



सत्यमेव जयते

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

संख्या: NRPC/OPR/106/01/2019/7897-7938

दिनांक: 31.07.2019

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 161<sup>वीं</sup> बैठक का कार्यवृत्त |

Subject: Minutes of 161<sup>st</sup> OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 161<sup>वीं</sup> बैठक 16.07.2019 को आयोजित की गयी थी। 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।

161<sup>st</sup> meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 16.07.2019. 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

## Minutes of the 161<sup>st</sup> meeting of the Operation Coordination Sub-Committee (OCC) of NRPC

161<sup>st</sup> meeting of OCC of NRPC was held on 16.07.2019 at NRPC Secretariat, New Delhi. The list of participants of the meeting is attached at **Annexure-I**.

### PART-A: NRPC

#### 1. Confirmation of Minutes

The minutes of the 160<sup>th</sup> OCC meeting held on 17.06.2019 and 18.06.2019 at NRPC Secretariat, New Delhi were issued vide letter of even number dated 28.06.2019.

Sub-Committee confirmed the minutes of the 160<sup>th</sup> OCC meeting.

#### 2. Review of Grid operations of June 2019

##### 2.1. Anticipated vis-à-vis Actual Power Supply Position (Provisional) June 2019.

Sub Committee was informed that there are variations (i.e. > 5.0%) in the Anticipated Vis-à-vis Actual Power Supply Position (Provisional) for the month of June, 2019 in terms of Energy Requirement for Delhi & Punjab and in terms of Peak Demand for Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir & Rajasthan. Reasons for variation and comments submitted by the utilities are as under:

**Delhi** stated that in June 2019, the variation between actual and anticipated energy consumption in MUs/ Day was -6.4% as there was only 0.24 % growth in energy consumption w.r.t previous year. Generally, the growth remains 5-6%. This variation is because of intermittent rain and thunderstorms in Delhi and adjoining areas.

**Haryana** informed that the 5% variation in MW terms was attributed to higher than expected temperature in the last 3-4 days of June 2019.

**Punjab** informed that the variation of 14% in energy requirement was because of delayed monsoon which led to such a rapid rise in the energy requirement.

**HP** informed that the variation of 8.7% in peak requirement was due to increased demand from the cooling load (ACs) which was met by booking URS power and purchasing from the market.

**Rajasthan** informed that the variation of 7.9% in peak demand was due to unprecedented heat wave condition which prevailed during June 2019.

The Sub-Committee requested all SLDCs to furnish the provisional and final power supply position in prescribed formats by 2<sup>nd</sup> and 15<sup>th</sup> day of the month respectively in compliance to the provision 5.3 of IEGC.

NRLDC representative added that all the states are sharing load forecast data with NRLDC. However, some states such as Delhi, Punjab and Haryana need to submit the data early than being done presently (to be shared by evening on day-ahead basis instead of night/same day). Moreover, RMSE (Root mean Square Error) for most of the states is on higher side with states such as Punjab, HP and J&K having RMSE above 10% while other states having RMSE in range of 5-10%.

## 2.2. Power Supply Position for NCR:

2.2.1. The Sub-Committee was informed that the NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of June 2019 is placed on NRPC website (<http://nrpc.gov.in/operation-category/power-supply-position>).

## 2.3. The highlights of grid operation during June 2019 are as follows:

- 2.3.1. Frequency remained within the IEGC band for **70.34%** of the time during June 2019, which is higher than that of last year during same month (June 2018) when frequency (within IEGC band) remained 76.45% of the time. The maximum and minimum frequencies recorded were 50.31 Hz and 49.63 Hz respectively.
- 2.3.2. Utilities were requested to take necessary action to further improve the frequency regime viz. by not changing abruptly the loads at block boundaries and assuring primary response from the generators.
- 2.3.3. Maximum and minimum load for the region during June 2019 were 65,531 MW (29.06.2019 at 22:20 hrs) and 40,889 MW (18.06.2019 at 04:10 hrs).
- 2.3.4. The average consumption, of the Northern Region, for June 2019, increased by 9.47% with respect to the corresponding month in previous year.
- 2.3.5. The average Thermal generation in June 2019 increased by 9.17% (56.57 MU/Day) with respect to the corresponding month in previous year. The details are enclosed at **Annexure-II(A)**.
- 2.3.6. The average Hydro generation in June 2019 increased by 51.11 MU/day with respect to the corresponding month in previous year.
- 2.3.7. The average Renewable generation in May 2019 increased by 3.89 MU/day with respect to the corresponding month in previous year. All utilities were requested to send the data for renewable generation regularly.
- 2.3.8. The average nuclear generation in June 2019 increased by 1.01 MU/day as compared to corresponding month in previous year.
- 2.3.9. The net average inter-regional import during June 2019 decreased by 0.92 MU/day as compared to corresponding month of previous year.
- 2.3.10. The net average Import from WR during June 2019 was 175.94 MU/day, which decreased by 2.1 MU/day as compared to corresponding month of previous year.

- 2.3.11. The net average Import from ER during June 2019 was 68.74MU/day, which decreased by 0.65 MU/day as compared to corresponding month of previous year.
- 2.3.12. The net average Import from NER during May 2019 was 11.85 MU/day, which increased by 1.83 MU/day as compared to corresponding month of previous year.
- 2.3.13. Long outages of generating Units were discussed in detail and the same is placed at **Annexure-II (B)**.
- 2.3.14. Long outages of transmission lines were discussed in detail and the same is placed at **Annexure-II (C)** & all constituents were requested to revive the elements under long outages at the earliest.
- 2.3.15. The new elements charged were discussed and the list is attached at **Annexure-II (D)**.

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

#### **3.1. Maintenance Programme for Generating Units.**

The maintenance programme for Generating Units for the month of August, 2019 was discussed on 15.07.2019 at NRPC Secretariat, New Delhi.

#### **3.2. Outage Programme for Transmission Elements.**

The maintenance programme for Generating Units for the month of August, 2019 was discussed on 15.07.2019 at NRPC Secretariat, New Delhi.

Representative of HPPTCL in the meeting stated that 220 kV D/C Charor-Banala line being constructed by HPPTCL is ready for charging. However, due to non-approval of the shutdown for charging of the said because of consent not being provided by AD Hydro and Everest power, the line could not be charged. HPPTCL was advised to settle the issue bilaterally between the concerned parties.

### **4. Planning of Grid Operation**

#### **4.1. Anticipated Power Supply Position in Northern Region during August 2019**

- 4.1.1. Modified Anticipated Power Supply Position in Northern Region during August, 2019 is placed at **Annexure-III**.
- 4.1.2. **UPSLDC** informed that anticipated availability will be 12000 MU and 19400 MW in place of 14000 MU and 20500 MW respectively. Anticipated requirement for the said period will be 12100 MU in place of 12600 MU.
- 4.1.3. **HPSLDC** informed that anticipated availability will be 978 MU and 1509 MW in place of 1050 MU and 1950 MW respectively.
- 4.1.4. **Haryana-SLDC** informed that anticipated requirement will be 6230 MU in place of 6010 MU.
- 4.1.5. **Rajasthan-SLDC** informed that anticipated requirement will be 12200 MW

in place of 11500 MW. HP representative informed that Anticipated availability 945 MU and 1299 MW in place of 970 MU and 1910 MW respectively. Anticipated requirement 852 MU and 1292 MW in place of 900 MU and 1500 MW.

## **5. Information about variable charges of all the generating units in the Region**

SE(O), NRPC highlighted the case of Haryana, Rajasthan, Uttarakhand and Delhi for 02.07.2019 (obtained from MERIT portal), wherein it was observed that some higher cost generating stations were scheduled before exhausting the available cheaper generating stations and reason for the same was not mentioned in the portal.

Delhi SLDC informed that the MERIT order is being followed by their utilities in letter and spirit. To the scheduling variations as highlighted in the agenda, it was stated that as the scheduling was being done at the behest of DISCOMs, there may be a possibility that corresponding to their share, one DISCOM might have backed down some generation and other DISCOM might have scheduled some other generator. In this respect it was opined by the committee that while filling the data on the MERIT portal SLDCs shall specifically mention the reasons for any violation under the 'remarks' column. Further, SLDCs were advised to deliberate the aforementioned issue in their internal OCC so as to optimize the scheduling.

Haryana, Rajasthan and Uttarakhand were advised to ensure scheduling according to the MERIT order and in case of some variation, reason shall be highlighted under the 'remarks' section of the MERIT order portal.

Further, all SLDCs were sensitized with the issue of not filling their data regularly on MERIT order portal for which GM Division, CEA has also written to NRPC for ensuring its compliance. All states in general and Punjab & Haryana in particular were advised to ensure timely filling of their data in the portal.

## **6. Reactive compensation at 220 kV/400kV level**

**In the 38<sup>th</sup> TCC & 41<sup>st</sup> NRPC dt. 27<sup>th</sup> & 28<sup>th</sup> February 2018, following elements in NR were approved:**

- a) 500 MVar TCR at 400 kV bus at Kurukshetra S/S of POWERGRID.
- b) 30 nos. of 220 kV bus reactors and 18 nos. of 400 kV bus reactors, subject to availability of space.

### **6.2 POWERGRID:**

500 MVar TCR at Kurukshetra: Award placed in January 2019 with completion schedule of 22 months.

PGCIL representative informed that for 11 no. of 400 kV Bus Reactor and 7 no. of 220 kV Bus Reactor, Bid Evaluation is under finalization and LoA will be placed by the end of August 2019.

### 6.3 DTL:

The updated status of the reactors as received from DTL is placed below:

S. No.	Sub Station	Voltage level (kV)	Reactor (MVAR)	Updated Status (as on 01.07.19)
1	Peeragarhi	220	1x50	PR No 1100002017 Raised.
2	Mundka	400	1x125	PR No 1100002120 Raised.
		220	1x25	
3	Harsh Vihar	220	2x50	PR No 1100002162 Raised.
4	Electric Lane	220	1x50	Under financial concurrence
5	Bamnauli	220	2x25	PR raised.
6	Indraprastha	220	2x25	Under financial concurrence
<b>TOTAL</b>			<b>450</b>	

### 6.4 PSTCL:

Sanction order for PSDF funding has been issued to PSTCL and re-tendering for 400kV bus reactor at Dhuri substation and 220kV bus reactors at Dhuri & Nakodar substations has been done with bid opening rescheduled for 25.07.2019.

### 6.5 Uttarakhand:

**125 MVAR reactors at Kashipur:** Technical Bid for 125 MVAR reactor at Kashipur has been opened and is being evaluated.

### 6.6 Rajasthan:

The updated status is placed below:

Item	Background	Status
3 Nos. each of 25 MVAR (220 kV) reactors for Akal, Bikaner & Suratgarh.	-	PSDF funding sanctioned. Tendering under process.
1 No. of 25 MVAR (220 kV) reactor for Barmer & 125 MVAR (400 kV) reactor for Jodhpur, included in 450 MVAR (13x25 + 1x125 MVAR) proposal	Revised DPR for 450 MVAR approved Reactor after separating STATCOM was submitted vide letter dt. 12.10.2018 to POSOCO for approval.	RVPN submitted reply to the sought clarifications. TESSG has examined the same and put up for approval of Appraisal Committee.

## 7. System Study for Capacitor Requirement in NR for the year 2019-20

- 7.1. HP representative informed that they have not received comments from CPRI on the sample data as submitted by them. HP was advised to directly take up the issue with CPRI.
- 7.2. Delhi representative informed that the reply on the clarification sought by CPRI has already been sent for necessary action.
- 7.3. SE (O), NRPC informed that as per the request of UPPTCL representative in

the 160<sup>th</sup> OCC meeting, a letter was sent to CPRI requesting them to take up the task of data collection in respect of UP (at additional cost to be borne by UP) citing UP's inability to collect the same in the prescribed format. Reply of CPRI in this regard is received wherein CPRI has expressed its inability to take up the task citing their other commitments.

- 7.4. All states were requested to expedite the submission of final data to CPRI after incorporation of the comments of CPRI. UP and Uttarakhand were specifically requested to submit the data at the earliest as not even the sample data for any of the substation was submitted by them.

## **8. Phase nomenclature mismatch issue with BBMB and interconnected stations**

- 8.1. On the solution as proposed by PGCIL and BBMB in the separate meeting, NRLDC expressed serious concerns and termed it to be a regressive step wherein after almost 2 years of deliberation on how to solve the issue of phase nomenclature mismatch, we have arrived at a decision that nothing can be done so as to rectify the issue.
- 8.2. PGCIL representative stated that during the past 2 years all the possible options for resolving the issue were pondered and considering their infeasibility, it was proposed that the decision of 142<sup>nd</sup> OCC meeting can only be implemented.
- 8.3. OCC was of the view that the agenda item was pending since last 2 years and decided that a separate meeting shall be scheduled for this issue and the matter may be resolved accordingly.

## **9. Follow up of issues from previous OCC Meetings – Status update**

The detail of the updated status as discussed in the 161<sup>st</sup> OCC meeting is placed at the corresponding agenda point of ***Annexure-IV***.

## **10. Status of FGD installation vis-à-vis installation plan at identified TPS**

- 10.1. All the utilities were requested to submit the progress status as per format specified by CEA to NRPC Secretariat as excel file (template available at <http://164.100.60.165/Oper/2019-20/dataformat/FGD-status-format.xls>).

## **11. System Protection Scheme (SPS) in NR**

### **11.1. SPS for ICTs at 765 kV Unnao sub-station**

UP representative informed that there were no such issues observed during the Mock testing which was done on 17.06.2019 as represented in the previous OCC meeting.

On the revised SPS logic as proposed by UP, NRLDC representative advised:

- i. Load shedding target in the new SPS logic shall be as per that proposed in



the earlier SPS logic.

- ii. As per the logic submitted, in case of tripping of 2 ICT at 765 kV S/s Unnao when the real time flow on 765 kV Anpara Unnao line (X MW) prior to tripping is  $1200 < X \leq 1350$ , backing down of 200 MW each from Anpara C and D is to be achieved within 60 seconds. In this scenario, remaining 1 ICT shall also trip on overload protection (within 5-10 sec) before backing down at Anpara C and D could be achieved. In view of the above, it was suggested that tripping of any one unit shall also be wired.

## 11.2. SPS for Kawai – Kalisindh - Chhabra generation complex

Rajasthan representative informed that it has been decided that the link between Chhabra – Chhabra Supercritical shall be closed during operation, however, the study was conducted by considering the link as open. In this regard Rajasthan was requested to submit the revised study within 15 days to NRLDC/ NRPC.

Further, NRLDC representative stated that in the earlier study submitted by Rajasthan, the tripping of Chhabra was mentioned twice under S. No. 8. It was advised that the same may be checked and incorporated accordingly in the revised study.

RVUN informed that they have submitted the dynamic data of Kalisindh to SLDC on 16.07.19.

Rajasthan was advised to share the dynamic data of other generators as brought out in previous meeting and the revised study to NRLDC/ NRPC by 30.07.19 so that the same can be discussed in the next OCC meeting.

## 12. Automatic Demand Management System

- 12.1. Clause 5.4.2 (d) of IEGC mandates for implementation of the state-of-the-art demand management schemes for automatic demand management to reduce overdrawal from the grid. The responsibility for the implementation of the same has been entrusted on SLDCs/ SEB/ DISCOMs. CERC in its order in petition No. 5/SM/2014 had granted time till 31.06.2016 to the concerned SLDCs/ SEB/ DISCOMs to implement ADMS, failing which action under Section 142 of the Act for non-compliance of the Regulation 5.4.2 (d) of the Grid Code and order of the Commission. RLDCs were also directed to submit the report in this regard to the commission by 31.08.2016. The issue of implementation of ADMS in NR is being deliberated regularly in the OCC meetings. The status of implementation of ADMS in states of NR is as under:

State/ Utility	Status
Punjab	<b>Not fully implemented.</b> At SLDC level, 96 feeders of 66 kV are operational. At 11 kV feeder level, ADMS is to be implemented by Distribution Company. As per the information available with SLDC, for 50 feeders of 11 kV at Amritsar and Ludhiana, scheme was under finalization.



State/ Utility	Status
Delhi	<b>Fully implemented</b> by TPDDL, BRPL and BYPL. NDMC will be implementing by December 2019.
Rajasthan	<b>Under implementation.</b> 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. ADMS functionality at 11 kV feeders from 33/11 kV substation is under the jurisdiction of the DISCOMs and matter is being perused with DISCOMs authorities
UP	<b>Not fully implemented.</b> Remote operation of 50 feeders at 132 kV level being operated from SLDC. For the down below network, issue taken up with the DISCOMs.
Haryana	<b>Not implemented.</b>
Uttarakhand	<b>Not implemented.</b>

12.2. Uttarakhand representative informed that the matter for the implementation of ADMS was being pursued with the DISCOMs, however, no positive response in this regard has been obtained from their end.

12.3. NRLDC representative requested all state utilities to submit the roadmap/ action plan for the implementation of ADMS before next OCC meeting. Accordingly, NRLDC would file reply to the Commission regarding the status of implementation of ADMS as per the requirement of CERC order in petition No. 5/SM/2014.

12.4. All the utilities were advised to expedite the implementation of ADMS so as to avoid any action by the commission under Section 142 of the Electricity Act for non-compliance of IEGC.

