भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति
**Eastern Regional Power Committee**
14, गोल्फ क्लब रोड, टालीगंज, कोलकाता-700033
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**NO. ERPC/EE/OPERATION/2021/ 1144.** **DATE: 15.11.2021**

To

As per list enclosed.

**Sub: Minutes of 184th OCC Meeting held on 26.10.2021 through MS Teams Platform- reg.**

Sir,

Please find enclosed minutes of 184th OCC Meeting held on 26.10.2021 through MS Teams Platform for your kind information and necessary action. The same is also available at ERPC website (www.erpc.gov.in).

Observations, if any, may please be forwarded to this office at the earliest.

Regards,

Yours faithfully,

Mondal
15.11.2021

**(N.S. Mondal)**
**Member Secretary**


# MINUTES
# OF
# 184th OCC MEETING

## Date: 26.10.2021

## Eastern Regional Power Committee

## 14, Golf Club Road, Tollygunge

## Kolkata: 700033

# EASTERN REGIONAL POWER COMMITTEE

## MINUTES FOR 184TH OCC MEETING HELD ON 26.10.2021 (TUESDAY) AT 10:30 HRS

*Member Secretary, ERPC chaired the 184th OCC Meeting. Welcoming all the participants to the meeting, he outlined the performance of ER Grid during September-2021 in brief. He highlighted the following points:*

- *During the month of Sept'21, growth in energy consumption of ER was 4.3% compared to the same month of previous year, and 9% more than that of Sept-2019.*
- *During the year 2021-22, the Peak Demand Met of ER was 25,010 MW in the month of Sept-21 which is 6 % more than that of Sept'2020.*
- *Eastern Region registered average PLF of 67.5% in Sept'21. Moreover, during the month of Sept'21, 6 nos. of thermal plants have achieved more than 90%.*
- *During Sept'21, 77 % of time, grid frequency was within IEGC Band (49.90Hz50.05Hz).*
- *As per the LGBR 2021-22, a thermal capacity of 2,720 MW is scheduled for planned shutdown in November 2021.*
- *As on 18.08.2021, total coal stock in Eastern Region was 2.168 Million Tonnes (i.e. for 6 Days).*

## PART – A

### ITEM NO. A.1: Confirmation of Minutes of 183rd OCC Meeting held on 20th September 2021 through MS Teams online platform.

The minutes of 183rd Operation Coordination sub-Committee meeting held on 20.09.2021 was circulated vide letter dated 13.10.2021.

Members may confirm the minutes of 183rd OCC meeting.

**Deliberation in the meeting:**

*The following modifications were agreed as per the request of NTPC Darlipali STPS vide mail dated 21.10.2021 for modification in the 183rd OCC Minutes:*

***ITEM NO. B.4: Metering arrangement for power supply to Manoharpur Coal Mine of OCPL from NTPC's Darlipali STPP***

*MoM of 183rd OCC:*

***…..***

*"33kV feeder from Darlipali STPP to Manoharpur coal mines shall be treated as outgoing feeder and ABT compliant main and check meters shall be installed in these feeders for accounting of injection by Darlipallii STPP and drawal by GRIDCO"*

*…..*

*Modified MoM:*

*….*

*"The 2 nos. of 132kV connectivity to the dedicated 132/33kV ICTs would be considered as tie lines for injection by Darlipallii STPP and drawal by GRIDCO and ABT meters would be installed at HV side and LV side of 132/33kV Transformers at NTPC Darlipali end for accounting purpose."*

*….*

## PART B: ITEMS FOR DISCUSSION

**ITEM NO. B.1: Review of Identified feeders for disconnecting load of States during extreme events**

In the 183rd OCC meeting, OCC advised all the SLDCs to submit the list of identified feeders to ERLDC for finalizing the feeder list for disconnecting load of states during extreme events.

Accordingly, ERLDC received list of feeders to be disconnected from Bihar, Jharkhand, Odisha & DVC. ERLDC is yet to receive list from West Bengal & Sikkim. List of the feeders of Bihar, Jharkhand, Odisha & DVC are tabled below. List of lines may be finalised including that from West Bengal & Sikkim.

| Odisha Feeder list for Disconnection | |
|---|---|
| **Old feeders** | **New feeders** |
| **ISTS feeders** | |
| 220 kV Rengali(PG)-Rengali(OPTCL) | 220 kV Rengali(PG)-Rengali(OPTCL) |
| 220/132 kV Baripada 160 MVA ICT | 220/132 kV Baripada 160 MVA ICT |
| 220 kV Baripada(PG)-Balsore (Odisha) | 220 kV Baripada(PG)-Balsore (Odisha) |
| **Intra-state feeders** | |
| 132kV Bolangir(New)-Patnagarh S/C | 132kV Bolangir(New)-Patnagarh S/C |
| 132kV Chhatrapur – Ganjam S/C | 132kV Bhadrak-Agarpada S/C |
| 132kV Bhanjanagar-Phulbani S/C | 132kV Balasore-Soro |
| 132kV Chandaka-Nimapara / Ranasighpur | 132kV Chandaka-Nimapara / Ranasighpur |
| 132kV Baripada(PG)-Jaleswar/Bhograi | 132kV Baripada(PG)-Jaleswar/Bhograi |
| 132kV Jajpur Rd. – Kendrapara D/C | 132kV Jajpur Rd. – Kendrapara D/C |

