



सत्यमेव जयते

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

संख्या: NRPC/OPR/106/01/2020/3237-78

दिनांक: 02.04.2020

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 169^{वीं} बैठक का कार्यवृत्त |

Subject: Minutes of 169th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 169^{वीं} बैठक 17.03.2020 को आयोजित की गयी। उक्त बैठक का कार्यवृत्त उत्तर क्षेत्रीय विद्युत समिति की वेबसाइट <http://www.nrpc.gov.in> पर उपलब्ध है। यदि कार्यवृत्त पर कोई टिप्पणी हो तो कार्यवृत्त जारी करने के एक सप्ताह के अन्दर इस कार्यालय को भेजें।

169th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 17.03.2020. The Minutes of this meeting has been uploaded on the NRPC website <http://www.nrpc.gov.in>. Any comments on the minutes may kindly be submitted within a week of issuance of the minutes.

संलग्नक: यथोपरि

(सौमित्र मजूमदार)

अधीक्षण अभियंता (प्रचालन)

सेवा में,

प्रचालन समन्वय उप-समिति के सभी सदस्य

**उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 169^{वीं}
बैठक का कार्यवृत्त**

169th meeting of OCC of NRPC was held on 17.03.2020 at NRPC Secretariat, New Delhi. The meeting was attended by representatives of states / utilities through Video Conferencing.

खण्ड-क: उ.क्षे.वि.स.

PART-A: NRPC

1. Confirmation of Minutes of last meeting

Comment from HVPN

i. Agenda 3 of 168th OCC meeting

Members were informed that SLDC Haryana vide e-mail dated 09.03.2020 has intimated that the information related to SLDC Haryana as brought out in the minutes portrays wrong image of availing rate of shutdowns by Haryana due to software issues at NRLDC end. SLDC Haryana following figures:

Entity	Planned	Non-Planned	Emergency	Total Approvals	Extra entries (repeated entries) due to software error	D-3 requests	Actual approvals	% D-3 requests
SLDC-Haryana	112	0	5	117	101	10	16	93.75

NRLDC representative stated that the same was analysed at their end and it was found that the outage taken on daily basis for multiple days were being interpreted by the software as multiple cases; thus, amounting to multiple entries for same shutdown. Further, it was stated that extra entries in case of Haryana were 65 instead of 101 as highlighted by SLDC Haryana.

NRLDC also informed that the software developer has been intimated to address the issue of multiple entries for daily shutdowns in the report.

ii. Table agenda: Voltage Dip problem at 220kV M/s Maruti Substation

The subject cited agenda was deliberated in the 168th OCC meeting but was inadvertently missed in the minutes of the meeting. Haryana SLDC has requested for inclusion of the same in the minutes:

“Haryana representative stated that 220 kV Maruti substation (MSIL) was test charged on 19.11.2019 and 50/60 MVA, 220/11 kV Transformer 2 was put in the service on 18.12.2019. M/s MSIL informed to HVPNL that they are facing voltage dip problems at 220kV voltage level, which is causing operational issues in their plant.

Some of the events as mentioned below were brought out to the OCC forum:

TIME		As Per SLDC System				As Per Maruti				Remarks
		Duration	Voltage (Before)- KV Phase Voltage	Voltage (After)- KV Phase	% dip	Duration	Voltage (Before)-	Voltage (After)-	% dip	
from	to									
2019-12-27 02:12:48.520	2019-12-27 02:12:48.600	80 ms	246	221	10.162602	60	240	221	7.92%	Ballabgarh_PG-MaharaniBagh ckt was closed as per SOE
2019-12-28 00:27:38.960	2019-12-28 00:27:39.080	120 ms	248	163	34.274194	80	240	163	32.08%	At that time multiple element tripped at 400kv Bawana(DTL) due to Y-N fault.
2019-12-28 15:50:37.000	2019-12-28 15:50:37.120	120 ms	237	213	10.126582	80	231	200	13.42%	Jaipur South_PG-Bassi Ckt was opened at thst time as per SCADA SOE.
2019-12-30 05:52:13.920	2019-12-30 05:52:14.040	120ms	242	218	9.6858206	100	237	205	13.50%	-
2020-01-02 16:22:13.640	2020-01-02 16:22:13.720	80ms	239	235	1.6736402	90	232	214	7.76%	No any transients have been observed neither on 220kv Side nor on 400kv side.
2020-01-05 07:21:00.000	2020-01-05 07:21:59.960	-	241	241	0	131	233	212	9.01%	No any transients have been observed. Voltage was slightly increased but it was in steady state condition.
2020-01-08 11:49:20.200	2020-01-08 11:49:20.520	-	234	234	-0.190611	100	225	206	8.44%	
2020-01-12 05:55:37.200	2020-01-12 05:55:37.320	120ms	239	219	8.3682008	100	224	196	12.50%	
2020-01-13 04:45:28.360	2020-01-13 04:45:28.880	520ms	244	222	9.0163934	100	239	212	11.30%	Operation being done at Dhanonda-Dadibana Ckt.
2020-01-13 16:39:44.640	2020-01-13 16:39:44.920	280ms	240	234	2.5	350	234	188	19.66%	-
2020-01-15 09:17:48.240	2020-01-15 09:17:48.400	160ms	232	208	10.344828	380	225	161	28.44%	Daultabad-Manesar Ckt. 2 was tripped at that time.
2020-01-22 20:49:35.480	2020-01-22 20:49:35.600	120ms	242	211	12.809917	50	234	208	11.11%	Ballabgarh-Tuglakabad ckt. Was closed as per SOE.
* Data has been taken from Ballabgarh Substation due to Gurugram_pg data not available.										

OCC advised NRLDC to look into the issue and suggest remedial measures to be taken so as to avoid power quality issues being experienced by M/s Maruti Ltd.”

During the deliberations in the 169th OCC meeting, NRLDC representative stated that in most of the incidents as brought out by Haryana SLDC, the fault got cleared within the stipulated time (160 msec for 220 kV line - stipulated in the Grid Standards Regulations). Thus, it seems to be an internal issue of Maruti Suzuki Ltd. and the same lies within the control area of Haryana SLDC.

Accordingly, Haryana SLDC was advised to hold a separate meeting with MSIL and verify the protection setting and coordinate the same in accordance with the grid standards.

OCC confirmed the minutes of 168th OCC meeting along with the aforementioned amendments and inclusion.

2. Review of Grid operations of February 2020

2.1. Anticipated vis-à-vis Actual Power Supply Position (Provisional) for February 2020

Sub-Committee was informed that there was negative / significant variation ($\geq 5\%$) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures in terms of Energy Requirement for Chandigarh, Himachal Pradesh, UTs of J&K and

Ladakh, Punjab and Uttarakhand and in terms of Peak Demand similar variation is noted for Chandigarh, Haryana, Himachal Pradesh, UTs of J&K & Ladakh and Rajasthan.

Following reasons for variation and comments were received:

- **Haryana** - Sudden increase in temperature along with increased agricultural load demand for few days upto 17th February led to an increased peak demand.
- **Himachal Pradesh** - Unanticipated rainfall led to increased peak demand and less requirement in energy terms over the month.
- **Rajasthan** – Network extension and the two block supply policy executed by Jaipur and Jodhpur DISCOMs during February 2020 led to an increase in the agricultural load and increased peak demand.

2.2. Power Supply Position for NCR

2.2.1. Sub-Committee was informed that 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 **February 2020** is available on NRPC website (<http://nrpc.gov.in/operation-category/power-supply-position>).

2.3. The highlights of grid operation during February 2020 are as follows:

- 2.3.1. Frequency remained within the IEGC band for **73.95%** of the time during February 2020, which is higher than that of last year during same month (February 2019) when frequency (within IEGC band) remained **70.73%** of the time. The frequency regime improved significantly in comparison of last year. For further improvement, utilities were advised to take necessary action to improve the frequency regime by not changing abruptly the loads at block boundaries and assuring primary response from the generators.
- 2.3.2. Maximum and minimum load for the region during February 2020 were **51,126 MW** (19.02.2020 at 07:50 hrs) and **25,600 MW** (21.02.2020 at 04:00 hrs).
- 2.3.3. The average Thermal generation in February 2020 increased by **1%** (5.41 MU/day) with respect to the corresponding month in the previous year. Thermal generation trends are enclosed at **Annexure-A.I (A)**.
- 2.3.4. The average Hydro generation in February 2020 decreased by 5.11 MU/day with respect to the corresponding month in previous year. Hydro generation trends are enclosed at **Annexure-A.I (B)**.
- 2.3.5. The average Nuclear generation in February 2020 increased by **4.76 MU/day** as compared to corresponding month in previous year. Nuclear generation trends are enclosed at **Annexure-A.I (C)**.
- 2.3.6. The average Renewable generation in February 2020 increased by 15.72 **MU/day** with respect to the corresponding month in previous year. All

utilities were requested to send the data for renewable generation regularly. Renewable generation trends are enclosed at **Annexure-A.I(D)**.

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

2.3.8. Long outage of generating units were discussed in detail and the same is attached at **Annexure-A.I (F)**.

2.3.9. Long outage of transmission lines were discussed in detail and the same is placed at **Annexure-A.I (G)** and all constituents were requested to review the elements under long outage at the earliest.

3. Maintenance Programme of Generating Units and Transmission Lines

3.1. The maintenance programme for Generating Units and Transmission lines for the month of April 2020 was discussed on **16.03.2020** at NRPC Secretariat, New Delhi.

4. Planning of Grid Operation

4.1. Anticipated Power Supply Position in Northern Region for April 2020

Anticipated Power Supply Position for April 2020 has been revised as per following figures of concerned states:

State / UT		Energy (MU)	Peak (MW)
Chandigarh	Availability	100	300
	Requirement	120	260
	Surplus/Shortfall	-20	40
	Surplus/Shortfall (%)	-16.7%	15.4%
Delhi (revised)	Availability	3890	6000
	Requirement	2825	6000
	Surplus/Shortfall	1065	0
	Surplus/Shortfall (%)	37.7%	0.0%
Haryana	Availability	4530	9790
	Requirement	3970	8540
	Surplus/Shortfall	560	1250
	Surplus/Shortfall (%)	14.1%	14.6%
Himachal Pradesh (revised)	Availability	850	1490
	Requirement	853	1434
	Surplus/Shortfall	-3	56
	Surplus/Shortfall (%)	-0.3%	3.9%
UTs of J&K and Ladakh	Availability	1350	3300
	Requirement	1670	3010
	Surplus/Shortfall	-320	290
	Surplus/Shortfall (%)	-19.2%	9.6%
Punjab	Availability	5200	11090
	Requirement	3810	7300
	Surplus/Shortfall	1390	3790
	Surplus/Shortfall (%)	36.5%	51.9%
Rajasthan (revised)	Availability	8480	20640
	Requirement	6800	12100
	Surplus/Shortfall	1680	8540
	Surplus/Shortfall (%)	24.71%	70.58%

State / UT		Energy (MU)	Peak (MW)
Uttar Pradesh (revised)	Availability	10050	21000
	Requirement	9960	20200
	Surplus/Shortfall	90	800
	Surplus/Shortfall (%)	0.9%	3.96%
Uttarakhand	Availability	950	2750
	Requirement	1160	2000
	Surplus/Shortfall	-210	750
	Surplus/Shortfall (%)	-18.1%	37.5%
NR	Availability	35700	72500
	Requirement	31125	56000
	Surplus/Shortfall	4575	16500
	Surplus/Shortfall (%)	14.7%	29.5%

5. Submission of breakup of Energy Consumption by the states

5.1. Following status on the submission of energy consumption breakup was discussed:

State	Period of submitted data	Submitted in specified format or not
Rajasthan	Apr'18 – Jan'20	Yes
Punjab	Apr'18 – Jan'20	Yes
Uttar Pradesh	Apr'18 – Nov'19	Yes
Haryana	Apr'18 – Nov'19	No
Himachal Pradesh	Apr-18 – Mar'19	No
Delhi	Apr-18 – Dec'19	Yes

5.2. HP representative stated that information in the prescribed format has been submitted through email dated 17.02.2020 to NRPC Sectt. However, the same could not be traced in the official emails of NRPC Secretariat and HP is again requested to submit before next OCC meeting.