### 13. Status of implementation of recommendations of Enquiry Committee on grid disturbances on 30<sup>th</sup> & 31<sup>st</sup> July 2012

13.1. The status of information received in this regard is as under:

Submitted		Not Submitted	
NTPC (NCR) (19.08.2018)	POSOCO	Uttar Pradesh	Jammu and Kashmir
BBMB (24.07.2018)	NHPC (07.02.2018)	Himachal Pradesh	UT of Chandigarh
Punjab (16.07.2018)	HPGCL (Panipat TPS) (17.07.2018)	NTPC (NR-HQ)	HVPNL
Rajasthan (13.06.2018)	NPCIL (RAPS: 17.07.2018)		

	(NAPS: 25.07.2018)		
THDC (18.07.2018) (19.07.2018)	POWERGRID (NR-1: 16.11.2018 NR-2: 13.07.2018 NR-3: 01.04.2019)		
SJVNL (NJHPS: 01.05.2019 RHPS: 08.05.2019)	Delhi (01.04.2019)		

UP, HP, NTPC (NR-HQ), HVPNL, J&K and Chandigarh were requested to submit status at the earliest so that the information could be forwarded to NPC, CEA.

#### 14. Cyber Security Preparedness Monitoring

14.1. Based on the detailed presentation given by Chief Information Security Officer (CISO), MoP in the 37<sup>th</sup> TCC and 40<sup>th</sup> NRPC meeting, all utilities were requested to monitor actions being taken in regard to the following points and report the status:

- a. Appointment of organization-wise CISO and its status.
- b. Identification of organization-wise Critical Infrastructure and its status.
- c. Preparation of organization-wise Crisis Management Plan and its status.
- d. Status of Cyber Security Mock Drill activity in coordination with CERT-In.
- e. Status of Training / Workshops on Cyber Security organized / participated by power sector entities.
- f. Status of action taken on CERT-In / NCIIPC advisories.

The updated status on aforementioned cyber security action points was enclosed as Annexure-V(A) of the agenda of 160<sup>th</sup> OCC meeting.

All utilities were requested to update the status.

14.2. In the 156<sup>th</sup> OCC meeting, it was mentioned that inherent vulnerability in the ICT infrastructure or website or web applications shall be accessed and remedial action thereon shall be taken by all utilities by conducting Vulnerability Assessment & Penetration Test (VAPT) of their respective ICT infrastructure, websites and web applications. The updated status of VAPT and cyber security audit is enclosed as Annexure-V(B) of the agenda of 160<sup>th</sup> OCC meeting.

All utilities were requested to update the status of VAPT conducted in their respective organization and VAPT plan for the future.

#### 15. Expediting Construction of 132kV supply for railway traction substation for railway electrification projects in states in NR region

15.1. Ministry of Railways has accorded high priority to railway electrification projects for reducing dependence on fuel based on crude oil and enhancing energy security of nation. However, progress of ongoing transmission line and substation works, being executed by SEBs (Annexure-VI of the MoM of 160<sup>th</sup> OCC meeting), is not matching with the targets for railway sections planned to be commissioned on electric traction. State-wise detail in respect of NR is as under:

Sl. No.	State	Tr. Line to be expedited		Contract to be awarded		Estimate awaited	
		(original target)	(updated status)	(original target)	(updated status)	(original target)	(updated status)
1	UP	19	-	5	-	1	-
2	Haryana	5	-	2	-	-	-
3	Punjab	1	-	2	-	2	-
4	Rajasthan	5	4* completed	5	1** completed	7	***
5	J&K	1	-	-	-	-	-

\* 1 no. railway end pending due to demarcation in Army area.

\*\* 2 nos. proposals withdrawn by Railways, 1 No. under progress, 1 No. route to be revised by Railways.

\*\*\* 3 Nos. proposals withdrawn by Railways, 2 Nos. A&FS pending and 2 Nos. works under progress.

15.2. In the 159<sup>th</sup> OCC meeting, HVPN has submitted the status (Annexure VI of minutes) of the ongoing works for railway traction substations.

15.3. In the 161<sup>st</sup> OCC meeting, Punjab representative informed following status:

Sr. No.	Name of Electrification Project	Name of Grid Substation	Status (as provided in the agenda)	Latest Status
1	Rohtak-Bathinda-Lehra Mohabbat	Talwandi	Tr. Line to be expedited	Completed & energized.
2	Jakhal-Dhuri-Ludhiana	Chhajli	Contract to be awarded	Land acquisition for construction of bays is in process by PSPCL
3	Jakhal-Dhuri-Ludhiana	Sandhaur		60 % work completed
4	Hisar-Bathinda-SuratGarh	Bathinda	Estimate awaited	No information available with the concerned offices. Railway to clarify.
5	Hisar-Bathinda-SuratGarh	Yet to be finalised		

UP and J&K were again requested to take up the matter with concerned utilities for expeditious completion of the identified transmission line & substation works and update the status.

## 16. Mapping of UFR, df/dt relay details in SCADA

16.1. As per Hon'ble CERC regulation, UFR and df/dt mapping is mandatory. In the 136<sup>th</sup> OCC meeting dt. 16.06.2017, it was decided that in addition to the SCADA mapping, states should provide the following information regarding the UFR, df/dt relays installed at their respective substations:

- Source of frequency measurement for UFR, df/dt relay viz. positive

sequence, phase-to-neutral, phase-to-phase

- Computational time for measurement of frequency, rate of change of frequency in UFR, df/dt relays respectively.

16.2. UP informed that all 132 kV feeders in respect of UFR and df/dt will be mapped by 30.09.2019 and the data shall be made available to NRLDC.

16.3. NRLDC representative requested each state to provide a consolidated list of the feeders under UFR and df/dt scheme based on which the mapping compliance may be ensured by them.

## **17. Maintenance & support (AMC) renewal of PSS@E licenses**

17.1. SE (O), NRPC apprised the members about the budgetary quote by OEM of PSS@E software for the maintenance & support of all PSS@E licenses supplied to Punjab, Rajasthan, J&K, BBMB, HP, UP, Haryana, DTL, Uttarakhand and Chandigarh by CTU during 2012.

17.2. All the STUs and SLDCs were advised to get their respective AMC licenses renewed. It was decided that budgetary quote of the OEM would be shared with STUs and SLDCs.

## **18. Consent and permission for shutdowns for installing of Inter-State boundary metering using ABT type energy meters. (agenda by UHBVN, Haryana)**

18.1. Representative of UHBVN, Haryana informed that they have proposed for installation of ABT type energy meters in parallel to the existing SEMs at the interface boundaries of their state (at PGCIL substation) in view of the large penalties which were imposed on them due to the OD/UD because of unavailability of real time data in case SCADA data is not available to them. Even if SCADA data is available there were also differences between the SCADA and SEM data.

18.2. By installing ABT type energy meters, Haryana would try to obtain almost real time data (interval of 15 minutes) from these meters in addition to the already available SCADA data so as to maintain redundancy. In view of the above he requested PGCIL to give consent and permission for installation of the same.

18.3. PGCIL representative stated that the proposal of UHBVN for installation of ABT type energy meters in parallel to the existing SEMs at the interface boundaries of their state (at PGCIL substation) was not acceptable to PGCIL because of space constraint, loading of CT/PT and other issues in their substations.

18.4. PGCIL further stated that that they are not against the proposal of Haryana as such; however, advised Haryana to install the meters at their own end.

18.5. It was also pointed by the members that data from the energy meters would not be received if the communication network gets faulty or congested and there is no redundant path for data transfer.

## 19. Unplanned shutdown of DVC Mejia-7 (agenda by BYPL)

- 19.1. Representative of BYPL informed the members about the un-planned shutdown of DVC Mejia-7, in which BYPL share is 111 MW, which was availed by them w.e.f 00:00 hrs of 02.07.2019 for the period of 35 days. It was not scheduled shutdown as per LGBR of ERPC.
- 19.2. He further informed that DVC had not availed the shutdown on 14.05.2019 as per LGBR schedule of ERPC, and again did not take the consent of beneficiaries for revised date of shutdown. As per Regulation 5.7.4 of IEGC planned shutdown shall be routed through RPC and the annual outage plan for respective Region shall be finalized by RPC Secretariat in consultation with LDC, and it shall be reviewed by RPC Secretariat on quarterly and monthly basis in co-ordination with all stakeholders.

In view of the above, MS, NRPC informed that NRPC would take up the matter with ERPC and would request them to follow the well-defined guidelines and not to allow unplanned shutdown without the consent of beneficiaries.

## Part-B: NRLDC

### 1. Reliability issues in the grid: June/July 2019

NRLDC representative stated that during past few weeks, NR has met very high demand of order of ~66000MW and several reliability issues are being observed. NRLDC representative presented details about N-1 non-compliance observed at different locations and requested SLDC to manage/control loading of these ICTs and other elements to ensure N-1 compliance (details attached as **Annexure-1**).

- **Delhi:** As per studies carried out by Delhi SLDC and NRLDC, TTC and ATC limit was assessed as 6800MW and 6500MW. Simulation studies suggested N-1 non-compliance at 400/220kV Mundka and Harsh vihar ICTs. Delhi has met its highest ever demand of 7370MW on 02.07.2019 at 15:25 hrs. It was observed that during this time loading of Bamnauli and Mundka ICTs were above their N-1 contingency limit. Delhi SLDC representative stated that 220kV cables from Maharaniabagh to Masjid Moth and Trauma Centre were damaged in June month, therefore some load had to be shifted from Maharaniabagh to Bamnauli ICTs. This resulted in high loadings at Bamnauli ICTs.
- **Uttar Pradesh:** As discussed in previous OCC meetings, UP and NRLDC officials have assessed TTC around 13400MW (slight difference) under state generation scenario of 10000MW. Considering reliability margin of 600 MW ATC comes out as 12800 MW with N-1 non compliances at 400/220kV Agra(PG) and 400/132kV Mau ICTs.

This year UP has met maximum demand of 21,900 MW on 11.06.2019 at 20:25 hrs. In real time, loadings above N-1 contingency limits were observed at Mau ICTs. Further, with outage of one 315MVA ICT, N-1 non-compliance issue is

present at Allahabad. One 500MVA ICT at Sarnath has also been replaced by 315MVA ICT due to fire incident. As highlighted in last OCC meeting, during the time ICT was out, there was continuous N-1 non-compliance at Sarnath ICTs. Even after revival of ICT although with reduced capacity, loadings close to N-1 contingency limits are observed.

POWERGRID representative stated that due to frequent trippings of 220kV Allahabad-Railway (Naini) D/c lines, heavy fault currents were fed from 400/220kV Allahabad ICTs. This might have resulted in fire in transformer. NRLDC representative stated that such trippings take place at many other stations as well, however damage/fire is not reported. POWERGRID was asked to expedite revival of ICT under outage as this is resulting in N-1 non-compliance at Allahabad. UP SLDC representative stated that 220kV lines from Obra might have been out, which may have increased loading of Allahabad ICTs. UP was asked to manage loading of Allahabad ICTs by shifting some load to nearby ICTs. Alongwith this, UP shall take actions to manage loadings below N-1 limits at other stations.

- **Haryana:** TTC/ ATC limits were initially assessed by NRLDC as 7500MW/ 6900MW respectively with N-1 non-compliance at 400/220kV Dipalpur and Panipat ICTs. In real-time also under import of 6000-7000MW, loading of Deepalpur, Sonapat, Kabulpur and Panipat(BBMB) ICTs are high (close to N-1 limits). Further, 315MVA ICT-3 has been commissioned at Nawada however, same has not been taken on load. Due to this there is severe N-1 non-compliance issue at Nawada. Haryana SLDC representative informed that 315MVA ICT-3 at Nawada was taken on load on 15.07.2019 evening and thus there would not be N-1 non-compliance issue at Nawada thereafter.
- **Punjab:** ATC/TTC limits of Punjab state control area were assessed as 6400/7000 MW suggesting N-1 non-compliance at 400/220kV Amritsar, Rajpura, Muktsar, Ludhiana, Nakodar and Makhu ICTs. Punjab has started to supply agricultural (paddy) load from 13.06.2019. With this, import of Punjab is close to its ATC limit of 6400MW. Loading at Amritsar and Rajpura ICTs is above N-1 contingency limits while that of Ludhiana, Makhu, Muktsar and Nakodar ICTs is close to N-1 contingency limit. NRLDC representative stated that loading of most of 400/220kV ICTs in Punjab state is high, therefore, an event causing tripping of ICTs at substation may result in cascade trippings with multiple trippings at nearby stations as well. Punjab SLDC was asked to manage loading of ICTs below N-1 contingency limits as this limit of TTC/ATC was agreed on confirmation from Punjab SLDC that they shall manage loadings of ICTs below N-1 contingency limit. Punjab SLDC representative stated they have already identified different load groups for supply hours from different substations. Constrained ICT stations are being regularly asked to monitor loading of ICTs and connect/disconnect agricultural load groups accordingly. It was also mentioned that 3<sup>rd</sup> 500MVA ICT at Muktsar is also expected to be commissioned



shortly. Punjab SLDC is trying to have high generation at 220kV voltage level even if they are costly generation to maintain system reliability.

**Rajasthan:** N-1 non-compliance at Akal and Bhadla ICTs. High loading of ICTs at Akal is being observed leading to constraints in evacuation of wind generation. As highlighted by NRLDC on previous many occasions, there is need for additional reactive power support at Akal. In real time, loading of ICTs at Bhadla is being observed in range of 900-1200 MW. Thus, there is N-1 non-compliance on daily basis from 10:00hrs to 16:00hrs when solar generation is high.

Under N-1 contingency of ICT at Akal or Bhadla, there could be generation loss of the order of 1000-1300MW, which is severe contingency in grid resulting in large scale frequency excursions (dip). Thus, there is need for SPS design to trip some generation in case of tripping of one ICT at these stations and antecedent loading of ICTs being higher than N-1 contingency limit. Rajasthan SLDC representative stated that they would explore possibilities of designing new SPS at 400/220kV Bhadla and Akal ICTs.

## 2. Monsoon Preparedness:

NRLDC representative stated that Northern region is meeting very high demand since past few weeks. As on date, Northern region has met maximum demand of 66,600MW and maximum energy consumption of 1491 MUs on 03.07.2019. However, we need to be prepared for eventualities such as sudden thunderstorm, rainfall, large hydro outages on silt etc. Practices to be followed to combat such situation were once again deliberated:

- a. **Maintenance of reserves:** Large state i.e. Punjab, Haryana, Rajasthan, Uttar Pradesh should maintain adequate reserves to combat the real time imbalances in the system. Small states i.e. Himachal Pradesh, Uttarakhand, Jammu & Kashmir etc. whose major load caters through hydro station shall make banking arrangement with other states which could be utilized in case of outage of Hydro stations on silt.
- b. **Coal/ Fuel shortage for thermal stations:** Few state generating units such as Bara, Meja, are reportedly out due to coal shortage. During these months, generators also report outages due to wet coal issues. Sudden information of outage of thermal units on coal unavailability pose challenges to meet high demand. Therefore, generating stations need to ensure sufficient coal stocks and also intimate same beforehand to system operators. NTPC representative stated that coal stock is available at Meja however, not sufficient to run units on continuous basis.
- c. **Load crash events:** Although demand generally remains high during July-Sep, due to sudden rainfall, there may be instances of huge demand

reduction which can adversely effect grid operation. Preventive actions from stakeholders are required under such condition:

- Weather monitoring and warning/alert issuance within control centers for taking advance & fast actions
- Backing down of thermal generation up to technical minimum in order to control high frequency operation besides containing over voltages.
- Fast ramping down during reduction in generation.
- Immediate actions to surrender power from ISGS generating stations
- Tower strengthening and availability of Emergency Restoration System (ERS)

Punjab SLDC representative stated that they have mapped weather data of five stations in their SLDC and same are being monitored on regular basis by shift operators. OCC appreciated efforts made by Punjab.

- d. **Better forecasting of Silt and Planned action for hydro outages:** Large hydro outage in short duration during monsoon on silt is a common phenomenon and the associated challenges have been highlighted in regular OCC/TCC meeting. It has been experienced that states those have major share in hydro e.g. Himachal Pradesh over draw from the grid during such condition. States were once again requested to manage their portfolio such that impact of silt based outages is minimized.

SJVNL representative stated that regarding sharing of silt data on FTP, there were some issues with login username/password and the same have been referred to their IT team and have also been communicated to NRLDC.

### 3. **Voltage vs MVar performance of generators:**

NRLDC representative stated that in 159th OCC meeting Anpara C, Anpara D, Bara were identified as three generators whose telemetry and MVar data are to be improved before next OCC. In 160<sup>th</sup> OCC meeting, UP SLDC had shared voltage vs MVar plots for 21.05.2019-31.05.2019. Based on available SCADA data at NRLDC, plots were developed and shared by NRLDC with UP SLDC vide email and then shared in 160<sup>th</sup> OCC meeting (SLD presented in OCC meeting are attached as **Annexure-2**). UP SLDC vide emails dated 30.05.2019, 10.06.2019 and in OCC meeting was requested to:

1. Confirm above telemetry data from site (generators). Actions taken to correct telemetry of Bara Unit 3.
2. Information regarding Vsch (voltage set point) of these generators and tap position of GT.
3. Since voltage ratio of 765kV and 400kV are varying widely from nominal ratio for Anpara C and Anpara D, to confirm tap positions of 765/400kV ICTs as well so that requirement for tap change be studied. UPRVUNL representative stated that tap position at Anpara D is nominal.

***UP SLDC was asked to share required data to NRLDC/NRPC and take corrective actions.***

#### 4. Hydro/ Thermal generation related issues:

Kishenganga HEP has 3\*110MW units in operation since May 2018. However, since its commissioning Kishenganga HEP at its full capacity is available very few times despite spillage conditions. It is observed that all the 3 machines are available but the DC is not being given to full capacity and many times unit 3 is not available due to cooling water pump problem.

NHPC representative stated that Kishanganga Power Station has snow fed water. But after commissioning of dam, PS encountered the problem of huge trash and mountaineer gravels, resulting in head loss as well as choking of cooling water system, which resulted reduction in generation or nil generation due to high bearing pad/oil temperature.