| DVC Feeder list for Disconnection | |
|---|---|
| **Old 33kV feeders** | **New 33kV feeders** |
| **Intra-state feeders** | |
| JSEB Barhi | JSEB Barhi |
| JSEB Bokaro | JSEB Bokaro |
| JSEB Chas | JSEB Chas |
| JSEB Konar Banaso | JSEB Konar Banaso |
| JSEB Mugma | JSEB Mugma |
| JSEB Giridih | JSEB Giridih |
| JSEB Digwadih | JSEB Digwadih |
| JSEB Gobindpur | |
| JSEB Ganeshpur | JSEB Ganeshpur |
| JSEB Jamadoba | JSEB Jamadoba |
| JSEB PADMA PSS RGGVY | JSEB PADMA PSS RGGVY |
| JSEB Dugdha | JSEB Dugdha |
| JSEB Ramgarh | JSEB Ramgarh |
| JSEB Karma PSS RGGVY | JSEB Karma PSS RGGVY |
| JSEB Kumardubi | JSEB Kumardubi |
| JSEB DumbriBanaso | JSEB DumbriBanaso |
| JSEB Mukunda | JSEB Mukunda |
| JSEB Katras (Tilatand) | JSEB Katras (Tilatand) |
| PMCH Medical College | PMCH Medical College |

| | |
|---|---|
| JSEB West Bokaro (Ghato) | JSEB West Bokaro (Ghato) |
| JSEB Sindri | JSEB Sindri |
| JSEB Biada-Chas | JSEB Biada-Chas |
| JSEB Katras (Sijua) | JSEB Katras (Sijua) |
| JSEB SendraBansjora | JSEB SendraBansjora |
| JSEB Jainamore | JSEB Jainamore |
| JSEB Badjna | JSEB Badjna |
| WBSEB Belmuri | |
| WBSEB Buedwan | |
| WBSEB Kanyapur | |
| WBSEB Luchipur | |
| WBSEB Dendua | |
| WBSEB Kalyaneswary | |
| WBSEB Borjora | |
| WBSEB Santhaldih | |
| WBSEB Jamuria | |
| | JSEB Hazaribagh |

| **Jharkhand feeder list** | |
|---|---|
| **Old feeders** | **New feeders** |
| **ISTS feeders** | |
| One 400/220 kV 315 MVA ICT Jamsedpur | One 400/220 kV 315 MVA ICT Jamsedpur |
| 220 kV Ranchi(PG)-Chandil(JUVNL) | 220 kV Ranchi(PG)-Chandil(JUVNL) |
| **Intra-state feeder** | |
| 132kV Chandil – Golmuri D/C | 132kV Chandil – Golmuri D/C |
| 132kV Dumka-Pakur S/C | 132kV Dumka-Pakur S/C |
| | 33kV-Gumla-Bharno |
| | 33kV-Kamdara-Torpa |
| | 33kV-Lalmatia-Mahagama |
| | 33kV-Nouamundi-Noamundi |
| | 33kV-Kendposi-Kumardungi |
| | 33kV-Rajkharsawan-Rajkharsawan |
| | 33kV-Latehar-Manika |
| | 33kV-Japla-Md. Ganj |
| | 33kV-Daltonganj-Tukbera |
| | 33kV-Lohardaga-Kuru |
| | 33kV-Simdega-Kolebera |
| | 33kV-Japla-Japla |
| | 33kV-Kamdara-Karra |
| | 33kV-Lohardaga-Kisko |
| | 33kV-Tamar-Bundu |
| | 33kV-Simdega-Simdega |
| | 33kV-Godda-Pathargama |
| | 33kV-Chaibasa-Saraikela |
| | 33kV-Chaibasa-2-Rajnagar |
| | 33kV-Chakardharpur-CKP |

| | |
|---|---|
| | 33kV-Lalmatia-Mahagama |
| | 33kV-Chitra-Simla |
| | 33kV-Gumla-Ghagra |
| | 33kV-Kamdara-Basia |
| | 33kV-Chitra-Sarath |
| **Bihar feeder list** | |
| **Old feeders** | **New feeders** |
| **ISTS feeders** | |
| 132kV Ara(PG)-Jagdishpur S/C line | |
| | 132 KV Sitamarhi(PG)-Runnisaidpur D/C T/L |
| 132kV Banka(PG)-Sultanganj D/C | 132 kv Banka(PG)-Sultanganj D/C T/L |
| 132kV Banka(PG)-Banka D/C line | 132 Kv Banka(PG)-Banka D/C T/L |
| **Intra-state feeder** | |
| | |

| **West Bengal feeder list** | |
|---|---|
| **Old feeders** | **New feeders** |
| **ISTS feeders** | |
| 220 kV Dalkohla (PG)-Dalkohla(WB) | |
| 132 kV Malda (PG)-Malda(WB) | |
| 132 kV Birpara(PG)-Birpara(WB) | |
| **Intra-state feeder** | |
| | |

| **Sikkim feeder list** | |
|---|---|
| **Old feeders** | **New feeders** |
| **ISTS feeders** | |
| | |

Member may discuss.

**Deliberation in the meeting:**

*ERLDC representative submitted that the list of identified feeders has been received from Bihar, Jharkhand, Odisha and DVC and input from Sikkim is yet to be received. He further added that the list of feeders for West Bengal has been prepared in consultation with SLDC West Bengal. On query, SLDC West Bengal representative expressed that the matter may also be discussed with WBSEDCL for finalization of the list.*

*OCC advised ERLDC to finalize the above list and incorporate the same in the operating procedure. Changes in the list, if any, would be subsequently updated in the operating procedure.*

**ITEM NO. B.2: Removal of technical minimum schedule support from ISGS plants to facilitate full surrender of power by Constituents.**

As per prevailing practice in Eastern Region, ISGS stations are provided with Technical Minimum schedule support. In the event where sum of requisition from all the beneficiaries falls below technical minimum, the beneficiary schedule is jacked up to provide technical minimum schedule to the generators.