5.3. Haryana and Himachal Pradesh SLDCs have been advised to submit the 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. System Study for Capacitor Requirement in NR for the year 2019-20

6.1. OCC forum was informed that due to the outbreak of COVID-19, the constitution and meeting of the sub-group could not happen. Further, the members were requested to submit the nominations for the sub-group so that the meeting could be

held at the earliest.

6.2. The nominations as received for the sub-group are:

Sl. No.	Organization	Name	Designation	E-mail	Mobile
1.	NRPC	Sh. Akshay Dubey	AEE (O)	dubey[dot]akshay[at]gov[dot]in	95991-79744
2.	NRLDC	Sh. Shashank Tyagi	Chief Manager	shashank[at]posoco[dot]in	95994-41243
3.	Delhi SLDC	Sh. Naveen Kumar	-	-	-
4.	Rajasthan SLDC	Ms. Sona Shishodia	Executive Engineer	-	-
5.	UP	Sh. Pankaj Saxena	Executive Engineer	smart[dot]saxena[at]gmail[dot]com	94159-02780
6.	Haryana	Sh. Subhash Chand	XEN/ Works, Panchkula	-	93164-67248
		-	XEN/Works, Hisar	-	95411-00024
7.	Punjab	-	-	-	-
8.	Uttarakhand	Sh. Vinayak Shailly	EE	-	70881 17954
9.	HP	Sh. Abhishek Puri	AE (E)	-	-

Members were requested to submit the pending nominations and contact details to NRPC Secretariat latest by 20.03.2020.

7. Phase nomenclature mismatch issue with BBMB and interconnected stations

7.1. NRLDC representative informed that nominations for the committee is awaited and the action plan would be formulated at the earliest after assessing the quantum of work.

7.2. Members were of the view that NRLDC shall initially assess the quantum of work as per the deliberations held in the 168th OCC meeting and also take into

consideration the practicality of the solution proposed. Further, NRLDC was advised to submit its findings before next OCC meeting.

7.3. The nominations received during the meeting for the sub-group are:

Sl. No.	Organization	Name	Designation	E-mail	Mobile
1.	NRLDC	Sh. Alok Kumar	Sr. DGM	alok[dot]kumar[at]posoco[dot]in	99990-93321
2.	NRPC	Sh. Ratnesh Kumar	Executive Engineer (O)	-	98111-01805
3.	BBMB	Sh. R. K. Chandan	Dir (P&C)	dirpc[at]bbmb[dot]nic[dot]in	-
4.	Rajasthan	Sh. R. C. Mahawar	Exe. Engineer	xen1[dot]prot[dot]j aipur[at]rvpn[dot]co[dot]in	94133-84026
		Sh. Kamal Patidar	Exe. Engineer	-	94133-82632
5.	POWERGRID	Sh. M. S. Hada	DGM	mshada[at]powergridindia[dot]com	96505-55997
		Sh. Praveen Kumar	DGM	mr[dot]praveenkumar[at]powergridindia[dot]com	99065-46606

7.4. **Other utilities were requested to submit the nominations directly to NRLDC at the earliest.**

8. Follow up of issues from previous OCC Meetings – Status update

Details of the updated status of follow up action points as discussed in the 169th OCC meeting is enclosed at **Annexure-A.II**.

9. SPS for ICTs at 765 kV Unnao sub-station

9.1. UP SLDC representative informed Anpara-C & Anpara-D machines were under shutdown and thus the mock testing could not be conducted. It was further informed that the test would be conducted in April 2020.

10. Automatic Demand Management System

10.1. Punjab representative informed that Siemens has given an initial offer for which negotiations were being conducted.

- 10.2. Delhi SLDC informed that the implementation of ADMS by NDMC has been delayed.
- 10.3. Rajasthan representative intimated that ADMS implementation may be completed by December 2020 and supply for the project has commenced.
- 10.4. UP representative stated that the issue for implementation of ADMS is being discussed at higher management level.
- 10.5. It was decided that NRPC Sectt. would request state DISCOM heads of NR for ADMS implementation.

11. Approval of Electrical Inspector for replacement works (by UPSLDC)

- 11.1. Members were informed that as per the deliberations in 168th OCC meeting, NRPC Sectt. has not received any communication / request from any of the STUs or CTU for approaching CEA in respect of the existing safety regulations.
- 11.2. OCC forum was of the view that matter may be dealt as per the decision taken in the 168th OCC meeting.

12. Islanding Schemes of NR

- 12.1. SE (O), NRPC mentioned that there is a need of comprehensive review of the implemented islanding schemes of Delhi, NAPS and RAPS and the approved scheme of Unchahar. Further, the proposed islanding scheme for J&K valley needs immediate attention at OCC level.
- 12.2. In the meeting, it was decided to form a Sub-Group under the Chairmanship of MS, NRPC with SE (O), NRPC as its Convener along with representation from NRLDC and the islanding scheme implementing agencies. The Sub-Group will be holding separate meetings for each islanding scheme in NR and thereafter prepare a repository of the same.

Table agenda No. 1: Comments on ramp Assessment Guidelines by NLDC (by APCPL, Jhajjar)

APCPL, Jhajjar submitted its comments / suggestions on the detailed guidelines issued by NLDC for assessment of ramping capability of thermal inter-state generating stations.

APCPL, Jhajjar was advised to submit its comments directly to NLDC.

Table agenda No. 2: Ramp rate capability issues in NTPC Dadri (by NTPC)

NTPC informed that unit-3 steam generator at Dadri station is equipped with FSCTR (Fire Side Corrosion Test Rig) loop of AUSC (Advanced Ultra Super Critical) project. The objective of FSCTR is to capture scientific database on fire-side corrosion properties and develop & document steam side oxidation behaviour & creep deformation of tubes of Alloy 617M and SS 304HCu under real thermal power plant conditions using Indian coal. However, there can be steep excursions in temperature of FSCTR loop during the ramping of machines. In view of the

above, NTPC requested to exempt unit-3 from ramping capability requirements (as per NLDC guidelines) till the completion of AUSC project.

Further, NTPC Dadri mentioned that in line with MoP policy, Dadri Stage-I units are fired with 5-10% of Biomass. And for the necessary tuning, testing of ramp rates is needed when the machine is at Technical Minimum and co-firing is on. In this regard, NTPC requested that requisite schedule to Dadri Stage-I units for conducting trial test may be given for necessary tuning and the ramp rate capability evaluation for these units may be withheld till the time of testing.

OCC forum decided that NTPC shall first approach the implementing agency i.e., NLDC for the above cited exemptions.

Table agenda No. 3: Scheduled / regular maintenance of 400 KV Outgoing Transmission line evacuating Power from MGTPP (by JPL)

It was highlighted by Jhajjar Power Ltd. (JPL) that 400 KV JPL-Dhanoda Circuit-I got tripped on 01.02.2020 due to fault in the line at a distance of 1.2 km from JPL and subsequently, one unit of JPL also tripped (on transformer oil surge protection) as the fault was very close to station. JPL requested that HVPNL shall establish the reason of fault, ensure preventative maintenance of all the 4 lines (D/C Dhanoda & D/C Kabulpur) at regular intervals and consider thermograph of the lines at fixed interval.

Haryana representative mentioned that fault on 01.02.2020 was cleared within 80 msec and JPL unit might have tripped on account of sensitive transformer surge protection setting. It was advised to NRLDC to take the specific incident in the upcoming Protection Sub-Committee meeting. Further, HVPNL was advised to submit the detailed report of the incident at the earliest and ensure preventative maintenance of all the 4 lines (D/C Dhanoda & D/C Kabulpur) at regular intervals.

Table agenda No. 4: Deferment of Major Overhauling of MGTPP Unit#1 (by JPL)

OCC forum was informed that due to outbreak of pandemic caused by Corona virus and advisory issued by GoI restricting travel, JPL had to defer its planned major overhauling of Unit#1 sine die.

Further, JPL machines are due for scheduled maintenance as per the OEM recommendation and it is required to carry out the preventive maintenance at the earliest to avoid forced outages.

OCC permitted JPL to carryout outage at first available opportunity.

13. Summer Preparedness 2020

NRLDC representative stated that demand of Northern Region is likely to increase from Mar'20 onwards with increase in temperature. Summer of Northern region are typically hot and demand is also high during this time, therefore advance actions would help in better grid operation.

Following few points were deliberated for the coming summer season:

- I. **Maintenance of reserves:** NRLDC representative stated that during summer, in anticipation of increasing demand, adequate reserves need to be maintained. During summer, sudden outage of hydro units on silt or other major generation outage or sudden changes in weather affects frequency/voltage, line loading, reliability and security of the corridor/control area/Generation complex etc. In such cases, apart from portfolio management based on proper forecast as discussed above, re-starting of units under reserve shutdown at state as well as Inter-state level through appropriate transactions is required.

Further as per CERC committee report on spinning reserves (2015):

“Each region should maintain secondary reserve corresponding to the largest unit size in the region and Tertiary reserves should be maintained in a de-centralized fashion by each state control area for at least 50% of the largest generating unit available in the state control area.”

- II. **Portfolio Management, load staggering:** Apart from LTA / MTOA / STOA / Market arrangements based on forecast, other short term arrangements should also be planned for real time imbalances. For example, adequate margin while scheduling own thermal generation, units on bar, maintenance of reserves, technical minimum operation of thermal units in case of load crash, tie up with neighbor states or hydro rich states etc. to bridge the load-generation gap in real time.

In events of sudden load crash, ISGS generators are being instructed to back down to 55% of their installed capacity. However, amongst states only UP state controlled generators are seen to be backing down up to 55%, which ensures that sufficient reserves are available to cater any variation in demand. Other states were also requested to take actions to ensure backing down of generators to 55% of their capacity in case of critical situations.

In view of high/increasing demand & transmission constraints (if any) in importing the power or in case of any contingency in the system, states were requested to maximize their internal generation to avoid low frequency/low voltage operation or other related issues.

NRLDC representative stated that silt monitoring for some stations such as Jhakri would be started from 1 Jun 2020 onwards. NHPC was asked to explore transmitting real-time silt data to NRLDC.