A committee comprises of Senior Officers from NHPC and a member from CEA was constituted for mitigation of above problems. As per recommendations of committee, cooling water pipe line suction point extended and hydrographic survey for finding reservoir cross-section is being carried out. The augmentation of cooling water system converting open loop to closed loop system is also being carried out. Presently the Kishanganga Power Station is facing the problem of high trash at intake, with the help of divers the accumulated trash is being removed.

Regarding frequent tripping of 220kV Kishenganga-Delina, POWERGRID updated that the above tripping was mainly due to problem of phase to phase clearance & sag between Span 60-61. The above problem alongwith zone setting discrepancy and CT Polarity were rectified by the PGCIL on 27 and 28 June'19. POWERGRID representative stated that 220kV Kishenganga-Wagoora line is also expected to be charged shortly.

Regarding other hydro generator related issues following were discussed:

- NHPC representative stated that the installed capacity of Salal Power Station is 6X115MW= 690 MW, however, due to head loss at Power Station, machine was not able to deliver their rated capacity. Hence, the runner of all the units have been replaced with new modified runners to achieve the rated capacity on reduced head. Accordingly, the Salal Power Station is now able to deliver upto 730-740MW with overload capacity. Accordingly, the revised AS1 format for the month of July 2019 in respect of Salal Power Station has been submitted to NRPC. Further, the revised AS1 format of Chamera-2 and Chamera-3 Power Station have also been submitted to NRPC. Therefore, maximum possible ex bus injection mentioned in AS3 format of Chamera2, Chamera3, Salal and Tanakpur would be revised.
- NHPC deliberated that DC declaration at Chamera-2 and Chamera-3 is high only for peak hours based on recommendations of OEM to operate under overload only for short duration. As per Reservoir Operation guidelines, the reservoir level at NHPC Power Station is to be kept near MDDL during monsoon season. Hence, machine may not be able to deliver the overload capacity continuously while keeping the reservoir level on

MDDL. However, NHPC will try to optimize the declaration as advised by NRLDC as per individual machine characteristics and other operational parameters, if permits.

- Dulhasti unit 3 has been restricted to 50-60 MW by plant due to high noise level. NHPC representative stated that annual maintenance work on Dulhasti were completed in January and since then high vibration and noise have been reported. Meanwhile, PS alongwith OEM attempted to correct the unit in the month of February, March, April and May-2019 alongwith foreign experts but problem could not be resolved. Now, the R&D team of OEM (M/s GE) will be visiting in this month (July 2019) for carrying out detailed analysis for finding the root cause for high noise/vibration and accordingly on the basis of findings the necessary corrective action shall be taken by the Power Station.
- 220kV Chamera3- Chamba ckt. 2 and Chamera 3 bus-1 are under outage since 14.05.2019 due to breaker damage. In this hydro season with high generation at Budhil and Chamera-3, generation is being evacuated through only one line 220kV Chamera 3 – Chamba ckt.1 (in service through ERS, only one ERS possible due to space constraint) and loading of line is nearing 300MW. Any outage of line/bus would result in water spillage at these generating stations.
- NHPC representative stated that isolator is damaged at their end and they have requested DTL to provide isolator on loan basis, if isolator is received from DTL, then in second-third week of August work would be completed. If not received, they will have to procure it and it is expected to take 6-8 months time.
- POWERGRID representative stated that updated that 5 new towers are required to be erected for restoration of both the transmission lines on normal tower, which will take 5-6 months as proposal is under tendering stage.
- BBMB representative stated that works are pending in stator of Pong unit 2 and are expected to be completed by October'19. Bhakra unit 3 is expected to be revived in December'19.
- NRLDC representative requested that flushing plan may be intimated to NRLDC well in advance and the planning should be staggered.

Apart from this, NTPC-NR has intimated that Rihand stage-I Unit-1 and Unit-2 internal component replacement work is in progress and this will be completed by 18.07.2019 and 24.07.2019 respectively. Till the work is completed, Rihand Stage-1 Units 1 and 2 would generate less (~250-350MW each). NTPC is planning to take one unit under shutdown shortly and other unit would continue running at part load. When works on first unit are completed, other unit would be taken under maintenance.

Moreover, Unit 2 at Rihand 2 is out for major overhauling work since 16.06.2019. Thus, during this peak demand period prolonged outage/ less generation at

thermal stations is not desirable. NTPC was asked to expedite works for revival of units of Rihand Stage I and II to their full capacity.

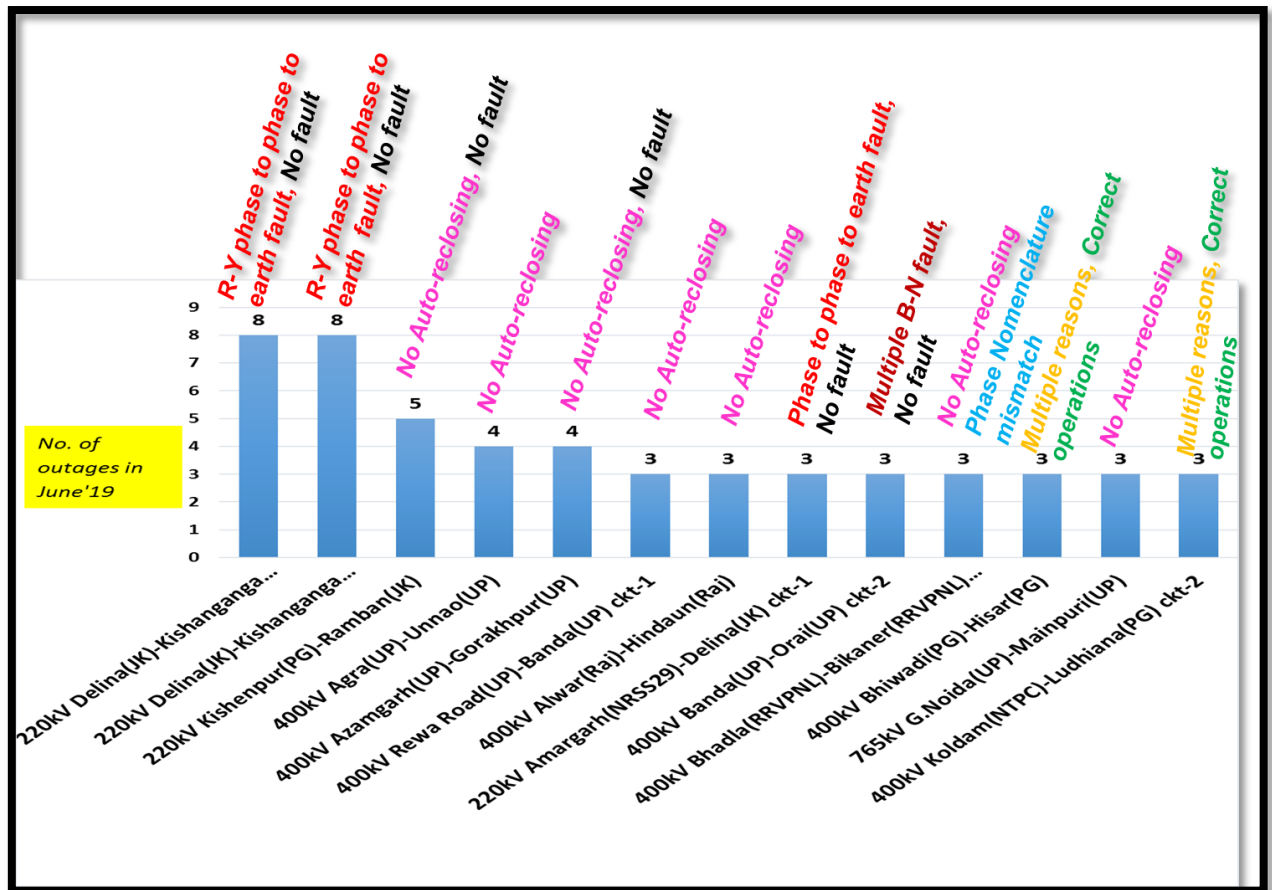
#### 5. Frequent forced outages of transmission elements

The following transmission elements were frequently under forced outages during the month of **Jun'19**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220kV Delina(JK)-Kishanganga HEP(NHPC) ckt-1	8	J&K/ POWERGRID/ NHPC
2	220kV Delina(JK)-Kishanganga HEP(NHPC) ckt-2	8	J&K/ POWERGRID/ NHPC
3	220kV Kishenpur(PG)- Ramban(JK)	5	J&K/ POWERGRID
4	400kV Agra(UP)-Unnao(UP)	4	UP
5	400kV Azamgarh(UP)- Gorakhpur(UP)	4	UP
6	400kV Rewa Road(UP)- Banda(UP) ckt-1	3	UP
7	400kV Alwar(Raj)-Hindaun(Raj)	3	Rajasthan
8	220kV Amargarh(NRSS29)- Delina(JK) ckt-1	3	J&K/ POWERGRID/ NRSS29
9	400kV Banda(UP)-Orai(UP) ckt-2	3	UP
10	400kV Bhadla(RRVPNL)- Bikaner(RRVPNL) ckt-2	3	Rajasthan
11	400kV Bhiwadi(PG)-Hisar(PG)	3	POWERGRID
12	765kV G.Noida(UP)-Mainpuri(UP)	3	UP
13	400kV Koldam(NTPC)- Ludhiana(PG) ckt-2	3	POWERGRID/ NTPC/ PKTCL

The complete details are attached at **Annexure-XI** of the Agenda. 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.

Complete status and major cause of tripping is show below in bar graph:



**The following were the discussion on the trippings:**

- Phase to phase clearance issue (mechanical problem) was identified in 220 kV Delina (JK)-Kishanganga ckt-2, which has been attended after taking shutdown on 26 & 27<sup>th</sup> June 2019. 220 kV Delina (JK)-Kishanganga ckt-1 tripped along with ckt-2 due to protection setting issues at 220 kV Delina end. Protection setting at 220 kV Delina station was also jointly (NHPC, PDD-JK & POWERGRID) reviewed and corrected.
- POWERGRID representative agreed to check the A/R functioning in 220 kV Kishenpur (PG)-Ramban(JK) ckt. Report will be shared separately.
- A/R issue in 400 kV Koldam-Ludhiana ckt has been already corrected. These tripping may be on other account. Line is of PKTCL, PKTCL will inform about it.
- State representative agreed to discuss internally and share the details within 7days.
- NRPC suggested SLDCs to take up the issue with STU internally also and submit the DR/EL, report along with remedial measures report in time bound manner.
- NRPC representative concerned about non-submission of information for multiple time single element tripping in last ten months. Information is still pending from most of the NR utilities.
- NRLDC representative raised concern about non-submission of remedial measures and tripping details despite of continuous follow up in various OCC meeting.
- In 160<sup>th</sup> OCC meeting, NRPC raised concern on non-submission of details to NRPC/ NRLDC and suggested to all the SLDCs to compile the



information and share the remedial measures report for last ten months tripping presented in various OCC meeting. All the concerned utility shall prepare the presentation on remedial measures taken and present during 161<sup>st</sup> OCC meeting. ***NRPC raised serious concern for non-adherence to the decision taken in 159<sup>th</sup> & 160<sup>th</sup> OCC meeting.***

**NRLDC representative informed that all these trippings in last 10 months will be again discussed in upcoming 38<sup>th</sup> PSC meeting. All the utilities were once again requested to share the details.**

**NRPC raised serious concern for non-submission of details to NRPC and suggested all the SLDCs to compile the information and share the report of last ten month tripping and remedial measures taken by all the utilities for mitigation of such multiple times tripping incidents. Members agreed for the same. All the remedial measures report shall be submitted within 7days.**

**6. Multiple element tripping events in Northern region in the month of Jun19:**

A total of **39** grid events occurred in the month of Jun'19 of which **28** are of GD-1 category. The preliminary report of all the events have been issued from NRLDC. A list of all these events along with the status of details received by 05-July-19 is attached at **Annexure-XII** of the Agenda.

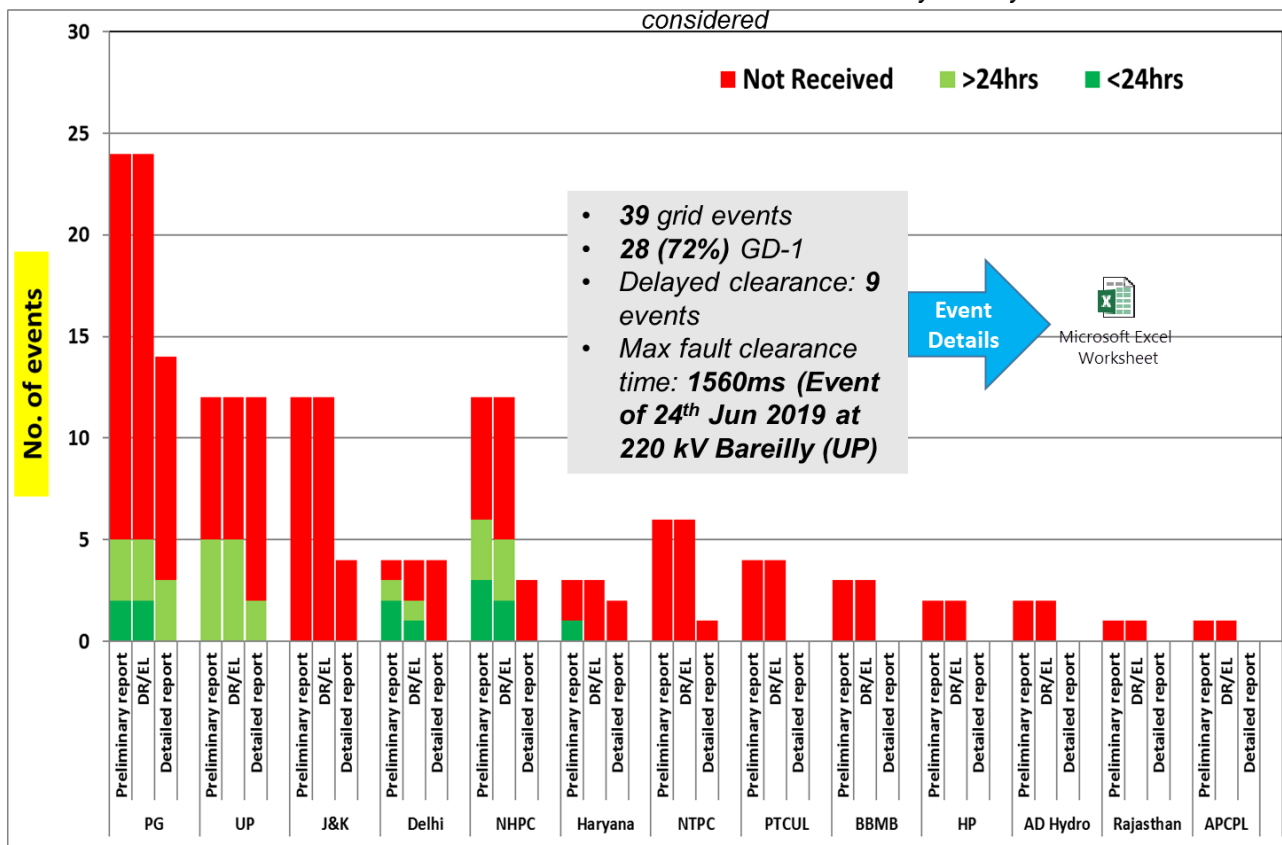
Further, despite persistent discussions/follow-up in various OCC/PCC meetings, the compliance of the regulations is still much below the desired level.

Maximum Fault Duration is **1560ms** in the event of multiple element tripping at 220 kV Bareilly (UP) on 24-Jun-19 at 10:31hrs.

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **9** events out of 39 grid events occurred in the month.

NRLDC representative further stated that the compliance of reporting details of events is still below the desired level. He showed the consolidated status of the reporting:

Note: Details received by 05-July-19 are considered



NRLDC representative once again requested to all the NR utilities to kindly calculate the energy loss in the incident and share the information to NRPC/ NRLDC in its detailed report.

SE, NRPC suggested to revamp the PSAG and regular meeting will be done during one half of OCC meeting for discussion on planned shutdown.

NRLDC representative suggested for monthly PSC meeting to improve the discussion and further follow up for multiple element tripping events.

NRLDC representative also suggested to form a separate Post-Dispatch Analysis department in SLDCs and other NR utilities which will deal with the site officials and share the detailed report based on input from the site. This proposal will be discussed in next PSC meeting for final approval.