However, in the light of recent CERC Order on Petition No: 60/MP/2019, the practice of jacking up surrendered schedule of beneficiaries shall be withdrawn, except in cases as mandated in

Section 5.7 of detailed Reserve Shutdown Procedure (RSD) (CERC Order No. - L-1/219/2017-CERC), which states:

*Quote*

*RLDC shall suo-moto revise the schedule of any generating station as per clauses 6.5.14 and 6.5.20 of the Grid Code to operate at or above technical minimum in the ratio of under-requisitioned quantum (with respect to technical minimum) in the interest of smooth system operation under the following conditions:*

- ✓ *Extreme variation in Weather Conditions*
- ✓ *High Load Forecast*
- ✓ *To maintain reserves on regional or all India basis*
- ✓ *Network Congestion*
- ✓ *Any other event which in the opinion of RLDC/NLDC shall affect the grid security.*

*While doing so, it is possible that the requisition of some beneficiaries may go up to ensure technical minimum. In this case, SLDCs may surrender power from some other inter-State generating station(s) or intra-State generating station(s) based on merit order. The concerned RLDC shall issue R-1 schedule accordingly and this shall be intimated to the concerned generating station, through the scheduling process."*

*Unquote.*

Members may discuss.

**Deliberation in the meeting:**

*ERLDC representative submitted that as per the existing practice if the sum of requisition from all the beneficiaries falls below the technical minimum then in order to ensure that the units continue to run on bar, RLDC jacks up the schedule of the beneficiaries thereby providing technical minimum to the generators. However, as per CERC Order on Petition No: 60/MP/2019, there should not be any jacking up by the RLDCs, except for some special conditions. If the requisition falls below the technical minimum then at that instance the concerned generators may run their unit at reduced generation or may go for RSD. He further added that the Generators may also approach the beneficiaries and request them to increase their requisition in case the sum of requisition from all the beneficiaries falls below the technical minimum.*

*NTPC representative submitted that if technical minimum is not allowed for only few blocks then either the concerned beneficiaries may increase their requisition to support the technical minimum of the generators or jacking up of the schedule for those time blocks may be done from RRAS.*

*SE(Comm), ERPC submitted that concerned generators may go for RSD if they don't get the technical minimum. He further added that in such scenarios the beneficiaries need to understand that if any unit goes under RSD then it will take a considerable amount of time to revive the unit and in that case if the beneficiaries need any power then they will have to depend on the market. Further he submitted that as per the prevailing regulation, RRAS can only be implemented where there is any increase/decrease in grid frequency or any major congestion in the transmission network happens.*

*Odisha representative opined that if any of the beneficiaries doesn't support the technical*

*minimum and surrenders its power, then the other beneficiary (ies) may use that power thereby providing technical minimum to the generator(s). In that case only the variable cost/energy charge would be levied on the beneficiary (ies) who availed that power. The beneficiary (ies) surrendering the power would bear only the fixed charge. He further added that the same has also been discussed in WRPC forum.*

*After detailed deliberation, OCC opined that:*

- *The existing practice would be continued until a decision is taken.*
- *In the mean time Odisha would submit a detailed proposal along with the WRPC's decision before the next OCC for further deliberation on the matter.*

**ITEM NO. B.3: Islanding Schemes in Eastern Region**

**B3.1 Implementation of Islanding Schemes in Eastern Region.**

In the meeting held on 28th December 2020 and chaired by the Hon'ble Minister of State (IC) it was directed that islanding schemes should be implemented for all major cities of the country considering all the strategic and essential loads. Subsequently, in line with the direction given in the meeting, the subject matter was discussed in PCC meeting of ERPC and it was finalized that new islanding scheme would be implemented for capital city of Patna & Ranchi.

**I. Patna Islanding Scheme**

In the special meeting held on 06.08.2021, it was decided that Patna islanding scheme would be designed considering two unit of Nabinagr STPP(2*660 MW) of NPGCL as participating generator and loads of in and around Patna city. The provision of island formation with one unit of NPGC with corresponding load is also to be included in the island logic.

The islanding frequency & logic will be finalized based on the result of dynamic study to be carried out by SLDC Bihar/ERLDC.

The following timelines were decided:

1. Submission of requisite information by SLDC, Bihar: 2nd week of Aug' 2021.
2. Completion of Islanding simulation study by ERLDC: 4th Week of Aug' 2021
3. Review of islanding study & designing of the logic: By September'2021
4. Implementation & Operationalization of the Islanding Schemes: By March'2022

In 106th PCC meeting held on 16.09.2021 it was informed that the requisite information had already been shared by SLDC Bihar and the study is under progress by ERLDC. Further SLDC Bihar was advised to prepare the DPR by September'2021 for PSDF funding, if required.

In the 44th TCC Meeting, BSPTCL updated that preparation of DPR for PSDF funding is under process and the same would be completed within 15 days.

TCC stressed on the fact that this issue is being regularly monitored by MoP and advised BSPTCL for timely implementation of the Islanding Scheme.

BSPTCL may update.

**Deliberation in the meeting:**

*BSPTCL representative submitted that M/s Siemens would give a presentation on DPR by Oct'21 end and subsequently the DPR would be prepared by 1st week of November'2021.*

*OCC advised BSPTCL to expedite the matter with Siemens and prepare the DPR as per the said schedule without any further delay*.

**II. Ranchi Islanding Scheme**

In the special meeting held on 06.08.2021, it was decided that Ranchi islanding scheme would be formed with one unit of Tenughat TPS(150-160 MW average generation) & Inland IPP(50-55 MW average generation) as participating generator & essential/critical loads of Ranchi to the tune of 180 MW. The islanding frequency & logic will be finalized based on the result of dynamic study to be carried out by SLDC Jharkhand/ERLDC.

The following timelines were decided:
1. Submission of requisite information by SLDC, Jharkhand: 2nd week of Aug' 2021.
2. Completion of Islanding simulation study by ERLDC: 4th Week of Aug' 2021
3. Review of islanding study & designing of the logic: By September'2021
4. Implementation & Operationalization of the Islanding Schemes: By February'2022

In 106th PCC meeting held on 16.09.2021 it was informed that the requisite information had already been shared by SLDC Jharkhand and the study is under progress by ERLDC. Further SLDC Jharkhand was advised to prepare the DPR by September'2021 for PSDF funding, if required.