III. **Furnishing of coal stock position:** Advance information of coal stock of thermal plants ensures generating units availability and it is very important during high demand season. Furnishing of coal stock position of thermal plants at least a week in advance as agreed earlier in TCC/NRPC meeting needs to be adhered. Utilities are not updating same at NRLDC site (except IGSTPP Jhajjar sometimes)

IV. **Tower strengthening and availability of ERS:** There have been number of instances of tower collapse & damage in the past during dust storms and thunder storms which resulted in constraints in supply power for extended duration of time. Each utility shall work on plan for tower repairing work before April 2020. Extra precautions need to be taken care for important lines which have history of tripping during thunderstorm/ windstorm. Moreover, manual opening of feeders results in large deviations in schedule leading to high voltages in grid.

OCC again expressed concern on update on categorization of all the feeders in two lists

- one which do not require manual opening (in view of safety requirements)
- other with safety concern

TPDDL representative informed that this data has been compiled by them and shared with SLDC, and would also be shared with NRLDC/NRPC.

Regarding procurement of ERS, Rajasthan representative informed that one set of ERS has been procured and procurement of other set is also under process and would be delivered shortly.

V. **Reactive power management:** Over previous several summer months, it has been observed that voltage profile during summer has improved. Measures for reactive power management were once again reiterated:

- a. Switching ON Capacitor/Switching OFF reactor as per system requirement
- b. 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.
- c. Dynamic reactive support from Generator as per their capability curve.
- d. Synchronous condenser operation
- e. SCADA Displays for better visualization

VI. **Defense Mechanism:** Several defense mechanism have been recommended by various committees and advantages of such defense schemes have been discussed in many fora too. Majority of defense mechanism are to cover protection for under voltage, under frequency, rate of change of frequency, SPS for line/ICTs loading/generator complex evacuation etc.

OCC suggested that 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. In addition, all states/user need to provide update for changes or modifications carried out if any.

- VII. **Telemetry:** All utilities were asked to ensure the telemetry of all analog & digital points of all stations at respective control centres. Large number of issues are encountered with new elements. Recently, many new substations/elements have been commissioned in J&K etc. telemetry of which is either not available or not reliable. Moreover, list of critical substations having poor telemetry, which was discussed in 44th TCC/ 47th NRPC meeting need to be attended at the earliest. From data it can be seen that telemetry from Uttarakhand and Jammu and Kashmir is very poor and not improving. Uttarakhand was asked to look into the matter.

OCC forum asked all utilities to take necessary summer preparedness measures as discussed above so that required demand in Northern region could be met ensuring safe and secure grid operation.

14. Computation of TTC/ATC of respective control areas

NRLDC representative stated that NRLDC has done preliminary studies for assessing the TTC/ATC of large state control area for upcoming summer as per information available with NRLDC. Before summer season, each state shall assess and share its ATC/TTC as agreed earlier and as per CERC regulations. TTC/ATC of summer 2020 and constraints expected this summer are given below:

State	Tentative ATC/TTC during Summer-20 (MW)	Constraints anticipated	Actions required
Punjab	State own generation= 6500 MW (High hydro) TTC= 7000 MW (on managing the load locally at Rajpura and Amritsar ICTs) ATC= 6400 MW (Considering reliability margin as 600 MW)	N-1 compliance issues at Rajpura, Amritsar, Ludhiana and Makhu ICTs Many 220kV lines near Amritsar(PG) and Ludhiana(PG) are also critically loaded TTC figure is dependent on the quantum of generation at 220kV as well as 400kV level. Less generation at 400kV would assist in drawing more interstate power whereas less generation at 220kV would lead to constraints at much lesser imports. However, in case of low demand it may result	<ul style="list-style-type: none"> • Increase in generation at 220kV level would help in meeting high demand & also improve voltage profile. • New 220kV lines may be planned and existing network reorganised to relieve the loading on ICTs and to meet loads through paths that are less loaded. • <i>P-V analysis need to be done to assess impact of reducing generation at 400kV level on grid voltage profile.</i>

State	Tentative ATC/TTC during Summer-20 (MW)	Constraints anticipated	Actions required
		in high voltages.	
UP	State own generation = 10600 MW TTC= 13700 MW ATC= 13100 MW (Considering reliability margin as 600 MW)	N-1 compliance issue at Mau, Sarnath, Allahabad(PG) ICTs. N-1 non-compliance at 765/400kV Fatehabad ICTs under high generation at Lalitpur TPS. Many 220 kV lines like Bareilly-Dohna, Bareilly-CB Ganj and Meerut-Modipuram are critically loaded.	<ul style="list-style-type: none"> Expedite commissioning of underlying n/w at recently commissioned 765kV & 400kV stations to reduce loading on other heavily loaded lines and ICTs UP to share updated basecase on which they have assessed ATC/TTC
Delhi	State own generation = 600MW TTC= 6800 MW ATC= 6500 MW (Considering RM as 300 MW)	N-1 compliance issue at Bamnoli, Harshvihar and Mandola ICTS and 220 kV Ballabgarh-BTPS lines	<ul style="list-style-type: none"> Loading on 220 kV Harsh Vihar - Preet Vihar - Patparganj to be monitored closely and new arrangements to feed the load to be worked on
Haryana	TTC: 7600 ATC: 7000	N-1 non-compliance at Kirori, Deepalpur, Panipat (BBMB) and Abdullapur ICTs 220kV Hisar(PG)-Hisar(IA), 220kV lines from Lula ahir, 220kV Abdullapur-Jorian and other 132kV lines are heavily loaded and need to be strictly monitored.	<ul style="list-style-type: none"> Haryana SLDC representative informed that they have submitted information regarding high loading of 220kV lines with their planning division. Alternate arrangement for reducing loading on above lines need to be expedited.
Rajasthan	(Generation : 8500MW) TTC: 5400 ATC: 4800 (Generation : 6000MW) TTC: 6800 ATC: 6200	<ul style="list-style-type: none"> N-1 contingency of Phagi, Jodhpur, Merta, Bikaner, Hindaun and Ratangarh ICTs High loading of ICTs at Akal and need for reactive power support during high wind season 	<ul style="list-style-type: none"> Expedite commissioning of 3rd ICT at Phagi New ICT to be planned at constrained locations Expedite commissioning of 400kV Rajwest-Barmer # 2 bays at Barmer end by RRVPNL

OCC forum asked all states / UTs to regularly compute TTC/ATC figures and manage loadings to ensure N-1 compliance for elements under their jurisdiction.

15. Grid Operation Related Issues

a. Charging of lines without NRLDC code:

NRLDC representative mentioned that recently several elements were revived without taking code from NRLDC, which is violation of IEGC as well as procedure agreed in Operating procedure document.

400 kV Bawana - Mundka ckt-1: On 9th March 2020, 400 kV line Bawana - Mundka ckt-1 tripped at 01:57 Hrs and the line was restored without prior intimation and without taking operating code from NRLDC by Delhi SLDC at 06:21hrs of 9th Mar 2020. Delhi SLDC representative informed that line tripped on overvoltage, there was internet failure for some time and they were trying to request code telephonically. However, they had charged the line without code by mistake and same would not be repeated in future.

400 kV Bawana CCGT-Bawana (DTL) ckt-2: The interconnector line 400 kV Bawana CCGT-Bawana (DTL) tripped at 14.48 Hrs on 11th February 2020 and it was charged on the same day without availing NRLDC code at 17.55hrs. CCGT representative informed that during morning inspection BPI was found damaged at CCGT Bus-1. They were not able to contact with SLDC Delhi, and Diesel generator was running continuously for three hours. Without request from SLDC, NRLDC was not able to give code thus they had to charge without code.

765 kV Aligarh-Orai ckt-1: 765kV Aligarh-Orai ckt-1 tripped at 22.12hrs on 29th February 2020 and it was charged on the same day without availing NRLDC code at 22.23 Hrs. Same line was again tripped at 22.40 Hrs on 29th February 2020 and was charged without availing NRLDC code at 23:34 Hrs on 29th February 2020. POWERGRID NR-3 representative stated that in the first instance the line was charged without code due to some issues and control room personnel have been instructed to avoid such instances in future.

400 kV Bareilly Shahjahanpur ckt-1: 400 kV Bareilly Shahjahanpur tripped at 11.32 Hrs on 9th March 2020 and was charged without availing NRLDC code at 12.05 Hrs 9th March 2020.

3X110 MVar Line Reactor of 765 kV Bikaner (end)-Moga ckt-2: The line reactor was opened at 09.02 Hrs at 7th March 2020 without taking NRLDC code.

220kV Badarpur-Ballabgarh ckt-2: on 8th March 2020, 220kV Badarpur-Ballabgarh-2 was charged from both ends without NRLDC code.

On 9th March 2020, 400kV Parbati-III - Banala line shut down code NR/1870 was issued. But, 400kV Parbati-II - Banala line was opened during operation from Banala S/S at 09:42 hrs. This is clear case of non-seriousness by control room operators. Such instances may pose severe threat to life as well as grid operation.

OCC Forum took serious note of the above incidences and decided that grid switching operations without NRLDC concurrence shall not be done and control room operators be once again directed to operate the system in co-ordination with NRLDC after following proper operating procedure and be alert while performing switching operations.

b. High voltages in the grid:

It was mentioned that very high voltages are being witnessed since past few weeks at several 765kV as well as 400kV nodes in the Northern grid. Several measures which help in controlling high voltages in the grid were discussed in the previous OCC as well as TCC/NRPC meetings and are also listed below:

- (i) Switch off capacitor & switch in all BR/LR wherein high voltage persists
- (ii) Generator reactive power absorption, SVC operations, Synchronous condenser operation especially of Hydro units
- (iii) Tap optimization at 400/220kV & below voltage levels by NRLDC and SLDCs respectively
- (iv) Opening of EHV lines based on studies considering reliability & security of system

Even after optimising resources at RLDC level, it is also necessary that actions are being taken at SLDC/Discom level to control high voltages. List of lines which tripped on overvoltage and ICTs which tripped on over flux has been attached as Annexure-II of the agenda.

OCC agreed that it is necessary to make sure that settings are correct. Issues like reset ratio in over voltage protection, CVT measurement error, tripping of line from one end only and absorption of reactive power by generator etc. that could be attended for minimizing these trippings on over voltages need to be strictly acted upon.

c. MVAR performance of generators:

It was mentioned that following was agreed in 44th TCC / 47th NRPC meeting and 165th and 166th OCC meetings:

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

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

Reactive power response in respect of MVAR vs Voltage for past 30 days (12.02.2020 - 12.03.2020) as per NRLDC SCADA data was enclosed as Annexure-III in agenda. Based on available data, it is observed that there are margins available as per capability curves for most of the generating stations. In

addition, telemetry (sign and magnitude of MVAR) of various state generating station is yet to be corrected.

It was agreed in previous OCC meetings that states shall also develop MVAR v/s voltage plots for generators under their jurisdiction. This would also help to improve telemetry of MVAR data and eventually, more reliable MVAR vs voltage plots will be available.