**Members may take expeditious actions to avoid such tripping in future and discuss the same. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events in line with the regulations.**

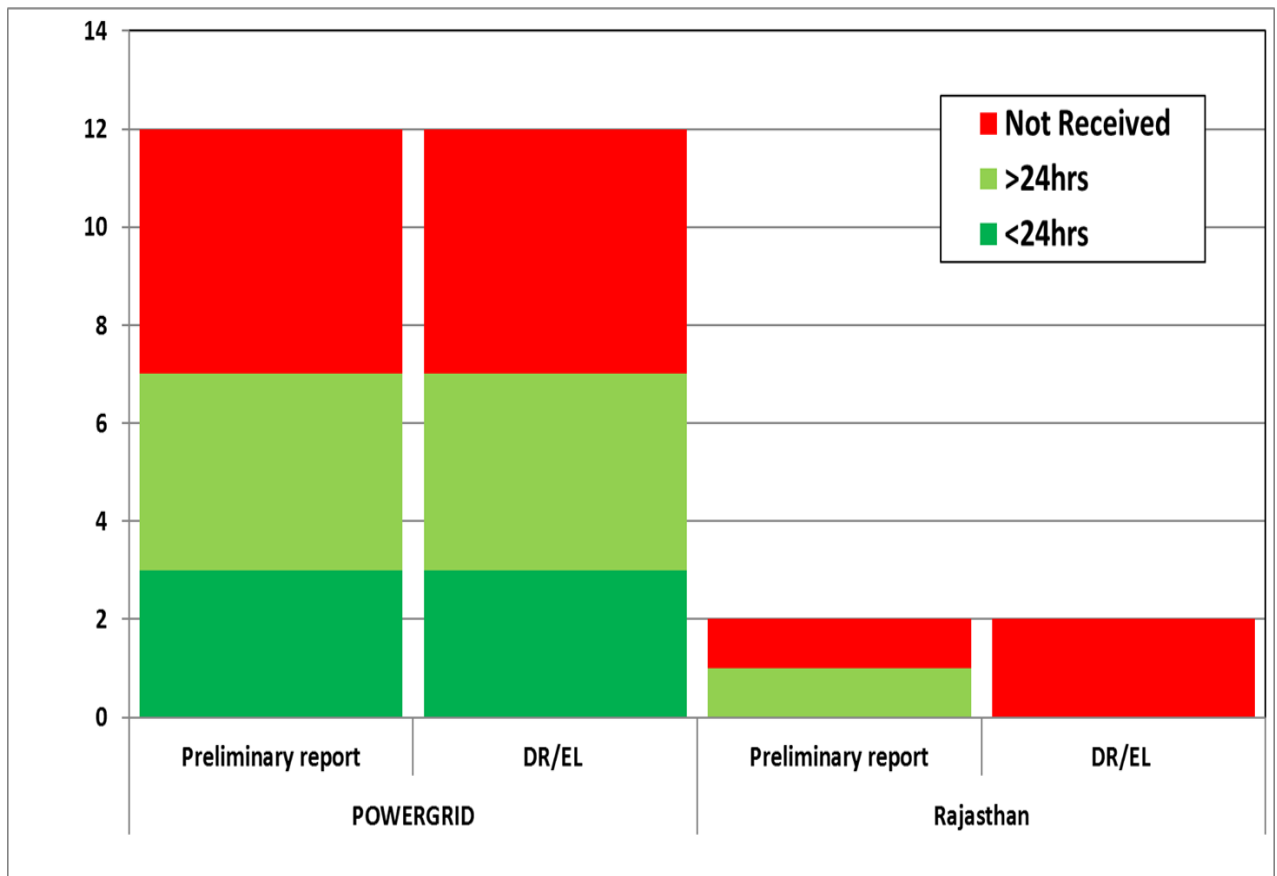
**7. Details of tripping of Inter-Regional lines from Northern Region for Jun'19:**

A total of **14** inter-regional lines tripping occurred in the month of Jun'19. The list is attached at **Annexure-XIII** of the Agenda. Out of 14, 6 tripping incidents are related to HVDC system. The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been

mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event 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 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 mandated by CEA (Grid Standard) Regulations

Status of details received from the NR constituents is as below:

*Note: Details received by 02-July-19 are considered*



NRLDC representative once again requested all the concerned utilities to kindly submit the Preliminary Report, DR/EL within 24hrs and also share the remedial measures report for tripping in last one year.

**POWERGRID representative agreed to share the DR/EL of all the Inter-Regional tripping within stipulated time period of 24hrs and also share the remedial measures report.**

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

8. **Discussion on shortcoming during mock testing of Agra-Gwalior SPS and finalization of load groups:**

The 765kV Agra-Gwalior D/C is an important link between WR-NR. An SPS is in place to take care of the contingencies associated with the aforesaid link.

After discussion in various OCC meeting, revised logic of Agra-Gwalior SPS scheme was implemented in the month of Apr-19. As per approval in 158<sup>th</sup> OCC meeting, mock testing of 765 kV Agra-Gwalior SPS was conducted on 01<sup>st</sup> May 2019. Detailed report based on input from different utilities is prepared by NRLDC and shared with all the concerned utilities. This report was attached and discussed in 159<sup>th</sup> OCC meeting and thereafter a separate meeting was also called on 23<sup>rd</sup> May 2019 through video conferencing. In this meeting concerned utilities shared its input on shortcoming highlighted in the NRLDC report. Details of the shortcoming in mock testing and reply of concerned utility is again discussed in 160<sup>th</sup> OCC meeting. Following are the key highlights of the discussion during the meeting:

- *NRLDC representative raised concern about submission of load relief information by most of the utilities on the basis of average load on the feeders however it has already been discussed and approved in NRPC meeting that load relief quantum shall be calculated on minimum load on these feeders.*
- *For calculation of minimum load, it was suggested that utilities shall take the yearly data and calculate the average of 30days of minimum load period on that particular feeder and share the details in next OCC meeting.*
- *If there is any shortfall in load relief then utilities shall submit the additional load feeders on the same locations where DTPC is already available/ installed.*
- *Load groups shall be finalized in next OCC meeting after input from all the concerned utilities (Punjab, Haryana, Rajasthan, Uttar Pradesh and Delhi).*

**Punjab representative informed that they will share the revised details within 7days.**

**NRLDC representative raised concerned about non-submission of details, despite continuous discussion in various OCC meeting.**

**It is once requested to all the concerned utilities to kindly share the feeder wise details of load relief based on minimum yearly load on those feeders and also share the input for finalization of load group along with feeder wise details of MW relief on the basis of suggested procedure.**

## **9. Frequency response characteristic:**

Three FRC based event has occurred in the month of **July-2019**. Description of the events is as given below:

Table:

S. No.	Event Date	Time (in hrs)	Event Description	Starting Frequency (in Hz)	End Frequency (in Hz)	$\Delta f$
1	05-July-19	03:56hrs	On 05th June 2019, at 03:56:20 hrs Blue phase jumper of 220 kV Akal-Bhu Line-I snapped and fallen on 220 kV Bus-I at 400/220 kV Akal station as reported by Rajasthan SLDC. It led to the tripping of 220 kV Akal-Bhu Line-I & II, 220 kV Akal- Dangri-I and 400/220 kV ICT-I & II at Akal station. The fault clearing time as per PMU data was 680 ms and Wind generation loss in Akal station as per SCADA data is 1500 MW. After 2 minutes of incident, 400 KV Akal-Kankani-I & Akal - Ramgarh-II tripped on over voltage as reported and Wind generation loss at Akal station at this second incident was 300 MW as per SCADA data. The FRC has been calculated for the first incident when generation loss was 1500 MW	49.90	49.83	- 0.067

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	05-Jul-19 event	Remarks
PUNJAB	55%	
HARYANA	39%	
RAJASTHAN	210%	Event in Rajasthan
DELHI	54%	
UTTAR PRADESH	27%	
UTTARAKHAND	20%	
CHANDIGARH	7%	Small Control area
HIMACHAL PRADESH	-9%	
JAMMU & KASHMIR	10%	
NR	<b>32%</b>	

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

Generator	05-Jul-19 event	Generator	05-Jul-19 event
Singrauli TPS	23%	Salal HEP	-18%
Rihand-1 TPS	-34%	Tanakpur HEP	-2%
Rihand-2 TPS	-9%	Uri-1 HEP	1%
Rihand-3 TPS	-8%	Uri-2 HEP	Suspected SCADA data
Dadri-1 TPS	55%	Dhauliganga HEP	Suspected SCADA data
Dadri -2 TPS	43%	Dulhasti HEP	-4%
Unchahar TPS	Suspected SCADA data	Sewa-II HEP	Suspected SCADA data
Unchahar stg-4 TPS	-34%	Parbati-3 HEP	Suspected SCADA data
Jhajjar TPS	Suspected SCADA data	Jhakri HEP	Suspected SCADA data
Dadri GPS	263%	Rampur HEP	Suspected SCADA data
Anta GPS	No generation	Tehri HEP	-12%
Auraiya GPS	No generation	Koteswar HEP	Suspected SCADA data
Narora APS	17%	Karcham HEP	64%
RAPS-B	6%	Malana-2 HEP	Suspected SCADA data
RAPS-C	-8%	Budhil HEP	-3%
Chamera-1 HEP	Suspected SCADA data	Bhakra HEP	-1%
Chamera-2 HEP	4%	Dehar HEP	5%
Chamera-3 HEP	Suspected SCADA data	Pong HEP	-2%
Bairasiul HEP	No generation	Koldam HEP	-4%
		AD Hydro HEP	0%

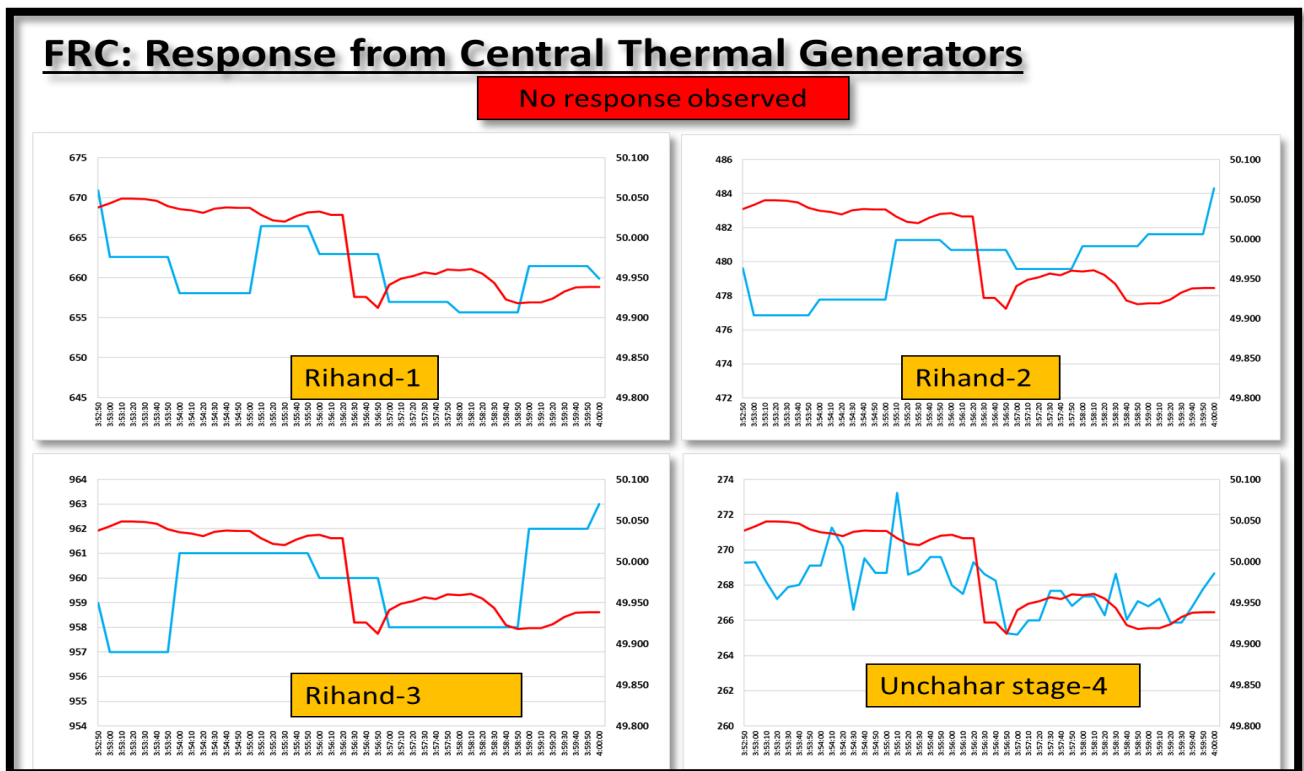
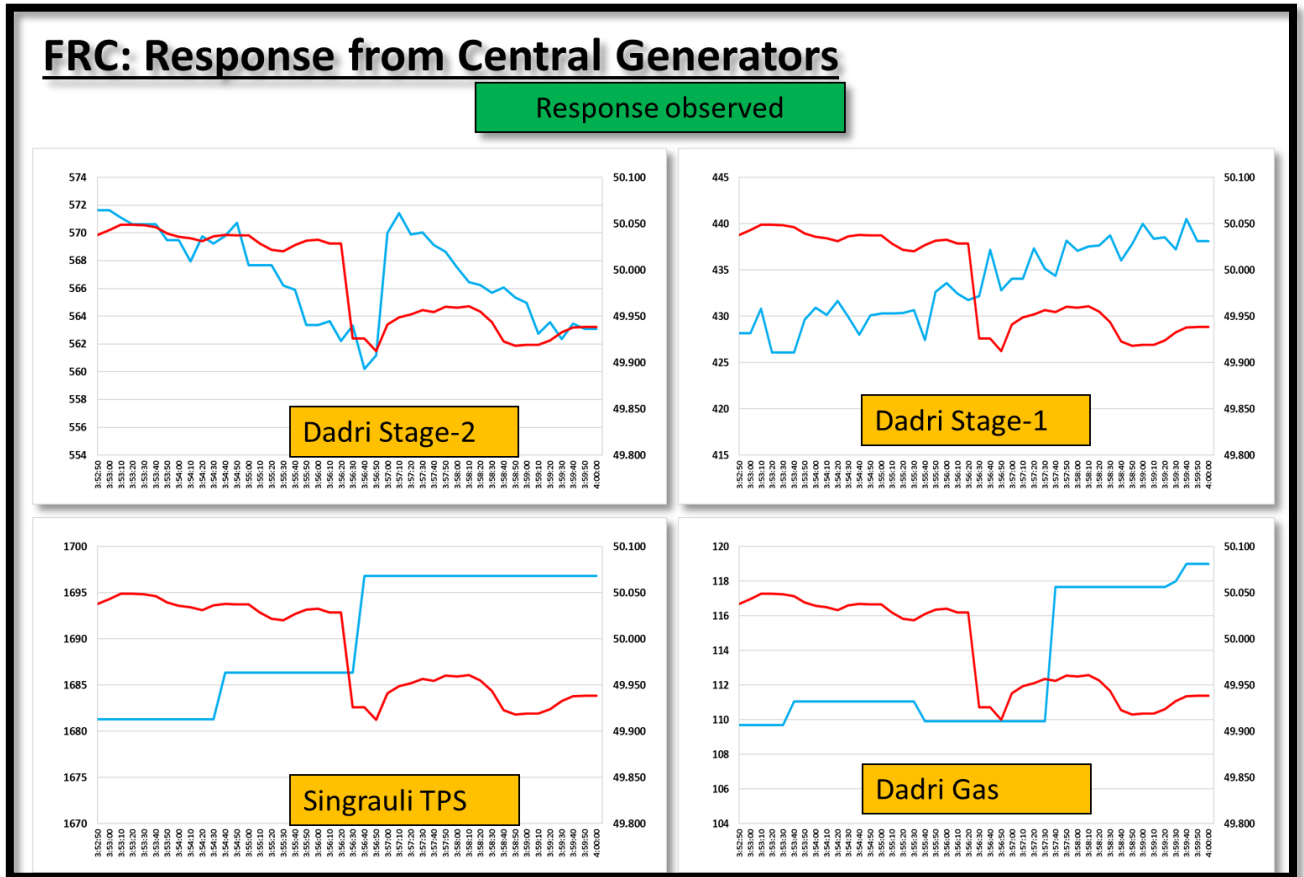
FRC calculation of major state generators based on NRLDC SCADA data is tabulated below:



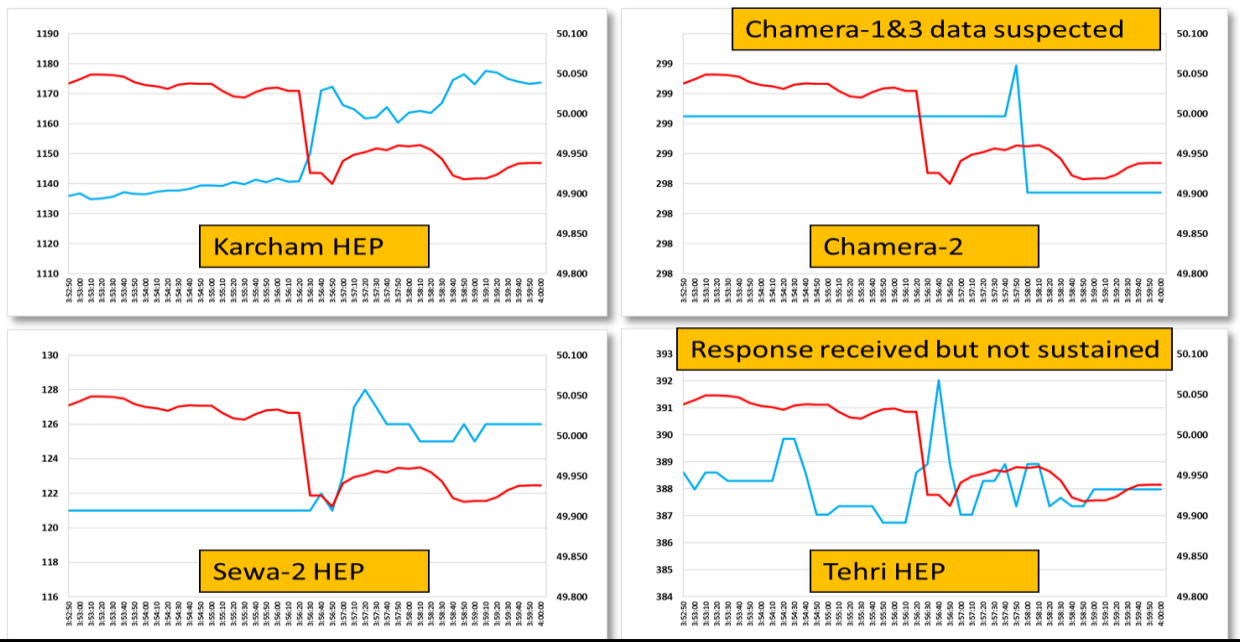
Generator	05-Jul-19 event	Generator	05-Jul-19 event
PUNJAB		UP	
Ropar TPS	98%	Obra TPS	5%
L.Mohabbat TPS	64%	Harduaganj TPS	16%
Rajpura TPS	77%	Paricha TPS	61%
T.Sabo TPS	165%	Rosa TPS	24%
Goindwal Sahib TPS	248%	Anpara TPS	-7%
Ranjit Sagar HEP	11%	Anpara C TPS	0%
Anandpur Sahib HEP	-5%	Anpara D TPS	-21%
HARYANA		Bara TPS	1%
Panipat TPS	-13%	Lalitpur TPS	85%
Khedar TPS	29%	Meja TPS	No generation
Yamuna Nagar TPS	No generation	Vishnuprayag HEP	Suspected SCADA data
CLP Jhajjar TPS	-7%	Alaknanda HEP	58%
Faridabad GPS	No generation	Rihand HEP	-1%
RAJASTHAN		Obra HEP	10%
Kota TPS	67%	UTTARAKHAND	
Suratgarh TPS	8%	Gamma Infra GPS	0%
Kalisindh TPS	28%	Shravanti GPS	0%
Chhabra TPS	No generation	Ramganga HEP	Suspect SCADA data
Chhabra stg-2 TPS	120%	Chibra HEP	Suspect SCADA data
Kawai TPS	-6%	Khodri HEP	No generation
Dholpur GPS	No generation	Chilla HEP	24%
Mahi-1 HEP	No generation	HP	
Mahi-2 HEP	No generation	Baspa HEP	1%
RPS HEP	No generation	Malana HEP	-3%
JS HEP	49%	Sainj HEP	Suspect SCADA data
DELHI		Larji HEP	10%
Badarpur TPS	No generation	Bhabha HEP	-6%
Bawana GPS	-8%	Giri HEP	No generation
Pragati GPS	-15%	J&K	
		Baglihar-1&2 HEP	-4%
		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