In the 44th TCC Meeting, JUSNL updated that preparation of DPR for PSDF funding is under process and the same would be completed within 15 days.

TCC stressed on the fact that this issue is being regularly monitored by MoP and advised JUSNL for timely implementation of the Islanding Scheme.

JUSNL may update.

**Deliberation in the meeting:**

*JUSNL representative submitted that they had requested for budgetary offer from GE, Siemens and ABB and after getting the same they would prepare the DPR.*

*OCC advised JUSNL to expedite the work and prepare the DPR within the stipulated time frame.*

**In addition to above new islanding schemes, the following schemes have already been finalized and under different stage of implementation.**

**III. Chandrapura Islanding Scheme**

The scheme detail in brief is as follows:

- The CTPS-B islanding scheme is to de designed with two units of CTPS-B (2x250 MW) generating station as participating generator and connected loads at CTPS, Putki, Biada, Nimiaghata & Patherdih. The estimated off-peak and peak load in the proposed islanding system is 280 MW & 420 MW respectively.
- The islanding frequency for CTPS-B islanding system was decided as 48.4 Hz.

In special meeting held on 06.08.2021, following deliberations took place:

Representative of SPE wing of DVC updated that necessary discussion for implementation of the scheme at CTPS-B is going on with M/s GE for finalization of the scope of work & other modalities. He submitted that the tender process for implementation of islanding scheme would be initiated within two weeks.

DVC was advised to prepare the detail action plan for implementation of the scheme along with time line for each milestone and submit it to ERPC secretariat within fortnight. They were also advised to take all measures in expediting the implementation work.

In the 44th TCC Meeting, DVC representative informed that the work order for implementation of Chandrapura Islanding Scheme would be placed by March-2022 and the same would be implemented within 6 months.

DVC may update.

**Deliberation in the meeting:**

*DVC representative submitted that the scope of work has already been finalized but the budgetary offer is yet to be received from GE & Siemens. He further intimated that after getting necessary details from GE and Siemens, approval from their appropriate authority would be taken.*

*On query, he submitted that the they are following up the matter with Siemens and GE on daily basis and stated that they would resolve the issue within one week.*

*OCC advised DVC to update the status to ERPC and ERLDC.*

**IV. KBUNL Islanding Scheme**

In special meeting held on 08.06.2021, following deliberations were made:
1. KBUNL Islanding scheme would be designed considering both units of KBUNL stage-II (2x195 MW) as participating generator and connected radial loads at Gopalganj along with in-house load of KBUNL.
2. The islanding frequency will be at 48.6 Hz and this is subject to revision based on the suggestion received from KBUNL/OEM on under frequency settings of the generator units.
3. KBUNL would expedite the construction work related to implementation of Islanding scheme in switchyard. They would also take up with concerned OEM for testing and commissioning of islanding relay panel at their end.

In 106th PCC Meeting following deliberations were took place -
Regarding bay construction work at KBUNL switchyard, NTPC informed that civil work would be completed by October-21 & further testing & commissioning would be completed by January-21.

ERPC secretariat informed that time line for implementation of KBUNL islanding scheme had been decided as December-21 and advised NTPC to complete the bay construction work as well as other pending works related to implementation of the islanding scheme at the earliest.

In the 44th TCC Meeting, NTPC representative informed that the Islanding Scheme would be implemented by February-2022.

TCC advised NTPC representative to share the detailed timelines for completion of the remaining work to ERPC.

TCC further advised NTPC to implement the KBUNL Islanding Scheme as per the timeline.

KBUNL may update.

**Deliberation in the meeting:**

*KBUNL representative submitted that 4 nos. of bays are under erection, however, the civil work for construction of Bus-sectionalizer is under progress and after completion of the same erection work would be started.*

*Further, KBUNL representative expressed that the islanding frequency i.e. 48.4Hz, as proposed by ERLDC, needs to be reviewed as they have their low frequency tripping command at 48.5Hz. ERLDC representative advised KBUNL to consult with their OEM and OS and thereafter getting the inputs from OEM and OS the matter may be further discussed for finalization of the frequency.*

**V. IB-TPS Islanding Scheme**

The scheme was finalized in the special Meeting on Islanding Scheme of IB-TPS held at ERPC, Kolkata on 12th December 2018.

In special meeting held on 06.08.2021, OPGC representative informed that work order had been placed on OEM (M/s BHEL) for implementation of the Islanding scheme at IB TPS units.

OPGC was also advised to take up the issue with their highest authority as well as with the OEM for expediting the implementation of islanding scheme.

In the 44th TCC Meeting, OPGC representative informed that IB TPS Islanding Scheme would be implemented as per the given timeline i.e. April-22.

OPGC may update.

**Deliberation in the meeting:**

*OPGC representative informed that the erection and testing work has been completed. He further submitted that the islanding scheme would be implemented after consultation with OPTCL regarding the load details (144 MW).*

*OCC advised OPGC to update the status of their meeting with OPTCL regarding this to ERPC and ERLDC.*

**B3.2 Separate Display of Islanding Schemes (IS) on SCADA of respective states LDCs/Sub SLDs and RLDCs**

Hon'ble Minister for Power and New & Renewable Energy had taken a meeting to review the Islanding Schemes in Indian Power system on 28th December 2020. Further, on 19th August 2021 Secretary, Ministry of Power had taken another meeting (MoM enclosed) in this regard wherein it was decided that for real time monitoring of participating generators & critical loads of Islanding schemes, a separate display of Islanding Schemes on SCADA of respective states LDCs/Sub SLDs and RLDCs may be prepared. Delhi SLDC and NAPS IS have already prepared the display page on their SCADA.