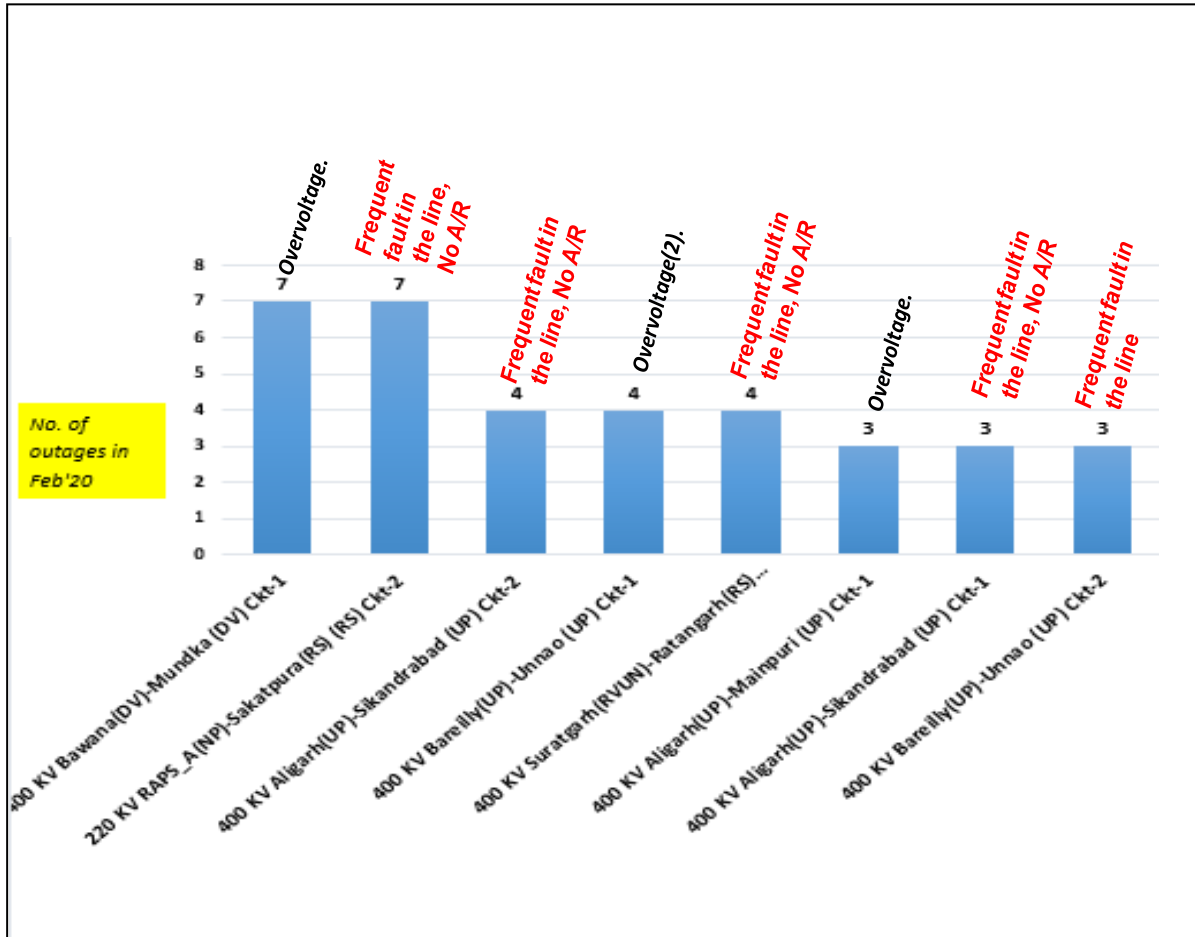
From the available data, it appeared that there is sign reversal for MVAR data from Dadri (one unit), Rajpura and Suratgarh. Utilities were asked to take necessary actions to make sure that these sign anomalies are checked and rectified.

In the last OCC meeting, Koteshwar (THDC) was asked to share MVAR data from their end and if required reactive power capability testing of Koteshwar may be carried out along with site visit planned for dedicated bus coupler bay allocation at Koteshwar. Data submitted by Koteshwar was presented. From the data, it appeared that when three or more units were running at the time of peak hours, MVAR was being injected to the grid. Koteshwar was asked to take necessary actions in this regard.

16. Frequent forced outages of transmission elements in the month of Feb'20

The following transmission elements were frequently under forced outages during the month of **Feb'20**:

Sl. No.	Element Name	No. of forced outages	Utility/SLDC
1	400 KV Bawana(DV)-Mundka (DV) Ckt-1	7	Delhi
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	7	Rajasthan/NP C
3	400 KV Aligarh(UP)-Sikandrabad (UP) Ckt-2	4	UP
4	400 KV Bareilly(UP)-Unnao (UP) Ckt-1	4	UP
5	400 KV Suratgarh(RVUN)-Ratangarh(RS) (RS) Ckt-2	4	Rajasthan
6	400 KV Aligarh(UP)-Mainpuri (UP) Ckt-1	3	UP
7	400 KV Aligarh(UP)-Sikandrabad (UP) Ckt-1	3	UP
8	400 KV Bareilly(UP)-Unnao (UP) Ckt-2	3	UP



The complete details was enclosed at **Annexure-B.4 of the Agenda**. Following was discussed during the meeting:

- **400 kV Bawana (DV)-Mundaka ckt-1:** Delhi representative informed that over voltage protection was operated in one of the relay. Over voltage feature has been disabled in same relay. Further, secondary ckt will be checked and remedial measures taken report will be submitted.
- **220 kV RAPS (NPCIL)-Sakatpura ckt-2:** RRVPNL representative informed that among total 7 faults, two are bus faults at 220 kV Sakatpura and no fault observed during line patrolling. RRVPNL representative further informed that A/R was not in service. However, they agreed to take up the A/R issue with NPCIL and frequent fault only in R-phase.
- **400 kV Aligarh-Sikandrabad ckt-1 & 2:** UPPTCL representative informed that A/R was in non auto mode due to works related to OPGW (Optical Fiber Ground Wire). OPGW work has been completed now A/R is in service.
- **400 kV Bareilly-Unnao ckt-2:** UPPTCL representative informed that design issue in the line and already take up at management level.
- **UP representative agreed to check the details of all the tripped elements and submit the report in 7 days.**

- Rajasthan representative agreed to check the details of all the tripped elements and submit the report in 7 days.

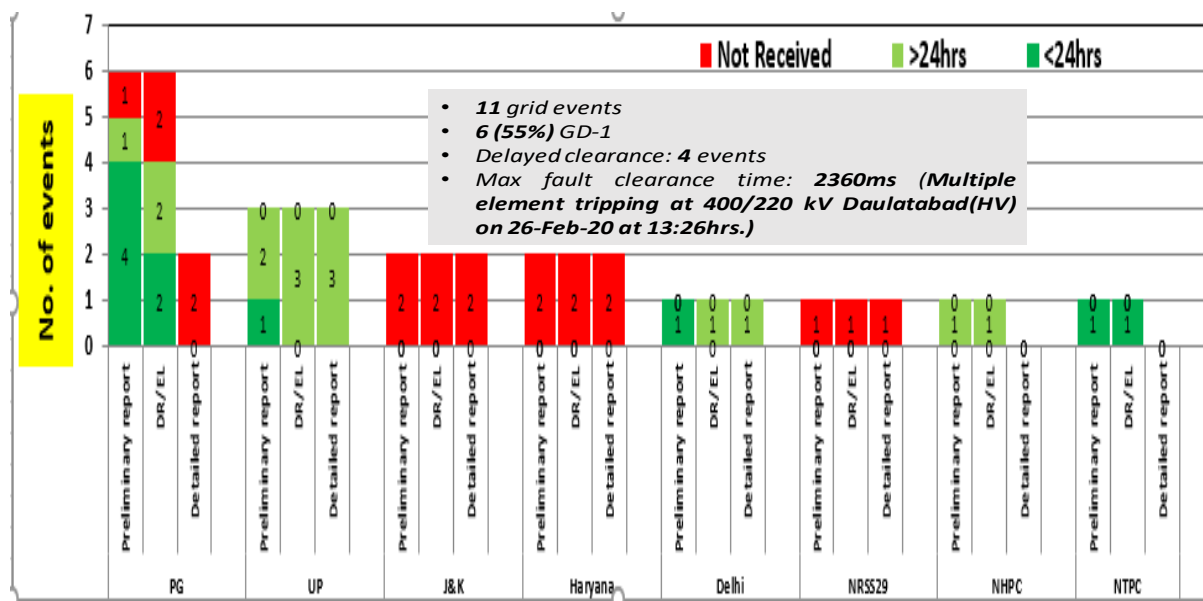
Frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are requested to look into such frequent outages and share the remedial measures taken/being taken in this respect.

OCC raised concern on non-submission of details to NRPC / NRLDC and suggested all SLDCs to compile the information and share the remedial measures report for all the tripped elements in 7 days.

17. Multiple element tripping events in Northern region in the month of Feb'20

A total of 11 grid events occurred during Feb'20 of which 6 were of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of details received by 5th March 2020 is attached at **Annexure-B.5 of the Agenda**.

Note: Details received by 05-Mar-20 are considered

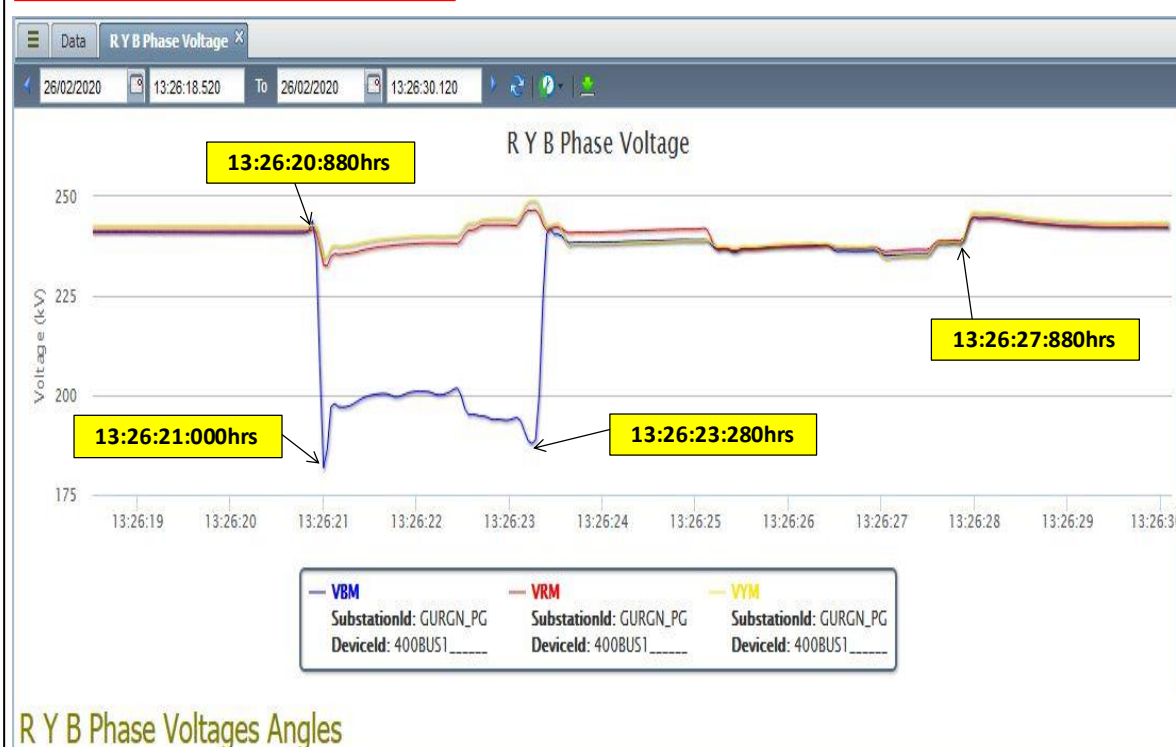


NRLDC representative highlighted that despite of persistent discussions / follow-up in various OCC/PCC meetings, the compliance of the regulations is still much below the desired level.