FRC response captured in NR SCADA:

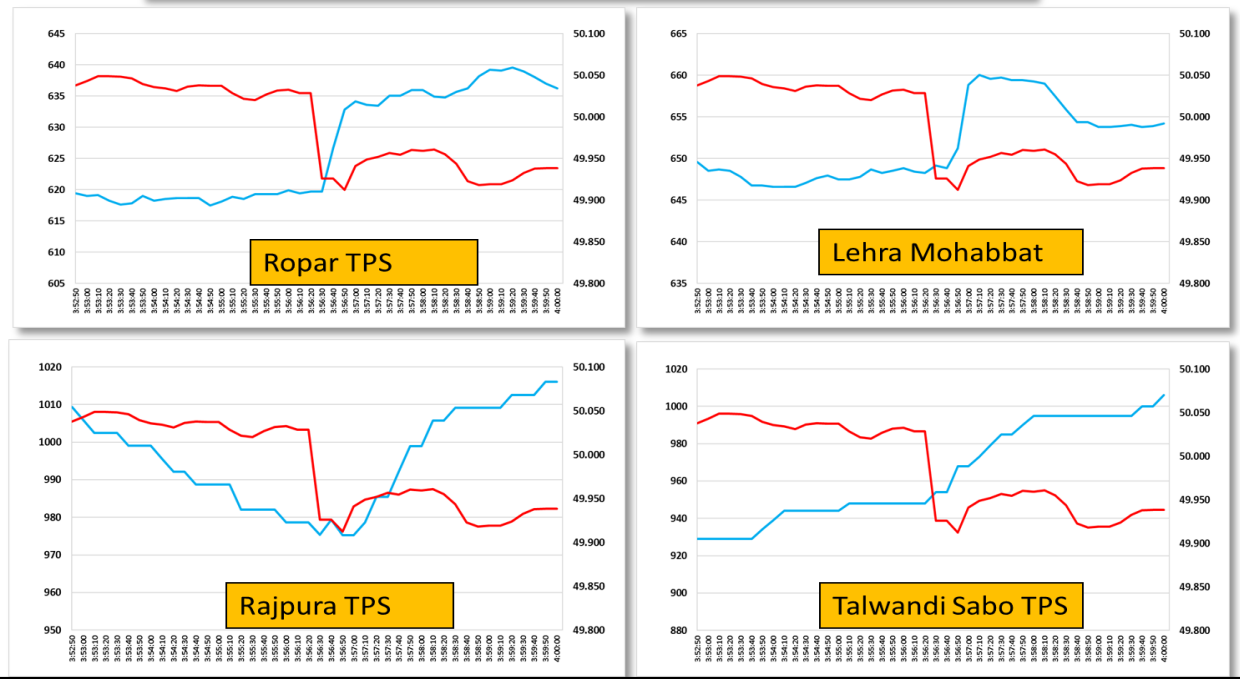


## FRC: Response from Central Hydro Generators

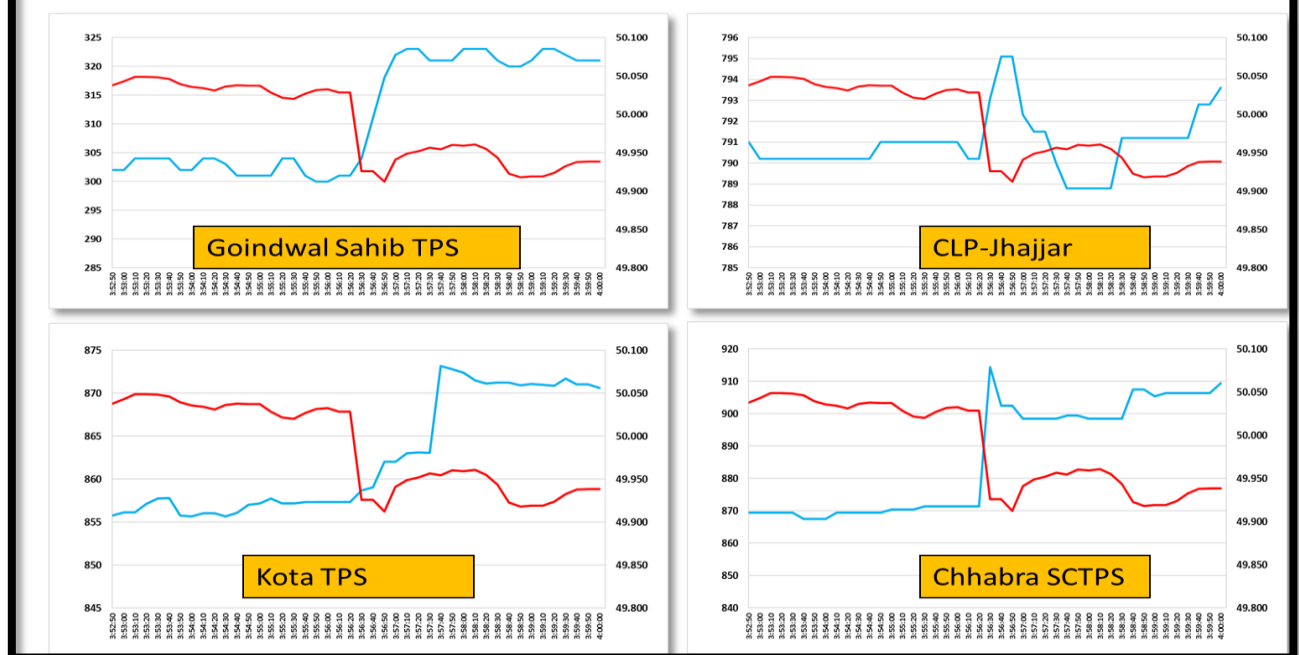


## FRC: Response from State Generators (Punjab)

Response observed. It may be due to schedule change



## FRC: Response from State Generators



NRLDC representative informed that in central generating station response received from Dadri stage-2 (**but delayed response**) & gas (more than 40%), Singrauli (23%) and Karcham Hydro (64%)

**Punjab representative informed that Anandpur Sahib is RoR (Run of the River) based plant and shall be removed from the NRLDC list.** He also informed that actual response is good from Punjab generators because of continuous follow up by SLDCs and continuous monitoring of Punjab SERC. Punjab SERC is regularly following up this issue and SLDC is regularly sharing event related details/data with SERCs and generators.

NRLDC representative appreciated the effort made by Punjab SLDC for improvement and suggested all the other utilities to improve the response on similar pattern.

NRLDC representative further informed about poor reporting of FRC events other than NHPC, Punjab, Uttar Pradesh, Delhi and Rajasthan. He also raised concern for non-submission of details by NTPC despite of continuous follow up during OCC meeting.

SJVNL representative informed that suspected data captured in NR SCADA was due to card problem at POWERGRID end and was attended by POWERGRID team. NRLDC representative requested NJPC to share the FRC response details based on its own SCADA data.

### **Action points decided during the meeting:**

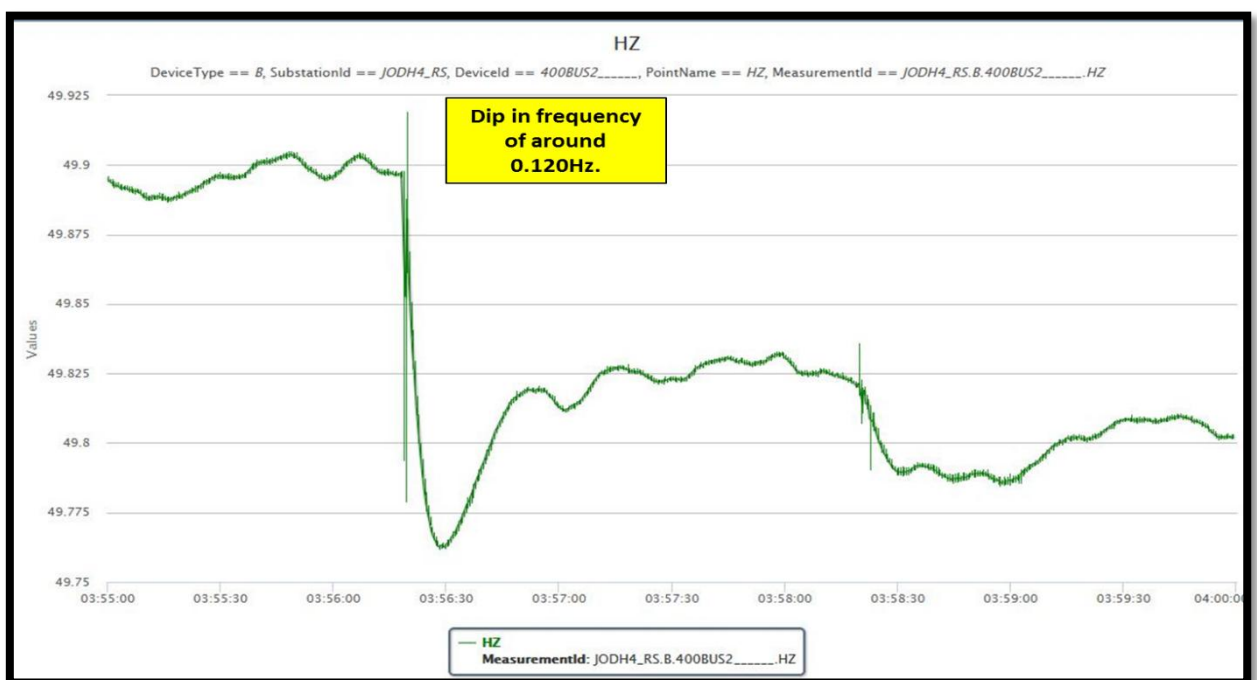
- Delayed FRC response of Dadri stage-2 and Dadri-Gas needs to be looked into.
- Unsustain response of Tehri HEP, CLP-Jhajjar needs to be looked into.

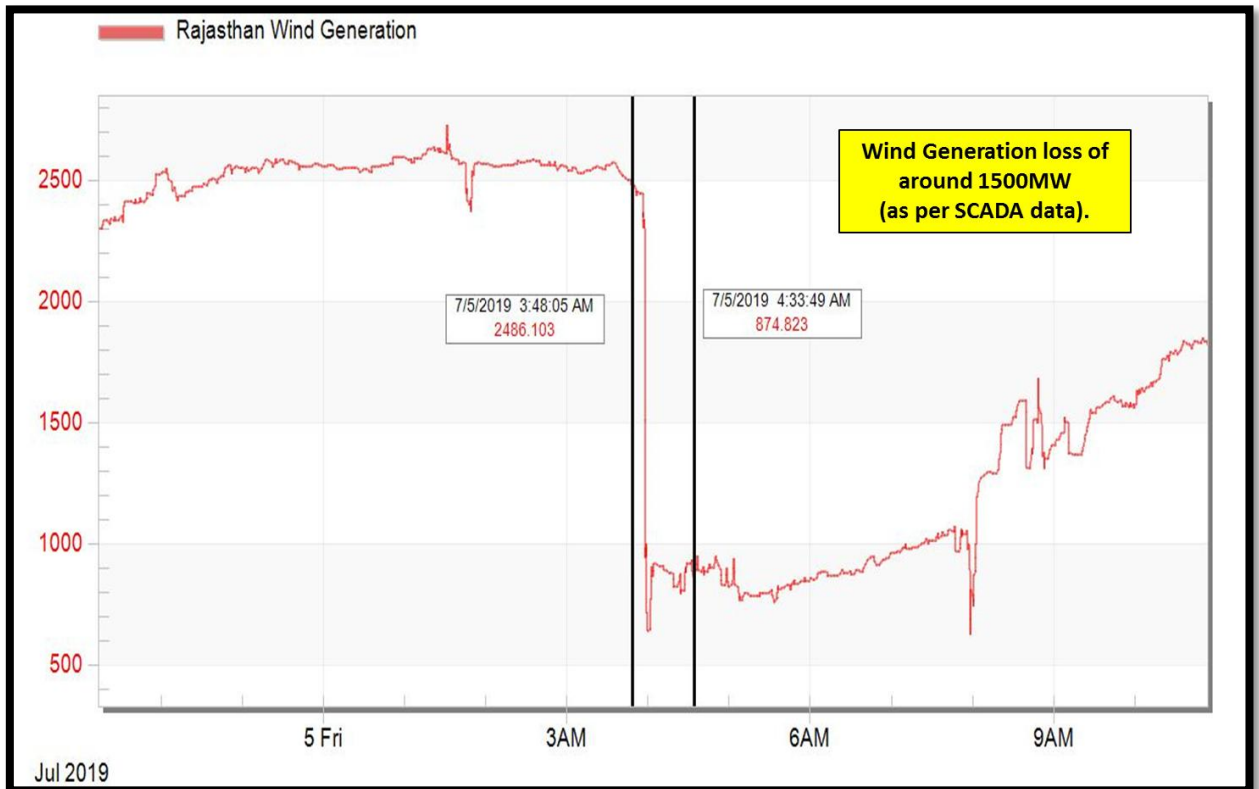
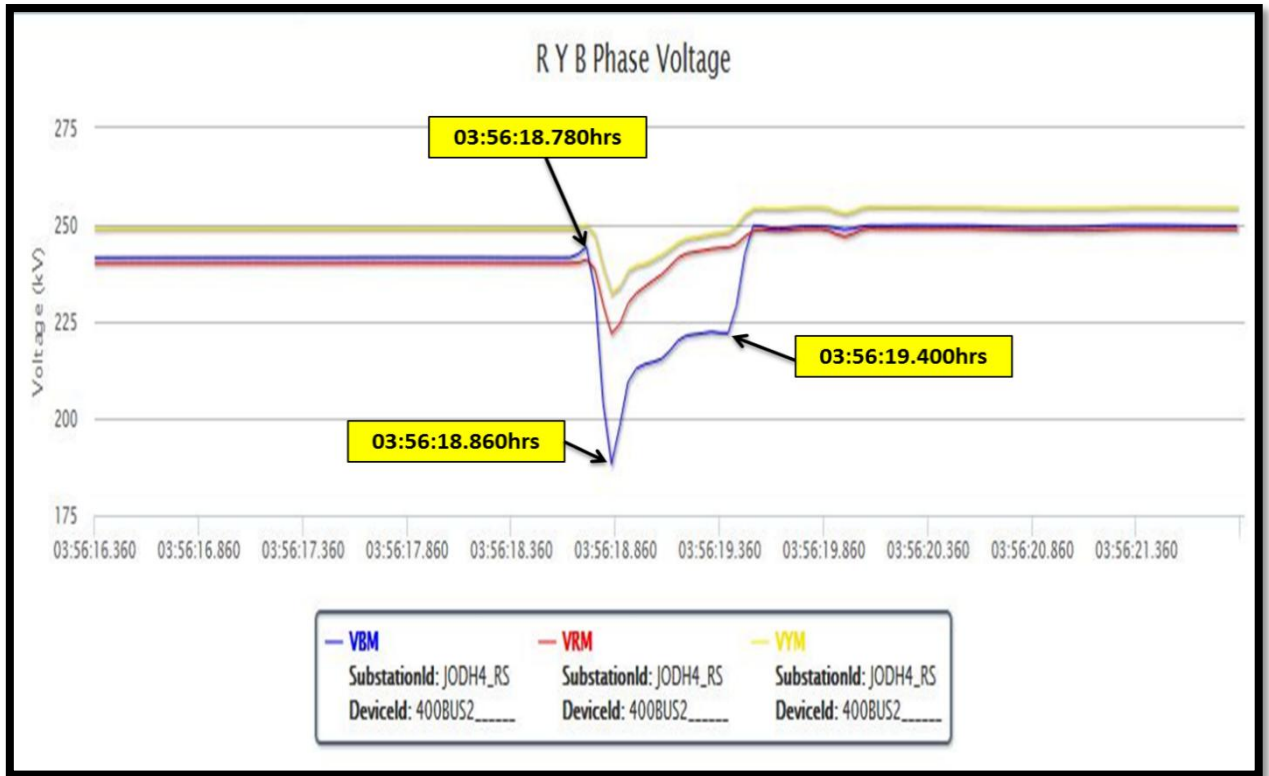
- Delayed response of Kota TPS needs to be looked into. Rajasthan state generators response is very poor other than Suratgarh (SCTPS)
- Most of the ISGS generating companies are not sending the FRC response. Central sector generating companies shall check its own response and share the report.
- FRC response from Dadri stage-1, Singrauli, Rihand and Unchahar station is poor and it needs to be looked into.
- Rajasthan and Haryana shall also check the reason of poor response from internal generation and share the remedial measures report.
- FRC response is not received from most of the NR constituents
- Other utilities shall also check the FRC response in case of these incident and share the details.
- As per Hon'ble commission order, All the ISGS hydro and thermal generators shall maintain the margin for FRC. All the generators shall ensure the proper margin during generation for compliance of the order.