Separate displays of the Islanding Schemes on SCADA may be set up in the SLDCs/Sub SLDs and RLDCs.

Members may discuss.

**Deliberation in the meeting:**

*OCC advised all the concerned state SLDCs to set up a separate SCADA display at their control room end so that the same can be extended to ERLDC. The display needs to be set up for both the existing and the proposed Islanding Schemes.*

*OCC advised ERLDC SCADA team to co-ordinate with the concerned utilities regarding the same.*

**ITEM NO. B.4: Reliable Power Supply to Lalmatia/Godda/Dumka areas of JUSNL**

**B4.1: Restoration of 220kV Farraka-Lalmatia S/C line**

The 220 kV Farakka-Lalmatia S/C was out of service since April 2021 due to tower collapse. The 220/132/33 kV Lalmatia substation is relying on only 132 kV lines. At present the local load at 220 kV Dumka and Godda S/S were being radially fed from 400/220 kV Maithon S/S through 220 kV Maithon-Dumka D/C and 220 kV Dumka-Godda D/C.

In 181st OCC Meeting, JUSNL representative submitted that they had got a letter from NTPC on 19th July '21 regarding anti-theft charging of the220kV Farraka-Lalmatia S/C line at 33kV level. Earlier the antitheft charging of the line was done at 11kV level but incidents of thefts have been reported in some portion of the conductor.

Further, Jharkhand representative requested NTPC to submit the details of the 33kV lines passing below 220kV Farakka-Lamatia T/L. He added that as per information obtained from their JUSNL Discom part, the 33kV lines are mostly connected with 11kV feeders and due to this it would be difficult to charge the Farakka-Lalmatia line at 33kV level in Pakur area.

NTPC representative informed that they had charged the line up to loc no.241 but in between loc no.76-82 only the top conductor was in charged condition and the bottom rest were not; because of this theft might have happened in that portion. He further added that they had already isolated the section from loc no.76-82, whereas up to loc no.76 the line is in charged condition and from loc no.82-241 the line needs to be charged.

ERPC advised NTPC and Jharkhand to explore the possibility of antitheft charging at 33kV level first and if that is not feasible then charging at 11kV can be assessed.

In the meeting held on 10th August 2021 by the Hon'ble Secretary, Ministry of Power, Government of India, ECL was directed to handover the FLTS assets on "as is where is basis" to JUSNL, the Operation and Maintenance whereof as was with the NTPC is also to be transferred to the JUSNL without any further delay and latest by 20th August 2021. Further JUSNL was directed to comply with all other directions of the CERC's order dated 21.07.2020, after the transfer of the FLTS from ECL.

In the 182nd OCC meeting, JUSNL representative submitted that the tripartite agreement for taking over of FLTS as well as O&M of FLTS is in process and the same would be done after

getting the consent from the competent authority by 4th week of August'2021.

OCC advised JUSNL to expedite the work for anti-theft charging without any further delay. JUSNL representative ensured to do the same.

ERLDC representative advised JUSNL for putting 220kV Lamatia-Godda line into service. JUSNL representative informed that they had tried to charge the line once but due to voltage rise at Lalmatia end, they had to open the line.

OCC advised JUSNL to re-check the possibility of charging the 220kVLamatia-Godda line for reliable power supply to Lalmatia.

In the 183rd OCC meeting, JUSNL representative informed that the proposal for taking over of FLTS has been placed before the BoD of JUSNL for approval.

JUSNL may update.

**Deliberation in the meeting:**

*JUSNL representative submitted that the agreement has been signed among NTPC, ECL and JUSNL. He further intimated that a joint patrolling of the line is yet to be done by them.*

*ERLDC representative opined that restoration of the 10 nos. of collapsed towers may be done first on priority basis.*

*JUSNL representative stated that the estimate for restoration of the lines has already been approved by their BoD and Govt. of Jharkhand has been approached for fund requisition. In the mean time the tendering process would be finalized and after getting the necessary fund approval the work order for the same would be placed.*

*On query, JUSNL representative ensured that the line would be restored by June'22.*

**B4.2: Commissioning of 220kV Tenughat-Govindpur line**

In 179th OCC meeting, ERLDC representative stressed over the fact that commissioning of 220kV Tenughat-Govindpur line would increase the system reliability and the said line may be commissioned at the earliest.

In 181st OCC Meeting, Jharkhand representative submitted that as per the information received from Powergrid the line would be ready by July'21 end and it would take another 15 days for getting the necessary Statutory Clearance.

OCC advised Jharkhand to apply for the necessary Statutory Clearance in the meanwhile so that further delay can be avoided when the line gets ready.OCC advised Jharkhand to co-ordinate with Powergrid and get the said line ready by 15th August 21.

In the 182nd OCC meeting, JUSNL representative submitted that they had already got all the Statutory Clearance. He further added that only one railway crossing is pending which is expected to be completed by 10th Sept'21.

In the 183rd OCC meeting, JUSNL representative submitted that all pending work has been completed and final checking of the line is under progress.

They intimated that the line would be charged by first week of Oct'21.

JUSNL may update.

**Deliberation in the meeting:**

*JUSNL representative submitted that the line would be charged by 26.10.2021.*

*OCC advised JUSNL to update the status to ERPC and ERLDC*.

**B4.3: Status of O & M agreement with Powergrid for bay equipments at Maithon end and resolution of auto recloser issues in the 220 kV Maithon-Dumka Lines**

In 103rd PCC meeting, during discussion of tripping of 220 kV Maithon-Dumka line-2 on 15/05/21, it was informed that the auto-recloser in the said line is not in operation due to some issues in PLCC. It was also come to notice that there was no formal agreement between JUSNL &Powergrid for O & M of the bay equipment at Maithon end. As a result, bay equipment at Maithon end for 220 kV Maithon-Dumka D/C lines are not being maintained properly.