Maximum fault duration is **2360ms** in the event of multiple elements tripping at 400/220 kV Daultabad (Haryana) on 26th February 2020 at 13:26hrs. NRLDC representative further informed that detail of above incident is still awaited.

PMU Plot of phase voltage magnitude at Gurgaon(PG)

13:26hrs/26-Feb-20



Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total 4 events out of 11 grid events occurred in the month.

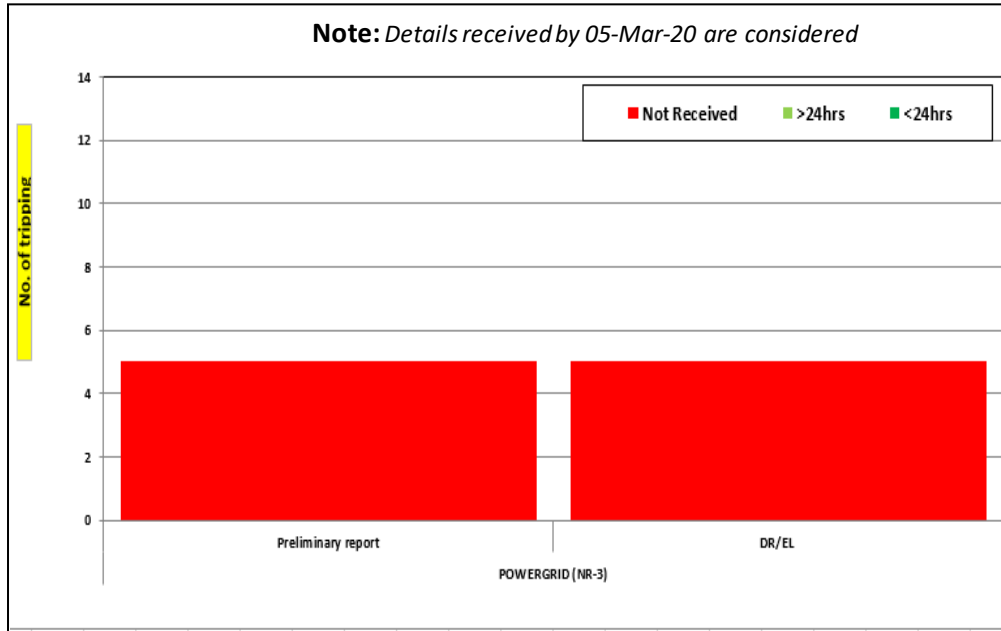
NRLDC representative informed that despite of web based online tripping portal, tripping details are still awaited from many of the utilities.

OCC forum raised concern for non-submission of details from the NR utilities and suggested to all for further improvement.

Members were again requested to provide timely details of the grid events, detailed report in desired format along with remedial measure report. Members agreed for the same.

18. Details of tripping of Inter-Regional lines from Northern Region for Feb'20

A total of 05 inter-regional lines tripping occurred in the month of Feb'20. The list is attached at **Annexure-B.6 of the Agenda**. Following status of the receipt of preliminary reports, DR/EL within 24 hrs of the event was shown in the meeting:



The non-receipt of DR/EL & preliminary report within 24 hrs of the event is in violation of various regulations. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24 hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than mandated by CEA (Grid Standard) Regulations.

NRLDC representative requested for timely submission of details and analysis of event for better real time system operation. Members agreed for the same.

19. Frequency response characteristic

Two FRC based event had occurred during **February 2020**. Description of the events is as under:

Sl. No.	Event Date	Time (in hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	Δf
1	17-Feb-20	17:38hrs	On 17th Feb 2020, at 17:38:31.600 hrs, HVDC Talcher - Kolar pole-II got tripped due to persistent DC line fault. At this time TS1 and TS2 signal generated at Kolar end and load relief of 1415 MW obtained in southern region as per SCADA data. It led to the frequency rise to 50.099 Hz from 49.930 Hz. Due to primary response, the frequency gone down to 50.025 Hz. Then at 17:39:58.400 hrs, Pole-I went	49.94	50.05	0.11

Sl. No.	Event Date	Time (in hrs.)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	Δf
			into ground return mode and at Talcher end, signal 3 is generated. On this signal, instantaneous back down of 666 MW occurred in Talcher stg II. Consequently, the frequency dipped to 49.96 Hz from 50.07 Hz and finally settled to a higher value of 50.04 Hz. The FRC has been calculated for the load relief of 1415 MW obtained in southern region.			
2	22-Feb-20	17:38hrs	On 22th Feb 2020, at 18:23:18 hrs Unit-II and Unit III at Bara station tripped. The reason of unit outage was differential protection as reported. As per Kanpur 3 phase voltage PMU, there was only single voltage dip and maximum dip is in Y-Phase. The total generation loss in the event was 1134 MW. In the event, Unit-I at Bara station remained connected and no generation was affected in it.	49.96	49.90	-0.06

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

States	17-Feb-20 event	Remarks
PUNJAB	21%	
HARYANA	43%	
RAJASTHAN	17%	
DELHI	47%	
UTTAR PRADESH	6%	
UTTARAKHAND	-10%	
CHANDIGARH	-19%	Small Control area
HIMACHAL PRADESH	9%	
JAMMU & KASHMIR	24%	
NR	21%	

States	22-Feb-20 event	Remarks
PUNJAB	20%	
HARYANA	-25%	
RAJASTHAN	12%	
DELHI	-50%	
UTTAR PRADESH	135%	
UTTARAKHAND	-42%	
CHANDIGARH	125%	Small Control area
HIMACHAL PRADESH	112%	
JAMMU & KASHMIR	-36%	
NR	37%	

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

Generator	17-Feb-20 event	Generator	17-Feb-20 event
Singrauli TPS	10%	Salal HEP	6%
Rihand-1 TPS	25%	Tanakpur HEP	-2%
Rihand-2 TPS	2%	Uri-1 HEP	2%
Rihand-3 TPS	21%	Uri-2 HEP	-12%
Dadri-1 TPS	No generation	Dhauliganga HEP	55%
Dadri -2 TPS	93%	Dulhasti HEP	18%
Unchahar TPS	0%	Sewa-II HEP	53%
Unchahar stg-4 TPS	8%	Parbati-3 HEP	No generation
Jhajjar TPS	38%	Jhakri HEP	13%
Dadri GPS	2%	Rampur HEP	112%
Anta GPS	No generation	Tehri HEP	13%
Auraiya GPS	Suspect SCADA data	Koteswar HEP	Increase in schedule
Narora APS	23%	Karcham HEP	68%
RAPS-B	23%	Malana-2 HEP	Suspect SCADA data
RAPS-C	-5%	Budhil HEP	No generation
Chamera-1 HEP	2%	Bhakra HEP	1%
Chamera-2 HEP	0%	Dehar HEP	-50%
Chamera-3 HEP	No generation	Pong HEP	7%
Bairasiul HEP	19%	Koldam HEP	Suspect SCADA data
		AD Hydro HEP	No generation

Generator	22-Feb-20 event	Generator	22-Feb-20 event
Singrauli TPS	57%	Salal HEP	1%
Rihand-1 TPS	94%	Tanakpur HEP	17%
Rihand-2 TPS	20%	Uri-1 HEP	-21%
Rihand-3 TPS	21%	Uri-2 HEP	0%
Dadri-1 TPS	No generation	Dhauliganga HEP	88%
Dadri -2 TPS	149%	Dulhasti HEP	37%
Unchahar TPS	0%	Sewa-II HEP	68%
Unchahar stg-4 TPS	-68%	Parbati-3 HEP	Suspect SCADA data
Jhajjar TPS	96%	Jhakri HEP	63%
Dadri GPS	0%	Rampur HEP	-22%
Anta GPS	No generation	Tehri HEP	Suspect SCADA data
Auraiya GPS	Suspect SCADA data	Koteswar HEP	Suspect SCADA data
Narora APS	-16%	Karcham HEP	91%
RAPS-B	7%	Malana-2 HEP	Suspect SCADA data
RAPS-C	37%	Budhil HEP	No generation
Chamera-1 HEP	178%	Bhakra HEP	0%
Chamera-2 HEP	0%	Dehar HEP	7%
Chamera-3 HEP	2%	Pong HEP	2%
Bairasiul HEP	9%	Koldam HEP	133%
		AD Hydro HEP	No generation

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

Generator	17-Feb-20 event	Generator	17-Feb-20 event
PUNJAB		UP	
Ropar TPS	No generation	Obra TPS	Suspect SCADA data
L.Mohabbat TPS	No generation	Harduaganj TPS	27%
Rajpura TPS	40%	Paricha TPS	-2%
T.Sabo TPS	0%	Rosa TPS	13%
Goindwal Sahib TPS	No generation	Anpara TPS	-2%
Ranjit Sagar HEP	14%	Anpara C TPS	69%
Anandpur Sahib HEP	2%	Anpara D TPS	No generation
HARYANA		Bara TPS	-43%
Panipat TPS	1%	Lalitpur TPS	10%
Khedar TPS	-12%	Meja TPS	No generation
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	No generation
CLP Jhajjar TPS	7%	Alaknanda HEP	Suspect SCADA data
Faridabad GPS	Suspect SCADA data	Rihand HEP	No generation
RAJASTHAN		Obra HEP	No generation
Kota TPS	5%	UTTARAKHAND	
Suratgarh TPS	22%	Gamma Infra GPS	3%
Kalisindh TPS	7%	Shravanti GPS	-4%
Chhabra TPS	No generation	Ramganga HEP	Suspect SCADA data
Chhabra stg-2 TPS	-1%	Chibra HEP	19%
Kawai TPS	0%	Khodri HEP	No generation
Dholpur GPS	No generation	Chilla HEP	10%
Mahi-1 HEP	8%	HP	
Mahi-2 HEP	No generation	Baspa HEP	1%
RPS HEP	No generation	Malana HEP	No generation
JS HEP	1%	Sainj HEP	No generation
DELHI		Larji HEP	13%
Badarpur TPS	No generation	Bhabha HEP	-2%
Bawana GPS	5%	Giri HEP	3%
Pragati GPS	-2%	J&K	
		Baglihar-1&2 HEP	0%
		Lower Jhelum HEP	No generation