**MS, NRPC raised serious concern about non reporting of FRC from most of the NR constituents and suggested all the NR constituents to share the FRC response along with action taken/ to be taken report (for mitigating poor FRC response) to NRPC/ NRLDC.**

**10. Wind Generation outage in Western Rajasthan during multiple element tripping at 400/220 kV Akal station:**

At 03:56hrs if 05<sup>th</sup> July 2019, Blue phase jumper of 220 Akal (end)-Bhu ckt-1 snapped and grounded. It resulted into multiple element tripping at 400/220 kV Akal station. At the same time 1500MW wind generation occurred in the Western Rajasthan area. PMU plot of frequency was showing frequency dip of around 0.12 Hz. PMU plot and SCADA plot is as below:





It is suspected that cause of large renewable generation tripping is due to unavailability of FRT capabilities in various wind generating stations. These large scale trippings are serious threat for security of the entire grid and also occurred in the past.

Rajasthan representative kindly check and share the details in view of following points:

- Timely clearance of Faults in the System (within mandated time as per Grid Standards regulations)
- Fault Ride Through (FRT) or LVRT capabilities are enabled in the wind turbine generators.

This point could not be discussed in detail during the meeting and hence, would be discussed in next meeting.

#### **11. Operating Procedure of Northern Region:**

NRLDC representative presented draft operating procedure of northern region for 2019-20. Major changes carried out in the document were highlighted.

Of all changes done by NRLDC, most of them were accepted by OCC, however, POWERGRID requested that changes done in Chapter 4.3 para 3, 4 & 6 need to be discussed further, as same were presented first time in OCC meeting.

OCC agreed that no changes be done in Chapter 4.3 para 3,4 and 6 for now and it would be discussed in next OCC meeting. However, all other changes suggested in Operating Procedure were accepted by OCC.

## BBMB

Name	Designation	Contact No.	Email
Er Rakesh Sharma	DIR./Power Regulation	9417216047	dirps@bbmb.nic.in
Er Amardeep Singh	Power Controller	2478200223	powerc@bbmb.nic.in

## NHPC

Name	Designation	Contact No.	Email
RAJIV MANGAL	DGM	9816503116	rajivmangalnhpc@gmail.com
Vijay Kumar	Sr. Manager (E)	9818696821	vijay.kumar239@gmail.com

## NPCIL/NAPS/RAPS

Name	Designation	Contact No.	Email
S. K. GOYAL	S/O, NAPS	9412768103	skgoyal@npcil.co.in

## NRLDC

Name	Designation	Contact No.	Email
नितीश यादव	मैनेजर	9560050257	nitinjadav@pasoco.in
अशोक कुमार	वो गैर प्रोपियेटर	9999039321	alok.kumar@pasoco.in
गोबिंद मिश्रा	इंजीनियर	9910953980	gmishra60@yahoo.com
Amr Hassan	इंजीनियर		amrhasan@pasoco.in

## NTPC

Name	Designation	Contact No.	Email
S. MUKHOPADHYAY	GM - OS	9453008341	smukhopadhyay@ntpc.co.in

## PGCIL

Name	Designation	Contact No.	Email
K. N. Singh	C.G.M.	9433730548	Kashinath.Singh@gmail.com
BIMAL KUMAR	Sr DGM	6393542580	bimalkumar@powergridindia.com
S. C. Sharma	Sr DGM	9823918526	sc_sharma@powergridindia.com
Praveen Kumar	DGM, NR-II	9906546606	mk-praveenkumar@powergrid.co.in

## SJVNL

Name	Designation	Contact No.	Email
RAJEEV AGARWAL	DGM (C & S)	9418045426	rajeev-sjvnl@rediffmail.com

## THDC

Name	Designation	Contact No.	Email
Ganesh Mishra	Manager (O&M), KHEP	8126821766	gpmishra14@gmail.com



## DTL

Name	Designation	Contact No.	Email
BL GUJAR	DGM (Prot)	9999533985	bl.gujar@dtl.gov.
S.K. Sinha	DGM (SO) SLD C	9999533673	Sinha.Surendra123@gmail.com
Abhishek Sharma	DGM (T) (Prot)	9999533893	abhishek2@gmail.com

### HVPNL-HPGCL-HPPC

Name	Designation-Org.	Contact No.	Email
Rajinder Kumar	SE/ SO, UHBVN.	9357587183	
N. C. MAHAR	XEN/ PC SLDC	9466219042	slidchayan co @ gmail . com
Rohan Lalra Anshu Jain HPSEBL	AE o/o XEN/SLDC, SLDC AE	8814015409 8745006072	

Name	Designation	Contact No.	Email
SURINDE KUMAR	AE	8580483134.	SLDC: scada.ae @ gmail . com

### PSTCL-PSPCL

Name	Designation	Contact No.	Email
NITISH BANSAL	AEE/SLDC/PSTCL	96461-55394	a se - sldc op @ pstcl . org
AKSHAY GARG	ASE/SLDC/PSTCL	96461-18014	<del>_____ Do _____</del>

### RVPNL-RRVUNL-RDPPC

Name	Designation-Org.	Contact No.	Email
A.K. ARYA	SE(SOLD)	9414061066	se.ldr v p n l @ gmail . com
Kamal Patidar	XEN(SOLD)	9413382632	se.ldr v p n l @ gmail . com
Rakesh Kumar	XEN (RVUNL) JPR PD	9413349585	PPJPR @ RVUN . Co . IN

### UPPCL-UPPTCL-UPRVUNL

Name	Designation-Org.	Contact No.	Email
A. J. Siddiqui	SE, VPSLDC	9415609363	aj.siddiqui @ gmail . com
ZAHIR AHMAD	SE, UPSLDC	9415609365	ahmadzahir2062 @ gmail . com
Brijesh K. Singh	EE, UPRVUNL	9415901993	kgm-to @ uprvunl . org

### PTCUL

Name	Designation-Org.	Contact No.	Email
Vinayak Shaily	Executive Engineer	7088117954	vinayak.shaily @ ptcu . org

### APCPL

Name	Designation-Org.	Contact No.	Email
P. MEDIRATTA	AGM, APCPL (NTPC)	9416212411	pmediratta @ ntpc . co . in

Adani Power Ltd.

Name	Designation-Org.	Contact No.	Email

AD Hydro Power Ltd.

Name	Designation-Org.	Contact No.	Email
T. K. TREHAN	VICE-President (Adani)	9416031618	tgj@adani.com

Jaiprakash Power Ventures Ltd.

Name	Designation-Org.	Contact No.	Email

NRPC

Name	Designation	Contact No.	Email

NPCIL

Rajeev Kumar      SOIF      9413358361      rkjguy@npcil.co.in

DISCOM (Delhi)

HARIDAS MAITY      GM - BYPL      9350110156      haridas.maity@relianceada.com  
 NISHANT GROVER      DGM - BYPL      9560599544      nishant.grover@relianceada.com

HPPTCL

Vivek Sharma      Assistant Engineer      8219104365      dvmp@hpptcl.in

IPGCL-PPCL, Delhi

Satyendra Prakash, AGM(T)      9717694813      spmprakash@gmail.com

Talwandi Sabo Power Ltd.

ARUN KUMAR, DM, Power Sale      7087020180      arun.kumar@vedha.co.in

(NRLDC)

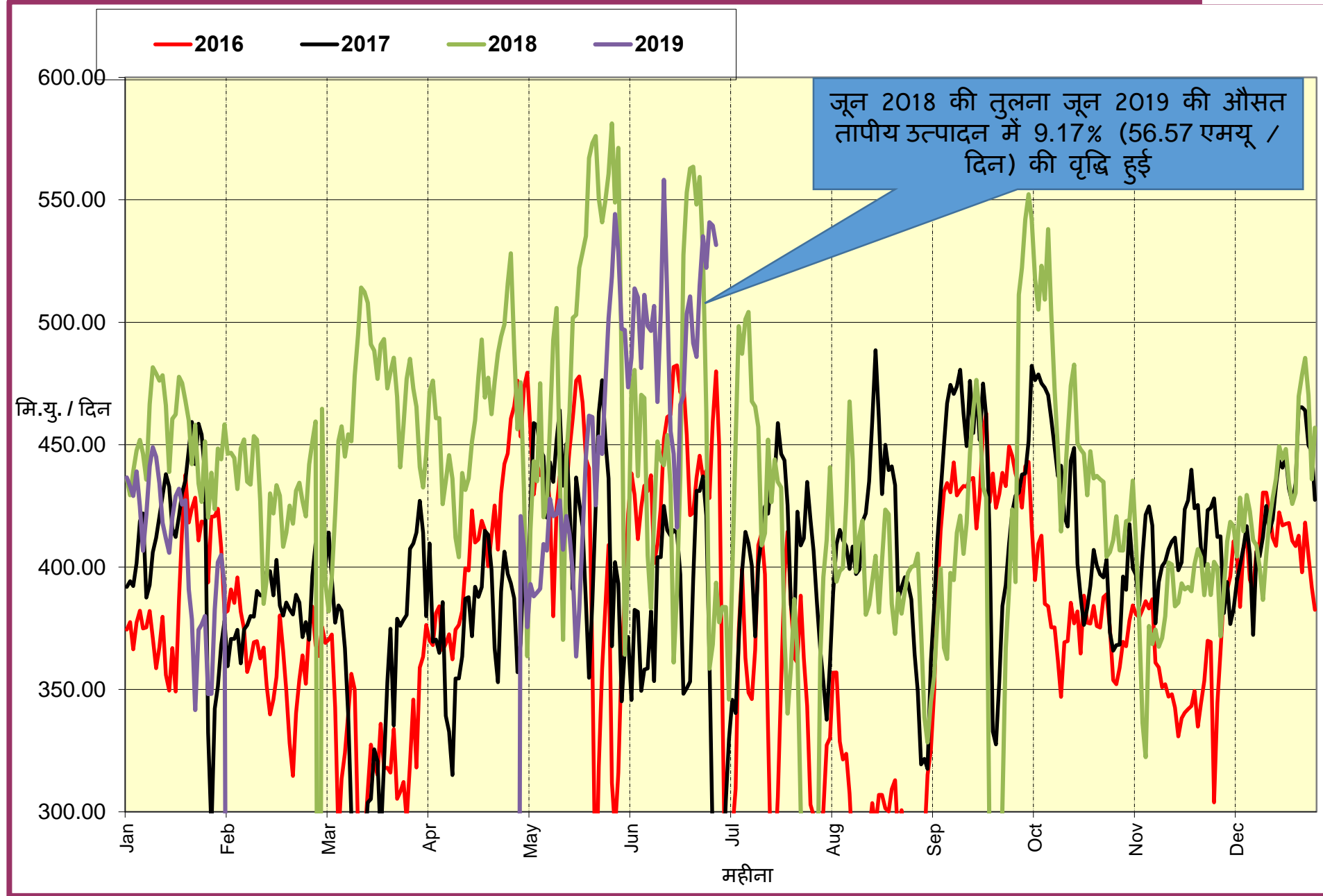
Ashutosh Kumar Pandey (AM, )  
Rajesh Kumar (Manager)  
37/008 25/11 (34 40/11)

VINAY VAISHNAV (AD, GM LEA)

9599112720  
9560032972  
9560270520  
8470009770.

ashutosh.pandey@posoco.in  
r.kumar@posoco.in  
ankit.gupta@posoco.in  
Vinay.Vaishnav@nic.in

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



**Long outages of generating Units**

S.No	Station	Location	Owner	Unit No	Capacity	Outage		Reason(s)
						Date	Time	
1	Bairasiul HPS	HP	NHPC	2	60	15-10-2018	10:02	For renovation and Modernisation of the plant
2	Pong HPS	HP	BBMB	2	66	14-02-2019	8:00	Renovation and Modernization.
3	Bhakra-L HPS	HP	BBMB	3	108	01-04-2019	9:20	Renovation and Modernisation of unit(capacity enhancement from 108 to 126 MW)
4	Obra TPS	UP	UPRVUNL	12	200	24-09-2018	17:26	Drum level high.
5	Obra TPS	UP	UPRVUNL	13	200	14-04-2019	13:01	Boiler tube leakage Turbine governor system problem.
6	Paricha TPS	UP	UPRVUNL	5	250	09-05-2019	3:27	Boiler tube leakage
7	Harduaganj-C TPS	UP	UPRVUNL	7	105	15-05-2019	1:16	Tripped due to fire at Unit No:7 as informed by UPSLDC.

S.No	Element Name	Type	Voltage Level	Owner	Outage		Reason / Remarks	Annexure-II(C)
					Date	Time		
1	Akal (RVPNL)-Ramgarh 400 (RVPNL) 1	Line	400 kV	RRVPNL	10/12/2018	10:15	General maint work.	
2	Aligarh 500 MVA ICT 2	ICT	400/220 kV	UPPTCL	14/05/2019	9:56	Emergency SD taken due to bad result(more formation of acetylene gas) of DGA test result of ICT oil.	
3	400 kV 50 MVAR Line Reactor (Non-Switchable) of Bhadla(RVPNL) ckt 1 at Ramgarh 400 (RRVPNL)	Line Reactor	400 kV	RRVPNL	10/12/2018	12:00	General maint work.	
4	400 kV Bus coupler Main CB (424) of Bus 1& 2 at Anpara B UP	BAY/CB	400 kV	UPPTCL	21/01/2019	12:30	. For replacement of faulty CB at Anpara B. CB is faulty from 02.01.19	
5	Jaisalmer_2-Barmer(RS) Ckt-1	Line	400 kV	RRVPNL	11/5/2019	21:34	Phase to earth fault R-N fault,FD=0.3KM from Barmer end	
6	Bhilwara 315 MVA ICT-1	ICT	400/220 kV	RRVPNL	12/05/2019	23:42	Oil leakage in Transformer Differential protection operated	
7	FACT at BLB in Knp-BLB Line	FACTS	400 kV	PGCIL	02/07/2016	10:20	Y-Phase current imbalance	
8	FSC of Balia-I at Lucknow	FSC	400 kV	PGCIL	29/112017	13:30	E/SD due to Hot Spot on Isolator	
9	FSC (40%) of Kanpur-II at Ballabgarh(PG)	FSC	400 kV	PGCIL	16/03/2019	14:39	Fire in B-Ph FSC at Ballabgarh end.	
10	400 kV 80 MVAR Line Reactor of KalaAmb(PG) ckt 2 at KWHEP	Line Reactor	400 kV	JPHYDRO	14/05/2019	21:29	Voltage regulation.	
11	Chamera III(NHPC)-Chamera pool(PG) 2	Line	220 kV	PGCIL	14/05/2019	11:56	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 Chamera3 GIS.	
12	Chamera 3 HEP 220kV Bus 1	BUS	220 kV	NHPC	14/05/2019	11:56	During shifting of Chamera pool-2 line from 220 kV Bus-2 to BUS-1 at Chamera 3 GIS. CB got damaged.	