In 181st OCC Meeting, Jharkhand representative submitted that some queries along with few finance observations had been raised to Powergrid in this regard. However, complete reply from Powergrid side is yet to be received and as soon as they receive the response from Powergrid, they would proceed for the agreement. However, in principle they are ready for the agreement.

ERPC opined that as Farakka-Lalmatia line is not in service at present, Maithon-Dumka line is of vital importance and healthiness of PLCC at both ends is to be ensured.

OCC advised Jharkhand to take up the necessary rectification work for ensuring the healthiness of the PLCC. In this regard, Powergrid has also given consent to Jharkhand for the necessary PLCC work at Maithon end.

Jharkhand representative assured that the PLCC would be restored by 15th August 21.

In the 182nd OCC meeting, JUSNL representative submitted that Powergrid had submitted the revised estimate and the same is in the process for approval by competent authority. He further informed that it would be completed by 1st week of September'2021.

In the 183rd OCC meeting, JUSNL representative intimated that in-principle approval for the O &M agreement had already been accorded to Powergrid. Further, signing of the agreement would be completed by September'21.

JUSNL may update.

**Deliberation in the meeting:**

*JUSNL representative submitted that the agreement would be signed after getting necessary approval from their Finance Wing.*

**ITEM NO. B.5: Outage of Important Transmission System.**

**B5.1. 132kV Sagbari–Melli**

Sikkim vide mail dated 09.06.2021 updated the following status:

1) In loc 82,83 & 84 we have low ground clearance which need hill cutting but if needed TL can be charged after putting temporarily barbed wire fencing .

2) In loc 98-99 a house had been constructed just below the line and warning had been issued to the owner for not to do vertical extension of the house till any such arrangement is made.

3) In loc 116 &117 land owner demanding for intermediate tower and not allowing for us to clear the jungles.

4) Loc 128 is in dilapidated condition due to sinking effect posing threat to lives and properties. Local public are asking to shift the tower in safe place before restoration of supply in the TL.

5) 80% of jungle clearance has been completed and remaining 20% is in Forest area most of it is under west district and waiting for permission from Forest department.

6) The delay in obtaining permission for following trees in forest land is that it cannot be ascertained whether FCA clearance during construction of TL was obtained as the record is not available either in power department or in DFO Office. Regarding this in the it had been told by ERPC that once obtaining environment clearance at the time of construction there need not to take permission for further clearance of ROW from Forest dept and this matter is been conveyed to the Forest department but they informed us as per Forest Act of Sikkim state permission has to be obtained for fresh felling with payment of compensation. File for approval is being send to conservator of Forest from DFO on 10/6/2021.

In the 181st OCC meeting, Sikkim representative submitted that for the rest 20% work, they are yet to get clearance from the Forest Department. He further informed that there are also some RoW issues in that portion of the line. Further, ERLDC representative stressed over the fact that being a very important line, the restoration of the 132kV Sagbari–Melli linemay be done at the earliest.

OCC advised Sikkim to take up the matter with Forest Department for obtaining necessary clearance and also to resolve the ROW issues without any further delay.

In the 182nd OCC meeting, Sikkim informed that the matter is under persuasion.

In the 183rd OCC meeting, the agenda could not be discussed as Sikkim representative was not available in the meeting.

Sikkim may update.

**Deliberation in the meeting:**

*The agenda could not be discussed as Sikkim representative was not available in the meeting.*

**B5.2. 220kV Pandiabili - Samangara D/C**

220kV Pandiabili-Samangara D/C line tripped on 03-02-2019 during the event of Fani due to Tower collapse. 48 no towers got fully damaged and 12 no towers got partially damaged. Presently the line is charged from Pandiabilli end up to location no 58. It is a very important line for supplying power to Puri area. The line is under outage more than 2 years.

In the 182nd OCC meeting, OPTCL representative submitted that the restoration work for 220kV Pandiabili - Samangara D/C line has been assigned to Powergrid. He further added that redesigning of tower in view of change of wind zone from Zone 4 to Zone 6 has also been taken up by Powergrid.

On query, OPTCL representative informed that the line is expected to be restored by March'2022.

ERLDC representative expressed that as 220kV Pandiabili - Samangara D/C line is of utmost important, thus the restoration of the said line may be expedited.

OCC advised OPTCL to expedite the work and also advised OPTCL to submit the work schedule mentioning the timelines for completion of designing, procurement and erection activities to ERPC and ERLDC.

In the 183rd OCC meeting, OPTCL representative informed that design of all the tower foundations of subjected line has been changed from open cast to pile foundation based tower. Therefore, the restoration of the line would take considerable time. He submitted that restoration of the line is expected by June'23.

OCC advised OPTCL to submit the action plan along with the time line for restoration of the line.

OPTCL may update.

**Deliberation in the meeting:**

*OPTCL representative submitted that the restoration work has been undertaken by Powergrid. He added that DA & DD type tower design has already been tested and passed by CPRI, however, the prototypes of DB & DC type tower are still under testing. Once the testing of the same is successfully completed, the action plan of the restoration work would be submitted by Powergrid.*

*OCC advised OPTCL to share the action plan to ERPC & ERLDC.*

**B5.3. 440/220kV 315 MVA ICT 2 at Meeramundali:**

400KV/220KV 315 MVA ICT 2 at Meeramandali tripped on 21-02-2021 due to fire hazard at Meeramundali SS. The ICT is under outage since then. Meeramundali S/S is serving the important load of the Odisha. Long outage of an ICT at such crucial S/S may hamper the reliability of the Grid.

In the 182nd OCC meeting, OPTCL representative submitted that the old ICT, which was completely damaged, would be replaced by a new one. The new 315 MVA ICT of BHEL make has already arrived at site and the foundation modification work is going on. OPTCL representative stated that the replacement work is expected to be completed by 30th Nov'21.