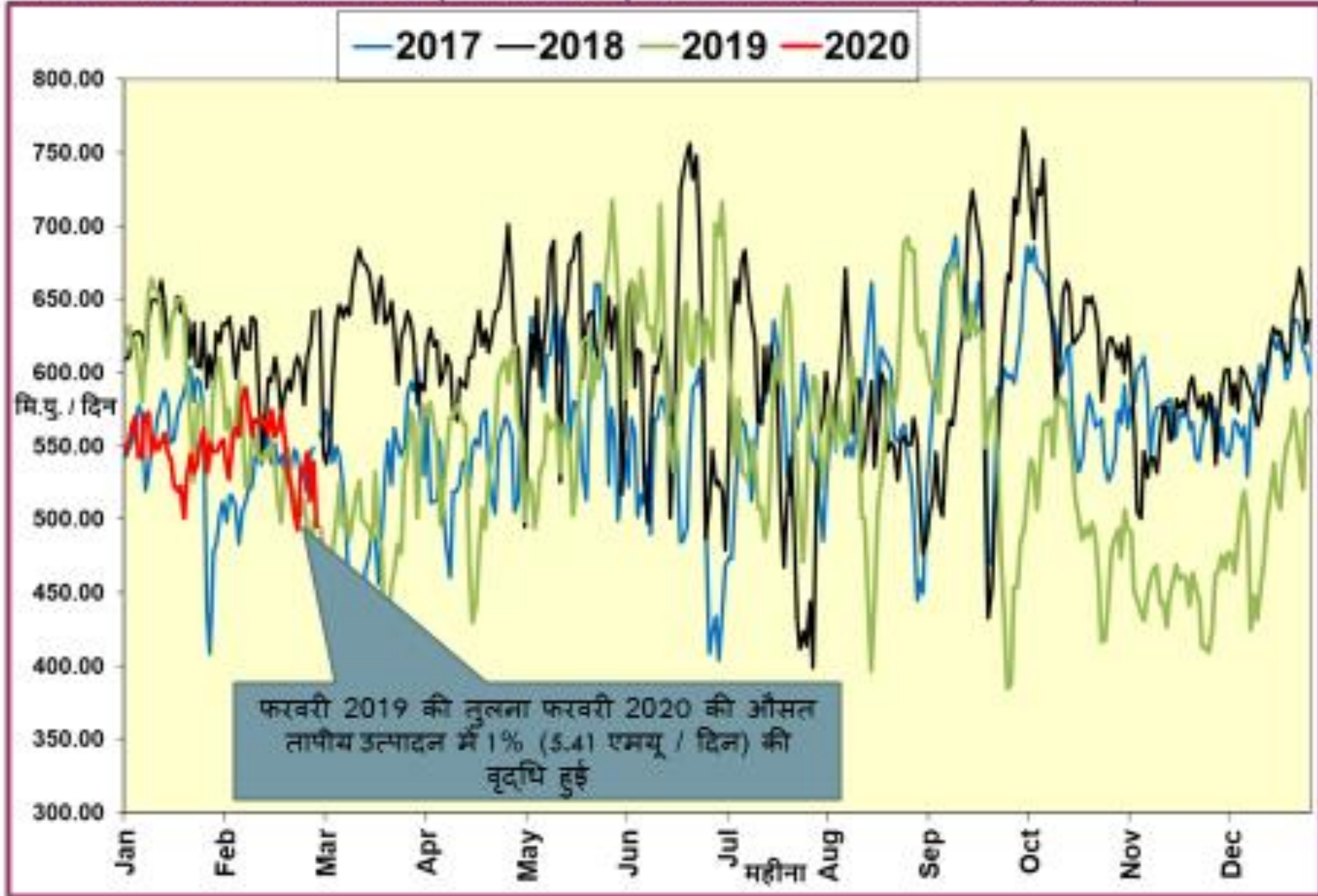
Generator	22-Feb-20 event	Generator	22-Feb-20 event
PUNJAB		UP	
Ropar TPS	No generation	Obra TPS	Suspect SCADA data
L.Mohabbat TPS	No generation	Harduaganj TPS	39%
Rajpura TPS	108%	Paricha TPS	79%
T.Sabo TPS	0%	Rosa TPS	90%
Goindwal Sahib TPS	No generation	Anpara TPS	-2%
Ranjit Sagar HEP	Suspect SCADA data	Anpara C TPS	60%
Anandpur Sahib HEP	-8%	Anpara D TPS	No generation
HARYANA		Bara TPS	-2714%
Panipat TPS	-1%	Lalitpur TPS	No generation
Khedar TPS	No generation	Meja TPS	No generation
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	No generation
CLP Jhajjar TPS	-15%	Alaknanda HEP	Suspect SCADA data
Faridabad GPS	Suspect SCADA data	Rihand HEP	No generation
RAJASTHAN		Obra HEP	No generation
Kota TPS	17%	UTTARAKHAND	
Suratgarh TPS	-7%	Gamma Infra GPS	15%
Kalisindh TPS	2%	Shravanti GPS	-13%
Chhabra TPS	No generation	Ramganga HEP	Suspect SCADA data
Chhabra stg-2 TPS	17%	Chibra HEP	0%
Kawai TPS	73%	Khodri HEP	No generation
Dholpur GPS	No generation	Chilla HEP	-9%
Mahi-1 HEP	-7%	HP	
Mahi-2 HEP	No generation	Baspa HEP	-8%
RPS HEP	No generation	Malana HEP	No generation
JS HEP	3%	Sainj HEP	No generation
DELHI		Larji HEP	-3%
Badarpur TPS	Suspect SCADA data	Bhabha HEP	-3%
Bawana GPS	-26%	Giri HEP	1%
Pragati GPS	-3%	J&K	
		Baglihar-1&2 HEP	-16%
		Lower Jhelum HEP	No generation

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 both the events and reason of poor response, if observed.

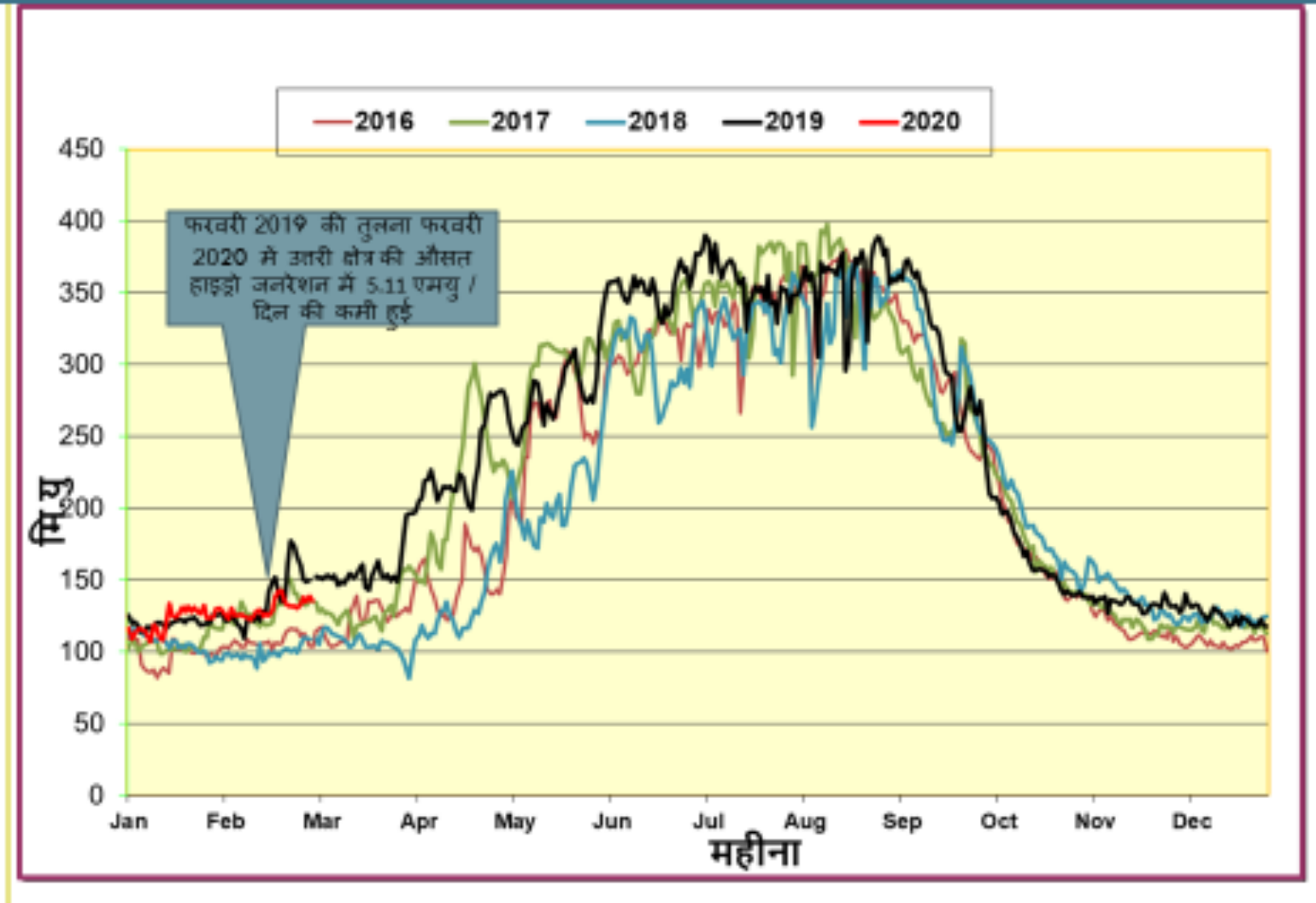
NRLDC representative once again requested to all the NR constituents to kindly calculate the FRC for respective control area or generating station and also share the remedial measures taken at respective end.

OCC suggested all the NR constituents to calculate the FRC of both the events and submit the details to NRPC/ NRLDC within 7 days.

