro) being the system and software specific job. Therefore, prpposal for upgradation of the excitation system of this unit is under process and PSS tuning shall be carried out during upgradation of excitation system.	3rd Quarter
	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	27.10.2020,10.02.201 21	YES	PSS tuning was done at the time of commissioning of Excitation System by OEM (M/s BHEL). Since then response of PSS is checked regularly and found satisfactory.	
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 units	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 turning shall be submitted seperately.	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		Re-tunning& Step response test shall be 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 (Unit1,3,4,6#250)	05.02.22 & 06.02.22		Yes	--	3rd Quarter
	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	--	3rd Quarter
	ANPARA-C TPS(Unit2# 600)	08-03-2016	08-03-2016	Yes	--	3rd Quarter
	ROSA TPS(Unit1 #300)	05-10-2021	05-10-2021	Yes	--	
	ROSA TPS(Unit2# 300)	18/2/2018	18/2/2018	Yes	--	4th Quarter
	ROSA TPS(Unit3 # 300)	03-02-2017	03-02-2017	Yes	--	4th Quarter
	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	--	3rd Quarter
	ALAKNANDA HEP(Unit2# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKNANDA HEP(Unit3# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	ALAKNANDA HEP(Unit4# 82.5)	12.072017	12.072017	No	--	3rd Quarter
	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)	
	Bara Unit#2	01.02.2022	01.02.2022	Yes		
	Bara Unit#3				Step test for PSS checking was not performed since commissioning by erstwhile owner as per information available. PSS tuning along with step test will be performed in next AOH (May 2022 or planned shutdown)	
	Vishnuprayag Unit#1	06/02/2021	06/02/2021	Submitted in the prescribed format provided by NRLDC to SE (R&A)		
	Vishnuprayag Unit#2	06/04/2021	06/04/2021			
	Vishnuprayag Unit#3	06/04/2021	06/04/2021			
	Vishnuprayag Unit#4	05/02/2021	05/02/2021			
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.	