OCC advised OPTCL to expedite the work and also to share the work schedule of the same to ERPC & ERLDC for effective monitoring of the same.

In the 183rd OCC meeting, OPTCL representative submitted that the foundation work has been completed and the remaining work is expected to be completed by Nov'21.

OPTCL may update.

**Deliberation in the meeting:**

*OPTCL representative submitted that the work would be completed by December'21. He further mentioned that representative of BHEL (OEM) is yet to visit the site, however, the civil construction work has been completed and the said transformer is on the plinth.*

*OCC advised OPTCL to expedite the work and complete it by 31st Dec'21.*

**ITEM NO. B.6: Inadequate reactive power performance of generating units during the high voltage condition.**

Since 180th ER OCC meeting, ERLDC highlighted the issue of inadequate reactive power absorption by generating units during the high voltage condition. Due to inadequate reactive power absorption by generating units, voltage at various 400 kV and 765 kV remained high. As per ERLDC SCADA data, following regional generating units' (ISGS & IPP) reactive power absorption was inadequate during September 2021.

| Name of generating units | Maximum MVAr absorption limit (as per capability curve) | MVAr absorption during maximum voltage (as per ERLDC SCADA data) | Maximum voltage during August 2021 |
|---|---|---|---|
| Barh STPS Stage II - 660 MW Unit - 5 | > 200 MVAr | <70 MVAr | 419 kV |
| Nabinagar STPP Stage I - 660 MW Unit -1 | > 250 MVAr | <45 MVAr | 420 kV |
| MPL - 525 MW Unit -1 & 2 | > 150 MVAr | < 20 – 50 MVAr | 413 kV |
| JITPL - 600 MW Unit -1 & 2 | > 200 MVAr | 0 MVAr (Unit was generating 100-130 MVAr) | 415 kV |

The details of the same are also attached at **Annexure-B6.**

During September 2021, satisfactory MVAr performance has been observed at Kahalgaon STPS. MVAr performance of Barh STPS was satisfactory in earlier months. Reason for poor performance during September 2021 may be shared. Other generating stations may share action taken at their end to improve reactive power performance.

NTPC Barh, NPGC, MPL & JITPL may update.

**Deliberation in the meeting:**

*OCC advised NTPC Barh to share the reason for poor performance during the month of September 2021 to ERPC and ERLDC.*

*MPL representative submitted that from 15th Sept'21 onwards the MVAr performance has been improved. He further added that an alarm system for high voltage has also been installed at their control room.*

**ITEM NO. B.7: Agenda by OPTCL**

**1. Splitting of Budhipadar 220kV Bus due to high fault level.**

OPTCL vide mail dated 30.08.2021 submitted that the fault level at Budhipadar 220 kV bus during steady state is 42.79 kA which is beyond the breaker rating of 40 kA.OPTCL has conducted the system study and the study reveals that in the base case the fault level is 42.79 kA while during splitting the fault level at the two buses are 30.40kA and 12.72kA. ERPC may advise suitable scenario to mitigate the fault level at Budhipadar.

In the 183rd OCC meeting, OPTCL informed that the fault level at 220 kV Budhipadar S/s is found to be crossed more than 42 kA and there is multiple generating units connected to 220 kV buses. In order to reduce the fault level, they proposed to segregate the 220 kV bus &connected feeders by opening the bus coupler breaker. In this regard they had carried out a study.

ERLDC pointed out that the proposal of segregating the bus by opening of bus coupler breaker reduces the overall reliability of the system.

OPGC informed that in the given study all four evacuating lines from IB TPS is connected to same bus at Budhipadar thereby affecting the reliability of the evacuation of IB TPS generation in case of any bus fault at Budhipadar.

ERPC secretariat informed that as per the decision taken in the special meeting on "implementation of SPS at Budhipadar S/s" the 220 kV Vedanta-Budhipadar D/C is to be made off after commissioning of second 220/132 kV ATR at Budhipadar and as such Vedanta injection at Budhipadar shall not be considered in the study. Further on suggestion of proper bus split at Budhipadar by bus-sectionalizer, OPTCL submitted that it would take considerable time to implement the proper bus splitting scheme.

After detailed deliberation, OCC advised OPTCL to carry out revised study in consultation with OPGC & SLDC Odisha for different scenarios and submit the report to ERPC/ERLDC for further discussion in this regard.

Members may update.

**2. Splitting of Meramundali 220 kV Bus due to high fault level.**

OPTCL vide mail dated 15.09.2021 submitted that the fault level at Meramundali 220 kV bus during steady state is 40.89 kA which is beyond the breaker rating of 40 kA. OPTCL has already conducted the system study. However, ERPC may advise suitable scenario to mitigate the fault level at Meramundali.

In the 183rd OCC meeting, after detailed deliberation, OCC advised OPTCL to carry out revised study in consultation with OPGC & SLDC Odisha for different scenarios and submit the report to ERPC/ERLDC for further discussion in this regard

OPTCL may explain.

**Deliberation in the meeting:**

*OPTCL representative submitted that due to the ongoing festive month, meeting with OPGC and SLDC Odisha could not be convened. He further intimated that a meeting would be convened by 1st week of November'2021 and the outcome of the meeting would be shared with ERPC & ERLDC.*

**ITEM NO. B.8: Consideration of outages i.r.o. commissioning of 50 MVAR natural ester oil based Reactor at Maithon SS- Pilot Project**

Powergrid vide letter dated 30.09.2021 submitted the following:

400 KV ester oil based 50 MVAR 3-phase reactor has recently (On dated 27.08.2021) been commissioned in Maithon SS. Gaya -I LR at Maithan has been replaced with ester oil based green reactor. This has been done as a pilot project for understanding/ experiencing the effect of natural ester oil in EHV equipment's in operation.

As gathered from various sources, this is the globally first 400KV level ester oil based Reactor commissioned.