Si. No.	Type of transmission element	Total No
1	220kV lines	2
2	400kV lines	2
3	500 MVA ICTs	1
4	315 MVA ICTs	1
5	100 MVA ICTs	1
6	2*260 MVA GT	1
7	660 MW Unit	1
8	125 MVAR Bus Reactor	1
Total New Elements charged		10
<p><b>Note-</b> Before applying new element charging at NRLDC , the element must be approved in standing committee meeting and connection agreement must be updated accordingly.</p>		



**Transmission Lines**  
**(220kV – 116 ckt. Km)**

S. No.	Name of element	Voltage Level (in kV)	Line Length (In kM)	Conductor Type	Owner	Remarks	Actual date & time of charging (Synchronized)	
							Date	Time
1	200kV DC Sohawal(PG)-New Tanda(UP)-2 Sohawal bay no 211 & New Tanda bay no 201	220	116.643	ACSR single zebra	UPPTCL		08.06.2019	8:21

**LILO of Transmission Lines**  
**(400kV Lines- 131 Ckt-Km & 220kV – 1.5 ckt. Km)**

S.No.	Name of element	Voltage Level (in kV)	Line Length (In Km) before LILO	Line Length (In Km)	LILO Line Length (In Km)	Conductor Type	Agency/ Owner	Actual date & time of charging(Synchronized)	
								Date	Time
1	400kV Sultanpur-Tanda Stage-II(400kV) bay no 401(existing) & 404(Tanda Stage-II)	400	125.619	103.06	65.336	ACSR Twin Moose	UPPTCL	02.06.2019	18:31
2	400kV Azamgarh-Tanda Stage-II(400kV) bay no 404(existing) & 407(Tanda Stage-II)	400	125.619	103.06	65.313	ACSR Twin Moose	UPPTCL	01.06.2019	19:09
3	220kV Noida Sec 20-Sec 38A(UP) bay no 201 at Noida Sec 20 & 202 at Sec 38A{LILO of 220kV Sec 20-BTPS(DTL) at Noida Sec 38A}	220	13.51	8.9	1.45	Single Zebra/Dear	UPPTCL	07.06.2019	14:20

**ICT & GT**  
**(ICT Capacity Addition - 915 MVA and GT-780 MVA)**

S.No.	Name of element	Voltage Level	Transformation Capacity (in MVA)	New/replacement /augmentation	Agency/ Owner	Remarks	Actual date & time of charging (on load)	
							Remarks	Date
1	315 MVA ICT-2 along with associated bays no 203 & 410(M) at Tanda Stage II(400kV)	400/220/33	315	New	BHEL		19.06.2019	18:24
2	500 MVA ICT-2 at Noida Sec 148 associated bays no 406 & 205	400/220/33	500	New	BHEL		21.06.2019	19:25
3	100 MVA ICT-3 bay no 203 & 104 at Sitargarh(PG) {ICT removed from Raebareilly after Augmentation}	220/33	100	Old	Bharat Bijlee		27.06.2019	19:33
4	3*260 MVA GT-5 at Tanda Stage II(400kV)	400/22	780	New	BHEL		09.06.2019	13:31

## **Bus Reactor & Line Reactor**

**(Capacity Addition –Bus Reactor 125 MVAR & Line Reactor 63 MVAR)**

S. No.	Name of element	Voltage Level (kV)	Transformation Capacity (in MVAR)	New/ replacement /augmentation	Make	Agency/ Owner	Remarks	Actual date & time of charging	
								Date	Time
1	125 MVAR Bus Reactor at Tanda Stage II(400kV)	400	125	New	BHEL	NTPC		29.06.2019	11:24

**Generating Units**  
**(Capacity Addition - 660 )**

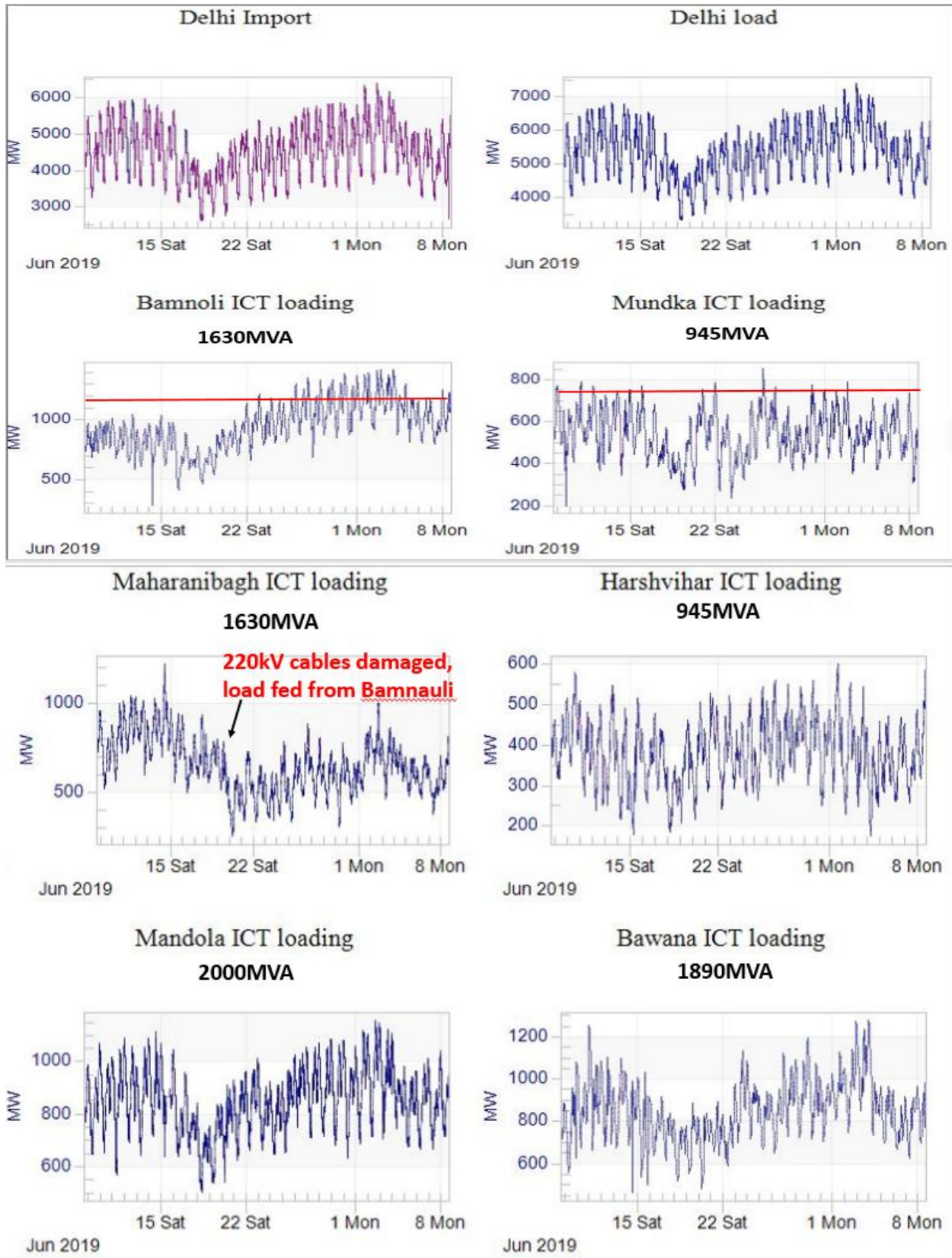
Sr. No	Generating Unit Name	Voltage Level	Installed Capacity	Fuel Type	Make	Owner	Synchronization date	Synchronization time
1.	660 MW unit#5 at Tanda Stage-II	440kV	660	Thermal	Alstom	NTPC	09.06.2019	13:31

**Annexure-III****Anticipated Power Supply Position in Northern Region for August 2019**

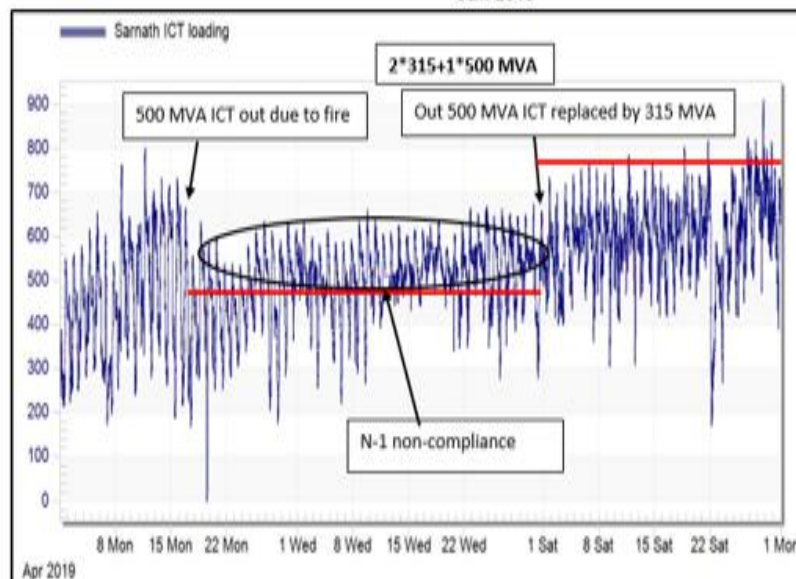
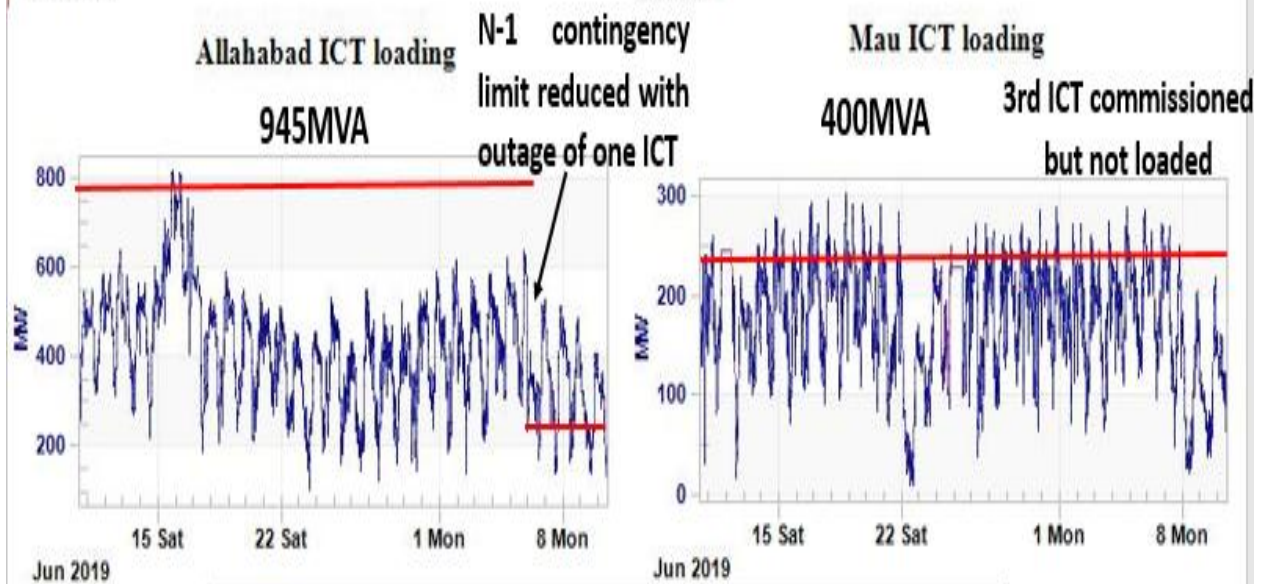
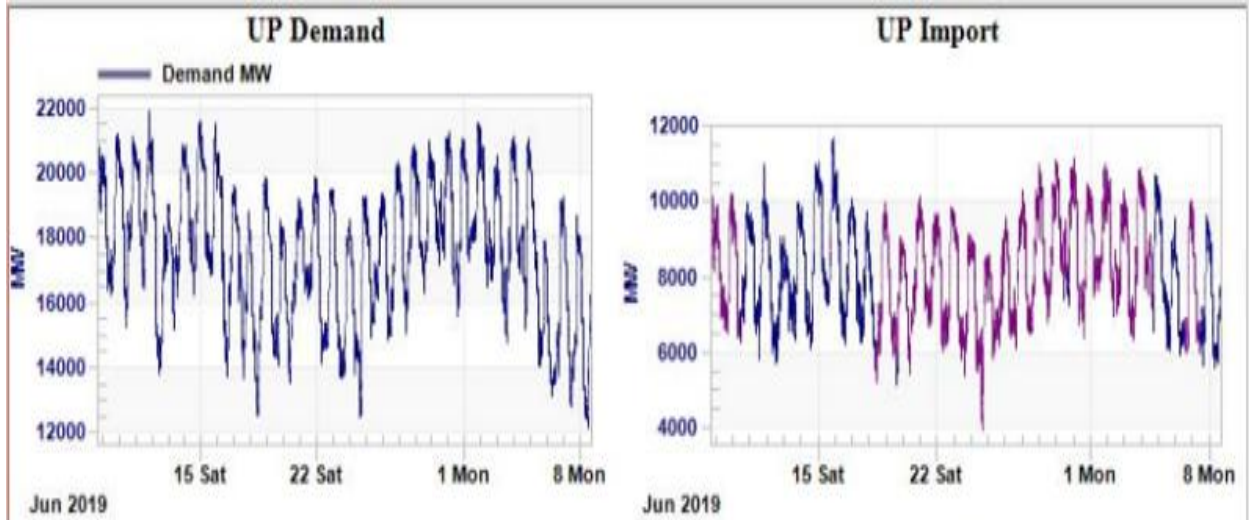
State / UT		Aug-19 (MU)	Aug-19 (MW)
<b>Chandigarh</b>	Availability	225	410
	Requirement	180	355
	Surplus/Shortfall (MU)	45	55
	Surplus/Shortfall (%)	25.0%	15.5%
<b>Delhi</b>	Availability	4010	7200
	Requirement	3750	6300
	Surplus/Shortfall (MU)	260	900
	Surplus/Shortfall (%)	6.9%	14.3%
<b>Haryana</b>	Availability	6750	12010
	Requirement	6010	10000
	Surplus/Shortfall (MU)	740	2010
	Surplus/Shortfall (%)	12.3%	20.1%
<b>Himachal Pradesh</b>	Availability	1050	1950
	Requirement	910	1490
	Surplus/Shortfall (MU)	140	460
	Surplus/Shortfall (%)	15.4%	30.9%
<b>Jammu &amp; Kashmir</b>	Availability	1510	2430
	Requirement	1620	2990
	Surplus/Shortfall (MU)	-110	-560
	Surplus/Shortfall (%)	-6.8%	-18.7%
<b>Punjab</b>	Availability	7670	11040
	Requirement	7640	12700
	Surplus/Shortfall (MU)	30	-1660
	Surplus/Shortfall (%)	0.4%	-13.1%
<b>Rajasthan</b>	Availability	9240	15940
	Requirement	7540	11500
	Surplus/Shortfall (MU)	1700	4440
	Surplus/Shortfall (%)	22.5%	38.6%
<b>Uttar Pradesh</b>	Availability	14000	20500
	Requirement	12600	21000
	Surplus/Shortfall (MU)	1400	-500
	Surplus/Shortfall (%)	11.1%	-2.4%
<b>Uttarakhand</b>	Availability	1440	2090
	Requirement	1400	2160
	Surplus/Shortfall (MU)	40	-70
	Surplus/Shortfall (%)	2.9%	-3.2%
<b>Total NR</b>	Availability	45895	73570
	Requirement	41650	62100
	Surplus/Shortfall (MU)	4245	11470
	Surplus/Shortfall (%)	10.2%	18.5%

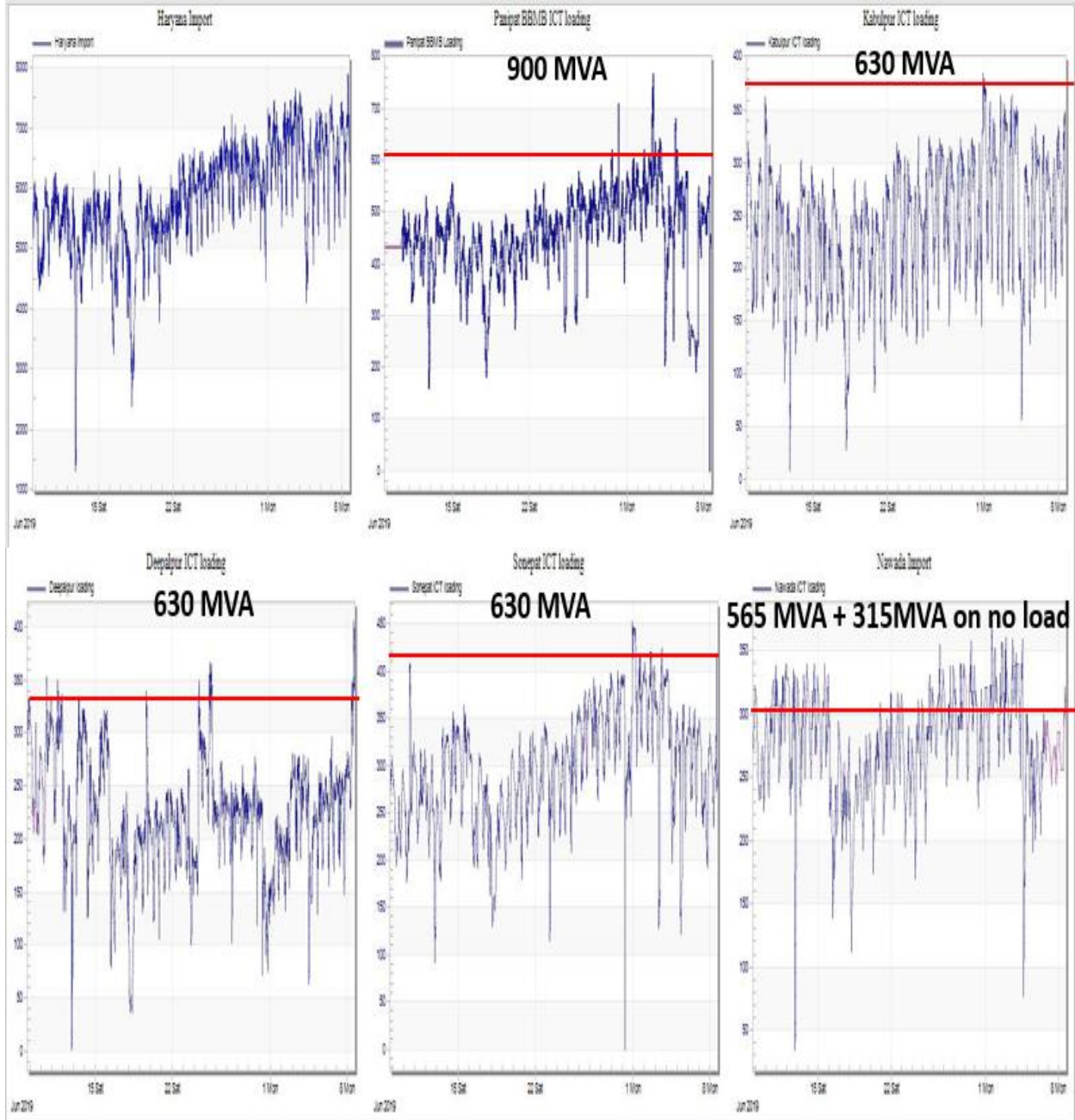
**Follow up issues from previous OCC meetings**

Sl. No.	Agenda point	Details	Status
1	Monitoring of schemes funded from PSDF ( <i>Agenda by NPC</i> )	The latest status of the schemes for which grant has been sanctioned from PSDF for the schemes in NR. Utilities are requested to expedite implementation of the schemes and submit information of physical as well as financial progress in the prescribed format by <b>first week of every month</b> on regular basis to Member Convener, PSDF Project Monitoring Group (AGM, NLDC and POSOCO) with a copy to NPC Division.	The available status of Schemes Submitted by the entities for funding from PSDF was attached as Annexure-III/1 of the agenda of 160 <sup>th</sup> OCC meeting. The updated status from <b>Punjab, Rajasthan and Delhi was received via e-mail dated 12.07.19, 16.07.19 and 15.07.19 respectively.</b> All other states are requested to update the status of the schemes to be funded from PSDF.
2	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.	The updated details of the substations of POWERGRID and their required downstream network was placed at Annexure-V/2 of the agenda note. All concerned utilities were requested to update.
3	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 <b>Uttarakhand</b> (June 2019), <b>Rajasthan</b> (up to June 2019), <b>UP</b> (up to April 2019) & <b>Haryana</b> (up to January 2019).  All other states were requested to update.
4.	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> .	The information of period ending March 2019 received from <b>UP, Haryana, Delhi and Rajasthan.</b>  All others are requested to submit information.