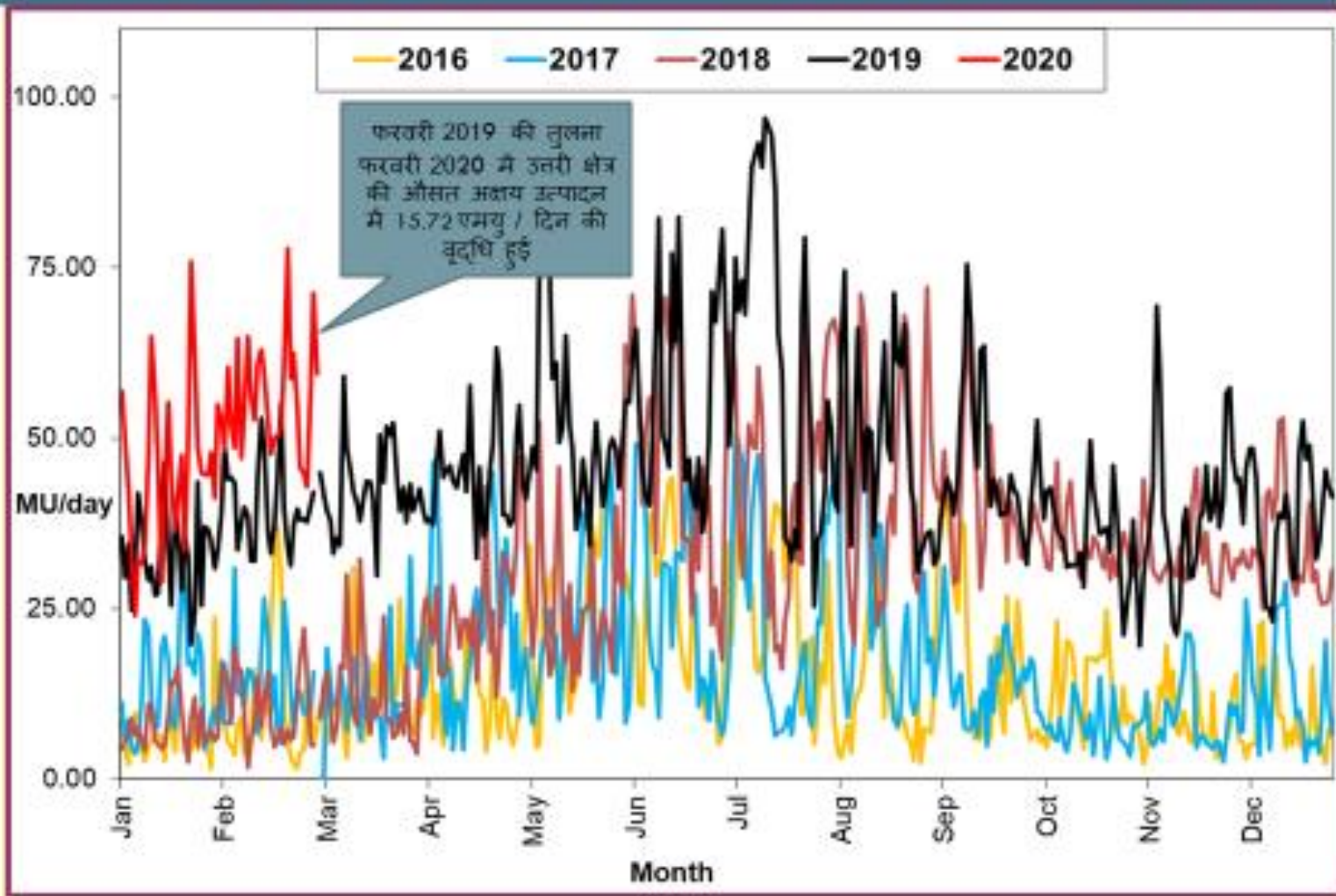
उत्तरी क्षेत्र की तापीय (Thermal) उत्पादन की स्थिति (MUs)



उत्तरी क्षेत्र की जलीय (हाइड्रो) उत्पादन की स्थिति (MUs)



उत्तरी क्षेत्र की अक्षय (Renewable) उत्पादन की स्थिति (MU_s)



First time test charged Transmission Elements during February-2020

Sl. No.	Type of transmission element	Total No
1	400kV lines	03
2	Station Transformer	02
Total New Elements charged		05

Transmission Lines (400kV Lines- 42 Ckt. km)										
Sl. No.	Name of element	Voltage Level (in kV)	Line Length (In kM)	Conductor Type	Agency/ Owner	Location	SCM / CEA / CTU / NRPC Meeting minutes	Remarks	Actual date & time of charging	
									Date	Time
1	400kV Noida Sec 148-Noida Sec 123-1 along with associated bays no 401 at Noida Sec 148 & 402 at Noida Sec 123	400	19.82	ACSR Twin Moose	UPPTCL	UP	31 st (point 42)	Charged at No Load	11.02.2020	15:30
2	400kV Noida Sec 148-Noida Sec 123-2 along with associated bays no 402 at Noida Sec 148 & 401 at Noida Sec 123	400	19.82	ACSR Twin Moose	UPPTCL	UP			11.02.2020	16:20
3	400kV DC Chabra(CTPS)-CSCTPS-1 and associated bays no 402A & 425A	400	2	ACSR Quad Moose	RVUNL	Rajasthan	in principle approval by CEA dated 04.02.2019		02.02.2020	16:11

STATION TRANSFORMER**(MVA Capacity Addition - 135MVA)**

Sr. No.	Name of element	Voltage Level	Transformation Capacity (in MVA)	New / replacement / augmentation	Make	Agency / Owner	Location	Remarks	Actual date & time of charging (no load)	
									Date	Time
1	ST-4 along with bay no 415 at Tanda 400kV	400/11.5	110	New	BHEL	NTPC	UP		25.02.2020	13:25
2	ST along with bay no 7 at Nathpa Jhakri	400/22	25	New	BHEL	NJPC	HP		27.02.2020	15:00

Details of Solar Plant Commissioned(1730 MW)

Sl. No.	Plant Name	Installed Capacity in MW	Capacity commissioned in MW	Dedicated Tr. Line	Grid Connectivity	Commissioned Date
1	SB Energy Solar Power Plant	200	100	220/33kV Saurya	765/400kV Bhadla(PG)	03.05.2019
			100			09.07.2019
2	Renew Solar Power Plant	50	50	220/33kV Adani	765/400kV Bhadla(PG)	27.04.2019
3	Azure Solar Power Plant	200	150	220/33kV Adani	765/400kV Bhadla(PG)	27.04.2019
			50			27.07.2019

4	Mahoba Solar UP Pvt. Ltd	250	100	220kV Mahoba-(PG) S/c line	765/400kV Bhadla(PG)	06.08.2019
			100			21.08.2019
			50			Yet to be commissioned
5	Tata Power Renewable Energy Ltd	150	150	220kV TPREL- Bhadla(PG) S/C line	765/400kV Bhadla(PG)	30.08.2019
6	Azure Power 34 Pvt Tranasmission Ltd	130	130	220kV APTFL- Bhadla(PG) S/C line	765/400kV Bhadla(PG)	06.09.2019
7	ACME Chittorgarh Solar Energy Power Pvt Ltd	250	100	220kV ACME- Bhadla(PG) S/C line	765/400kV Bhadla(PG)	06.10.2019
			130			25.10.2019
			20			01.01.2020
8	Renew Solar Power Plant, Bikaner	250	250	400kV Bikaner(Renew)- Bikaner(PG) S/C line	765/400kV Bikaner(PG)	27.10.2019
9	Clean Solar Power Energy Pvt Ltd	300	100	220/33kV Saurya	765/400kV Bhadla(PG)	10.12.2019
			70			03.01.2020
			70			23.01.2020
			30			14.02.2020
			30			26.02.2020
Total			1680			

Balance 60 MW Solar Generation of out of 300MW(Clean Solar Power)

SI. No.	Capacity to be charged out of 300 MW	Voltage Level	Total Installed Capacity (in MW)	Make (Inverter & IDT)	Inverter Capacity & No	IDT Capacity & No	Feeder Capacity & No	Agency/ Owner	SCM	Actual date & time of charging	
										Date	Time
1	30 MW Clean Solar Power Energy Pvt Ltd at Bhadla (Plot No R1)	33kV	250	Huawei & VOLTAMP	70*90kW	7.2 MVA	50 MW Feeder No R1A-Block No 3	Clean Solar Power		14.02.2020	20:30
					68*90kW	6.8 MVA	50 MW Feeder No R1A-Block No 8			14.02.2020	21:45
					68*90kW	6.8 MVA	50 MW Feeder No R1B-Block No 10			14.02.2020	21:55
					70*90kW	7.2 MVA	50 MW Feeder No R1B-Block No 11			14.02.2020	19:55
2	30 MW Clean Solar Power Energy Pvt Ltd at Bhadla (Plot No R2)	33kV	250	Huawei & VOLTAMP	68*90kW	6.8 MVA	50 MW Feeder No R2A-Block No 1	Clean Solar Power		26.02.2020	17:30
					70*90kW	7.2 MVA	50 MW Feeder No R2A-Block No 8			26.02.2020	17:43
					70*90kW	7.2 MVA	50 MW Feeder No R2A-Block No 15			26.02.2020	18:10
					70*90kW	7.2 MVA	50 MW Feeder No R2A-Block No 16			26.02.2020	17:55

Annexure-A.I (F)

Sl. No	Station	Location	Owner	Unit No	Capacity	Reason(s)	Outage		Outage Duration
							Date	Time	
1	RAPS-A	RAJASTHAN	NPCIL	1	100	Subject to regulatory clearance. unit is to be decommissioned	09-10-2004	22:58	5637
2	Giral (IPP) LTPS	RAJASTHAN	RRVNL	1	125	bed material leakage	11-07-2014	08:20	2075
3	Giral (IPP) LTPS	RAJASTHAN	RRVNL	2	125	Boiler tube leakage	27-01-2016	15:27	1510
4	Pong HPS	PUNJAB	BBMB	2	66	Renovation and Maintenance work	14-02-2019	08:00	396
5	Bhakra HPS	PUNJAB	BBMB	3	126	Renovation and Maintenance work	01-04-2019	09:20	350
6	Chamera II HPS	HP	NHPC	2	100	Turbine problem	07-08-2019	03:54	222
7	Chamera II HPS	HP	NHPC	1	100	Turbine problem	07-08-2019	08:58	222
8	Meja TPS	UP	UPPTCL, NTPC	1	660	HP turbine vibration high	06-10-2019	23:22	162
9	Guru Gobind Singh TPS (Ropar)	PUNJAB	PSPCL	6	210	annual maintenance	01-11-2019	09:00	136
10	Anpara-D TPS	UP	UPPTCL	2	500	Generator blast due to hydrogen leakage.	13-11-2019	14:14	124
11	RGTPP(Khedar)	HARYANA	HVNL	1	600	A severe blast has taken place in generator bus duct	23-11-2019	21:20	114
12	Bairasiul HPS	HP	NHPC	1	60	Complete shutdown for renovation and modernization.	30-12-2019	08:00	77

Sl. No	Station	Location	Owner	Unit No	Capacity	Reason(s)	Outage		Outage Duration
							Date	Time	
13	Paricha TPS	UP	UPPTCL	2	110	permanently closed	30-12-2019	22:14	77
14	Anpara-D TPS	UP	UPPTCL	1	500	Turbine Problem turbine testing	17-01-2020	06:38	59
15	Rajpura(NPL) TPS	PUNJAB	PSTCL,PSPCL	1	700	Annual Maintenance	31-01-2020	23:53	45
16	Pong HPS	PUNJAB	BBMB	6	66	Annual maintenance	01-02-2020	14:20	44
17	Uri-II HPS	J&K	NHPC	4	60	ANNUAL MAINTENANCE	08-02-2020	06:00	37
18	Chamera III HPS	HP	NHPC	1	77	Complete Shutdown of PH for replacement of MIV seals of all Units.	08-02-2020	17:00	37
19	Anpara-C TPS	UP	UPPTCL,LANCO	1	600	Major overhauling.	11-02-2020	00:01	34
20	Paricha TPS	UP	UPPTCL	5	250	Coal mill trip	13-02-2020	15:08	32

Annexure-A.I (G)

Sr. No.	Element Name	Type	Voltage Level	Owner	Outage		Revival	Outage Reason	Outage Duration
					Date	Time	Date		
1	400/220 kV 315 MVA ICT-1 at Bhilwara(rs)	ICT	400/220KV	RRVPNL	12-05-2019	23:42	16-03-2020	oil leakage in transformer	309
2	220 kV Chamera_3(NH PC)-Chamba(PG) ckt-2	Line	220KVPOWERGRID		14-05-2019	11:56	16-03-2020	Tower at loc no. 25 has been bend due to soil sinking and land slide. During shifting of Chamera Pool-2 line from 220 kV Bus-2 to Bus-1 at Chamera 3 GIS.Line isolator and circuit breaker of line 2 got damaged at Chamera-3 GIS.	307
3	50 MVAR LR ON BHILWARA(RS) - CHHABRA(RVUN) (RS) CKT-1 @BHILWARA(RS)	LR	400KV	RRVPNL	04-12-2019	10:29	16-03-2020	Routine maintenance of 400 kv chhabra line & bay with reactor (4352a)& associated equipment	103

Sr. No.	Element Name	Type	Voltage Level	Owner	Outage		Revival	Outage Reason	Outage Duration	
					Date	Time	Date			
4	400/220 kV 500 MVA ICT-2 at Agra(UP)	ICT	400/220KV	UPPTCL	16-12-2019	18:14	16-03-2020	Transformer Replacement due to core winding problem.	91	
5	50 MVAR LR ON 400 KV AKAL-RAMGARH (RS) CKT-1 @RAMGARH(RS)	LR	400KV	RRVPNL	19-12-2019	14:00	16-03-2020	quarterly maintenance	88	
6	50 MVAR LR ON KOTA(PG)-MERTA(RS) (PG) CKT-1 @MERTA(RS)	LR	400KVPOWERGRID		09-01-2020	11:08	16-03-2020	Quarterly maintenance work of Bay and equipment.	67	
7	400 KV GURGAON-MANESAR (PG) CKT-2	Line	400KV	POWERGRID	05-02-2020	13:03		SD taken by sterlite for Lilo of this D/C (PG) line at Sohna road new s stn. of GPTL sterlite	40	400 KV GURGAON-MANESAR (PG) CKT-2
8	800 KV HVDC Champa(PG) Pole-2	HVDC POLE	800KV	POWERGRID	06-02-2020	08:58		For commissioning work of pole 4 at Champa	39	800 KV HVDC Champa(PG) Pole-2
9	800 KV HVDC Champa(PG) Pole-1	HVDC POLE	800KV	POWERGRID	06-02-2020	08:58		FOR commissioning work of pole-4 at Champa.	39	800 KV HVDC Champa(PG) Pole-1

Sr. No.	Element Name	Type	Voltage Level	Owner	Outage		Revival	Outage Reason	Outage Duration
					Date	Time	Date		
10	220 KV Meerut(PG)-Modipuram(UP) (PG) Ckt-1	Line	220KV	POWERGRID,UPP TCL	12-02-2020	13:04	for online retro fitment of LBB relay at Meerut PG.	33	220 KV Meerut(PG)-Modipuram(UP) (PG) Ckt-1
11	80 MVAR Bus Reactor No 1 at 400KV Bareilly(UP)	BR	400KV	UPPTCL,UPPTCL	17-02-2020	15:13	During this S/D the 400kV Bareilly-Unnao ckt II line will be kept energized through C.B - 90(Bus Transfer) and supply will not be interrupted. As there is no separate bus for Bus Reactor, it is energized through 400 kv Transfer Bus. So, for charging 400 kv Bareilly-Unnao ckt.II line through transfer Bus, Bus Reactor (80 MVAR) will be kept out of ckt.	28	80 MVAR Bus Reactor No 1 at 400KV Bareilly(UP)
12	400 KV KOTESHWAR-MEERUT (PG) CKT-1	Line	400KV	POWERGRID	20-02-2020	10:02	For construction work of 765kv GIS equipment at Koteshwar stn & charging of line on 765 kV.	25	400 KV KOTESHWAR-MEERUT (PG) CKT-1
13	50 MVAR LR ON 400 KV KANKROLI-ZERDA (PG) CKT-1 @KANKROLI(PG)	LR	400KV	POWERGRID	27-02-2020	11:10	For foundation and erection work of new bay for it's conversion as a	18	50 MVAR LR ON 400 KV KANKROLI-ZERDA (PG) CKT-1

Sr. No.	Element Name	Type	Voltage Level	Owner	Outage		Revival	Outage Reason	Outage Duration
					Date	Time	Date		
							switchable line reactor.		@KANKROLI(PG)
14	93 MVAR BUS REACTOR NO 1 AT 400KV VINDHYACHAL(PG)	BR	400KV	POWERGRID	28-02-2020	08:36	RETRO FITMENT OF CIRCUIT BREAKER UNDER ADD CAP at Vindhyachal HVDC S/S.	17	93 MVAR BUS REACTOR NO 1 AT 400KV VINDHYACHAL(PG)

Follow up issues from previous OCC meetings

Sl. No.	Agenda point	Details	Status / Decision
1.	Sub-stations likely to be commissioned in next six months.	All the concerned states were requested to submit the details of the downstream network associated specially with POWERGRID substations along with the action plan of their proposed / approved networks.	Present members confirmed the status details of downstream networks mentioned in Annexure-A.II.I.
2.	Progress of installing new capacitors and repair of defective capacitors	Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.	Information received from Uttarakhand and Uttar Pradesh up to February 2020. Rajasthan up to January 2020. Haryana up to November 2019 All states were requested to furnish updated status monthly.
3.	Healthiness of defence mechanism: Self- certification	Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that <i>"All the UFRs are checked and found functional"</i> .	Report for the period ending Feb`20 received from Haryana . Ending Dec`2019 received from Rajasthan, UP and Punjab . BBMB have submitted information up to Nov`2019 . Delhi and HP have submitted information up to Sep`2019 . All states are again requested to submit details of feeder-wise expected load relief through UFR and df/dt relays in the format enclosed at Annexure-A.2.3 of agenda of 165 th OCC.
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 36 th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144 th 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.	Updated status in the month of March 2020 has been received from Punjab . All states/utilities are requested to update status on monthly basis.

5. Reactive compensation at 220 kV/ 400 kV level

Sl. No.	Owner	Substation	Reactor	Updated Status
1.	POWERGRID	Kurukshetra	500 MVar TCR	Anticipated commissioning: Jan-Mar'2021
2	DTL	Peeragarhi	1x50 MVar at 220 kV	Tender opened on 27.02.2020. Under Bid evaluation.
		Harsh Vihar	2x50 MVar at 220 kV	
		Mundka	1x125 MVar at 400 kV	No bid received for the Tender scheduled to be opened on 04.03.2020. To be refloated.
			1x25 MVar at 220 kV	
		Bamnauli	2x25 MVar at 220 kV	
		Indraprastha	2x25 MVar at 220 kV	
Electric Lane	1x50 MVar at 220 kV	Scheme sent for approval in DTL BOD meeting. Tender to be floated after approval.		
3.	Punjab	Dhuri	1x125 MVar at 400 kV	Bid opening date extended due to less participation. To be opened on 26.03.2020.
			1x25 MVar at 220 kV	
		Nakodar	1x25 MVar at 220 kV	
4.	PTCUL	Kashipur	1x125 MVAR at 400kV	Already submitted to PSDF. On hold due to policy decision
5.	Rajasthan	Akal	1x25 MVar	PSDF funding sanctioned. Under tendering
		Bikaner	1x25 MVar	
		Suratgarh	1x25 MVar	
		Barmer	1x25 MVar	Response awaited from TESC of PSDF.

Annexure-All.I

Sl. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
1	400/220kV, 3x315 MVA Samba	2 nos. bays utilized under ISTS. Balance 4 nos. to be utilized	Commissioned (1 st & 2 nd – Mar'13 3 rd – Oct'16) Bays - Mar'13	<ul style="list-style-type: none"> • LILO of 220 kV Bishnha –Hiranagar D/c line. Target completion - Nov, 2019 • 220 kV D/c Samba (PG) – Samba (JKPDD) approved in 1st NRSCT. No representation from JKPDD
2	400/220kV, 2x315 MVA New Wanpoh	6 Nos. of 220 kV bays to be utilized	Commissioned in Jul'14 Bays-Jul'14	<ul style="list-style-type: none"> • 220 kV New Wanpoh –Mirbazar D/c line. • 220 kV Alusteng - New Wanpoh Line. No representation from JKPDD
3	400/220kV, 2x500 MVA Kurukshetra (GIS)	4 nos. of 220 kV bays to be utilized 4 nos. of bays utilised for LILO of one circuit of Kaul-Pehowa 220 kV D/c line at Bhadson (Kurukshetra). Commissioned on 07.03.2019 LILO of one circuit of Kaul- Bastara 220 kV D/c line Bhadson(Kurukshetra). Commissioned on 27.06.2019	Commissioned in Mar'17.	<ul style="list-style-type: none"> • 220kV D/c Bhadson (Kurukshetra) – Salempur with HTLS conductor equivalent to twin moose. P.O. issued on 15.10.18. Contract agreement signed on 30.11.18. Likely date of completion is 30.04.2020.
4	400/220 kV, 2x315 MVA Dehradun	Out of 6 bays, only two bays used. Balance 4 bays to be utilised.	Commissioned in Jan'17	<ul style="list-style-type: none"> • 220 kV Dehradun- Jhajra line. Target completion: Nov 2021

Annexure-All.I

Sl. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
5	Shahjahanpu, 2x315 MVA 400/220 kV	Partially utilized. Balance 4 Nos. of 220 kV bays to be utilized.	Commissioned in Jun/Sep'14	<ul style="list-style-type: none"> • Shajahnapur-Azimpur D/C line is planned, expected by Dec, 2020 • 220 kV D/C Shajahnapur-Gola line expected by Dec, 2020
6	Hamirpur 400/220 kV 2x 315 MVA Sub-station (Augmentation by 3x105 MVA ICT)	2 nos. bays utilized under ISTS. Balance 6 nos to be utilized	1 st -Dec'13, 2 nd – Mar'14 & 3 rd Mar'19. 4 bays-Dec'13, 2 bays-Mar'14 2 bays-Mar'19	<ul style="list-style-type: none"> • 220 kV D/C Hamirpur-Dehan line. Target completion – Dec, 2020
7	Kaithal 400/220 kV 1x 315 MVA Sub-station	July 2017 (Shifting of transformer from Ballabgharh)	Commissioned	<ul style="list-style-type: none"> • 220 kV Kaithal(PG)-Neemwala D/c line. Target completion - 30.04.2020
8	Sikar 400/220kV, 1x 315 MVA S/s	2 Nos. of 220 kV bays	Commissioned	Retendering to be done in Feb/Mar 2020 .
9	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned	<ul style="list-style-type: none"> • 220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line. Target completion – Nov, 2020
10	Jind 400/220kV S/s	6 nos. of 220kV bays	Commissioned	<ul style="list-style-type: none"> • LILO of both circuits of 220kV D/c Narwana – Mund line at Jind (PG). Target completion – Nov, 2020

Annexure-All.I

Sl. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
11	<p>400/220kV Tughlakabad GIS</p> <p>(10 no of 220kV bays)</p>	4x 500	Commissioned	<ul style="list-style-type: none"> • RK Puram – Tughlakabad (UG Cable) 220kv D/c line. Scheme will be revised Target completion – March 2023 • Okhla – Tughlakabad 220kv D/c line. • Mehrauli – Tughlakabad 220kv D/c line. • BTPS – Tughlakabad 220kv D/c line. Commissioned. • Masjid Mor – Tughlakabad 220kv D/c line. Target completion – Dec, 2021.
12	<p>400/220kV Kala Amb GIS (TBCB)</p> <p>(6 nos. of 220kV bays)</p>	7x105	Commissioned (Jul'17)	<p>HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s. Details for remaining 4 nos. of line bays may be provided.</p> <p>Target completion – Dec, 2021</p>