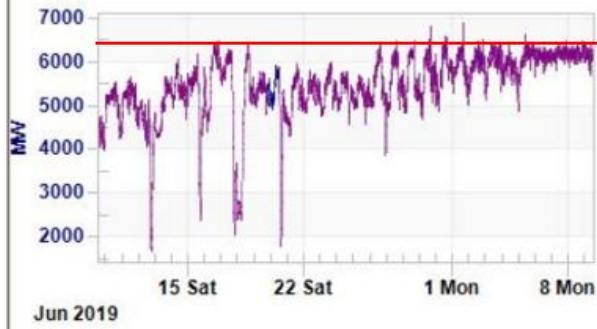




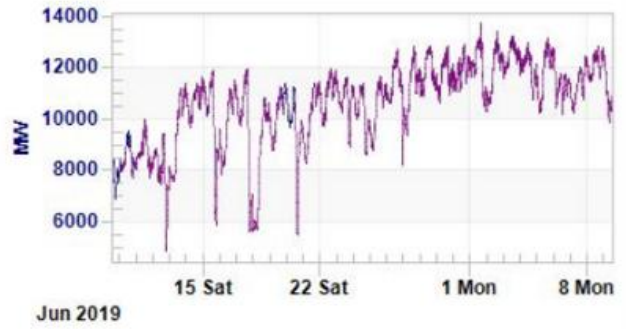




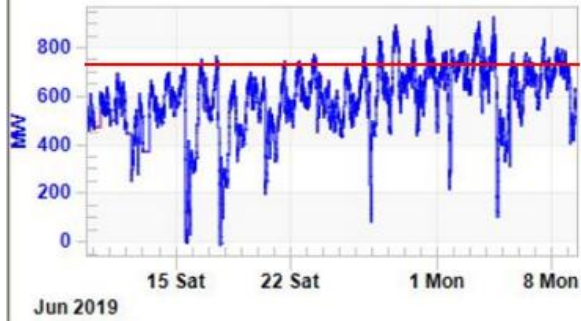
**Punjab Import**



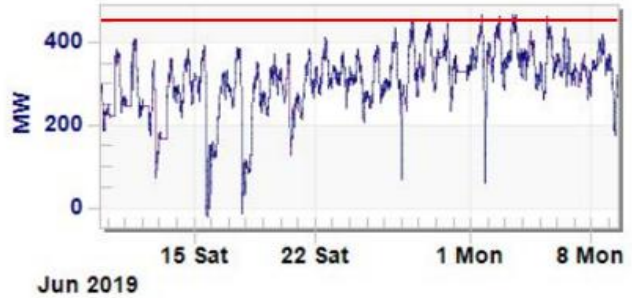
**Punjab load**



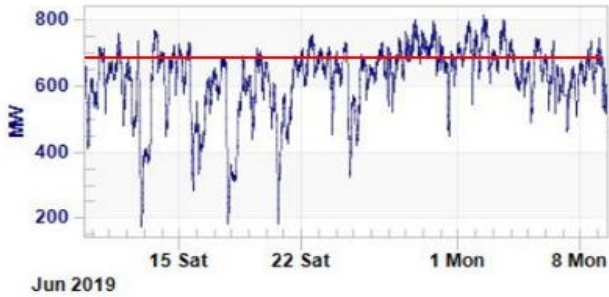
**Amritsar ICT load**  
**1130MVA**



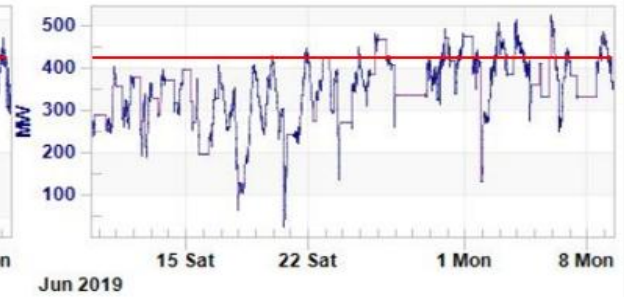
**Nakodar ICT load**  
**630MVA**



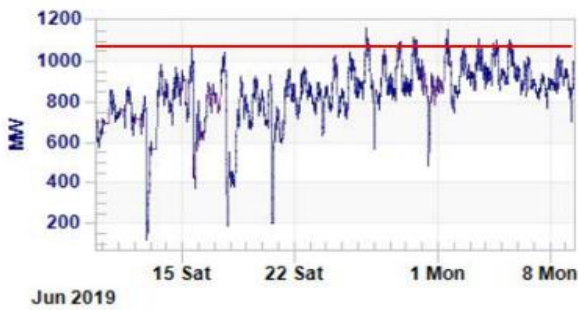
**Rajpura ICT load**  
**1000MVA**



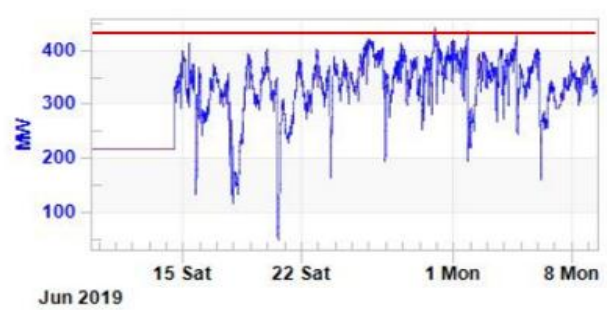
**Muktsar ICT load**  
**630MVA**



**Ludhiana ICT load**  
**1445MVA**



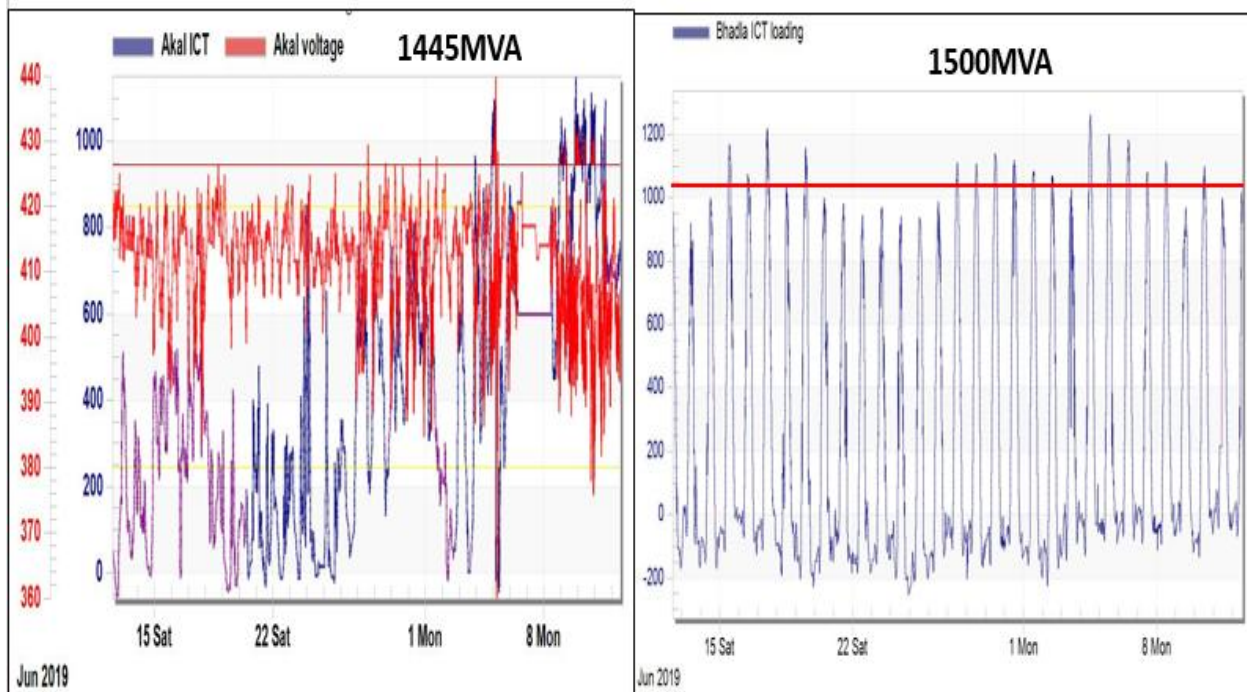
**Makhu ICT load**  
**630MVA**

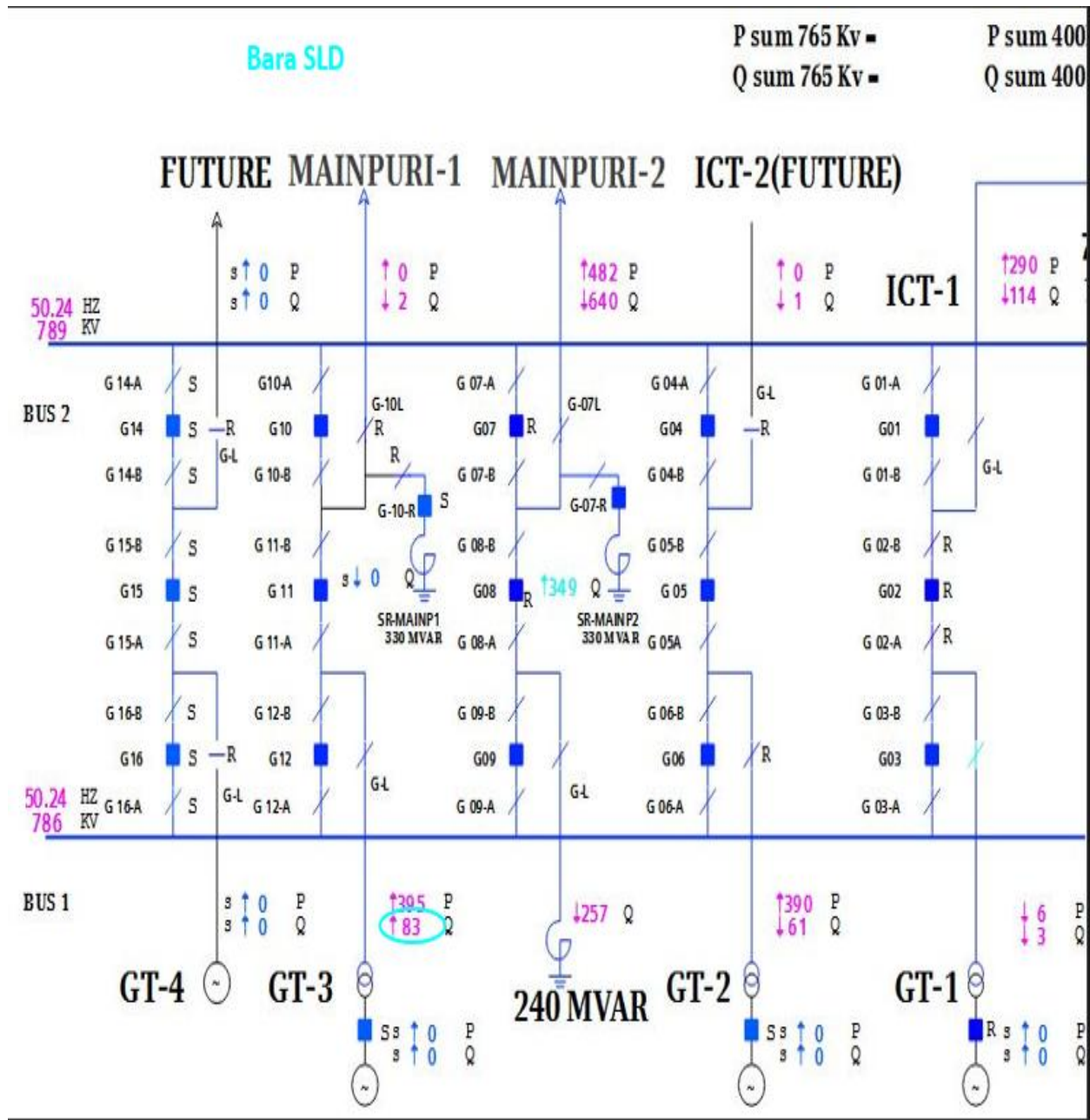




## Rajasthan

- N-1 non-compliance at Akal and Bhadla ICTs.
- Long outages of ICTs at Akal
- Under N-1 contingency of ICT at Akal or Bhadla, there could be generation loss of the order of 1000-1300MW
- Need for SPS design to trip some generation in case of tripping of one ICT and antecedent loading of ICTs being higher than N-1 contingency limit.





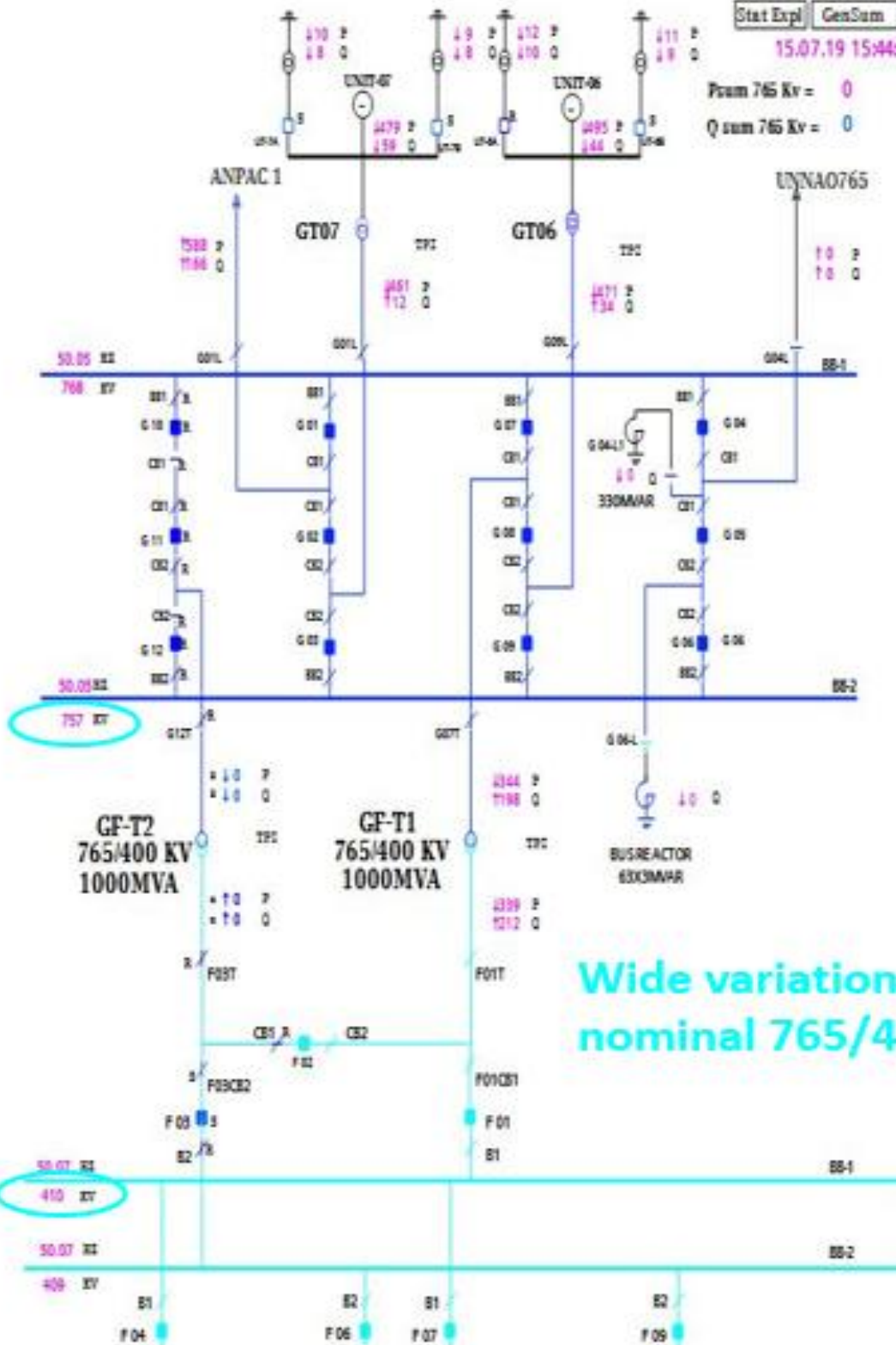
# ANPAD UP

Stat Expl GenSum Company

15.07.19 15:44:02

From 765 Kv = 0 From 400 Kv =

Q sum 765 Kv = 0 Q sum 400 Kv =



Wide variation in nominal 765/400 ratio

# ANPARA-C\_UP

Stat Expl

GenSum

Company

15.07.19 15:46:22

Psum 765 Kv =

Psum 400 Kv =

Qsum 765 Kv =

Qsum 400 Kv =