Ester oil is formulated from edible seeds (In this case Soybean). Ester oil is sustainable, renewable and recyclable providing sustainable environmental protections. This oil offers strong benefits for transformers in environmentally sensitive locations. In the event of an oil leakage release, these oils are quickly and thoroughly biodegrade in the environment and contain no harmful petroleum, halogens, silicones or other questionable materials. The chemical properties of ester dielectric fluids enhance transformer insulation performance and life expectancy, minimizing the impact of moisture.

In coming days, definitely, more equipment's will be coming with natural ester oil as a part of green mission of central government and also enhancing life of the insulations of the Transformer/ Reactors. In effect this will lead to greater flexibility for the installed assets and in terms of asset life, the insulation system can last up to three times longer than in a mineral oil filled transformer.

For adopting to a major step towards change in insulating oil medium, Maithon Reactor will be definitely be remembered as important step. Moreover, the experience gathered during entire process is under documentation and supposed to be a part of CIGRE Working group on Transformer / Reactor.

Shutdown for original oil based reactor was taken from 29.06.2021 08:15 to 27.08.21 20:06.This total outage hours may be considered as outage for system upgradation purpose towards addition of a prestigious element in Indian Power Grid.

Powergrid may explain. Members may deliberate.

**Deliberation in the meeting:**

*OCC appreciated the initiative taken by Powergrid and opined that the said total outage hours may be considered as outage for system upgradation purpose.*

**ITEM NO. B.9: Additional Agenda**

**1. Data for preparation of LGBR of ERPC for the year 2022-23**

As per the IEGC under Clause 2.4.2 (d) & (e) issued by CERC on 28.04.2010, the planning of maintenance of generating units of various generating companies of the region as well as outage of transmission system on annual basis in respect of Eastern Region for the year 2022-23 is to be finalized by January 2022. In this context, the Director (OPM), CEA desired the approved programme of planned maintenance in respect of Thermal, Hydro stations in the region for the year 2022-23 and the estimated energy requirement(MU) and peak/off-peak demand (MW) for the next year for each state / utility shall be furnished by 27th, October-21. To facilitate the preparation of LGBR of Eastern Region, the following data/ information for the year 2022-23 in respect of the constituents/ generators of Eastern Region is required:

State and Central Sector Generators/ IPPs/CPPs/SLDCs/Utilities

i) The Unit wise and Station wise monthly energy generation proposed from existing units during 2022-23 (thermal, hydro and RES).
ii) Annual maintenance programme for each of the generating units (thermal, hydro and RES)
iii) Generating units under R&M/ long outage indicating date of outage and reasons of outage and expected date of return (thermal and hydro both.).
iv) Partial and forced outage figures (in %) of generating units and aux.power consumption for the last 3 years.
v) Month wise peak/off-peak demand (MW) – restricted and unrestricted.
vi) Month wise energy requirement (in MU).
vii) Month wise and source wise power (both MU & MW) purchase and sale plan
viii) Schedule of commissioning of new generating units during 2022-23 and unit-wise monthly generation programme (in MU) upon COD
ix) Allocation of power from new generating units

**ISTS/STU/Transmission licencees in the states and Central Sector**

x) Month wise and annual planned outage of transmission system (Transmission lines 220kV and above / ICTs / Reactors/ other elements (TCSC, SC etc.).

All the concerned utilities are advised to send the above information (as applicable) on or before **27.10.2021** for compilation of data and preparation of draft LGBR **of ER for the year 2022-23.**

Members may update.

**Deliberation in the meeting:**

*OCC advised all the constituents to submit their month wise generation, availability, proposed schedule maintenance etc. to ERPC positively by 31st Oct'2021, so that the same can be complied for LGBR of ER for the year 2022-23.*

**2. Islanding Performance and Observations during recent Islanding incidents in CESC system**

CESC islanding performance and frequency variation for past few Islanding events were checked for Island stability. Based on the analysis by ERLDC, possible challenges for island survival are listed below.

- Oscillating Variation of frequency after island formation in Budge-budge frequency is observed up to (0.5-1 Hz) and was varying continuously till it got synchronized with grid at Howrah point.
- In event 3, Budge-Budge Unit generation was also oscillating and its root cause needs to be looked into which is ultimately driving the frequency of island.
- Any cyclic load changes or other behavior within the island need thorough analysis as these may also be the source of observed variation. Variation of traction and Metro load may also be studied within the island as it impacts on overall frequency stability within the islanded system.
- Under frequency load shedding setting as shared within the island starts from 49.4 Hz and may cause operation of UFR relay in some cases inside the island. This would be detrimental for island survival as observed for 2 events, Frequency dipped up to 49.5 & 49.6 Hz due to these variations.
- Above observation and frequency variation pattern was also observed during event of 28thApril 2020.

Detailed report is attached at **Annexure A.**

CESC may explain.

**Deliberation in the meeting:**

*CESC representative submitted that their team would visit ERLDC on 27th Oct'21 for detailed discussion on the incidents*.

**3. Low frequency oscillation observed on 20th September 2021 due to Budge-Budge Plant of CESC.**

Low Frequency Oscillation of 0.875 Hz was observed between 03:53 Hrs to 03:57 Hrs on 20th Sept 2021 near Subhasgram area. The magnitude of oscillation was maximum near Subhasgram and started reducing on moving away from Subhasgram. Observed LFO was of Local mode which indicates that the oscillation initiated with hunting of any nearby unit.
It was observed that maximum variation in MW oscillation was observed for Budge-budge units, which appears to be the source of oscillation. It was also observed that as MW of units reduced at Budge Budge units, this oscillation also damped.

Detailed report from ERLDC is attached at **Annexure B.**

CESC may explain.

**Deliberation in the meeting:**

*CESC representative submitted that their team would visit ERLDC on 27th Oct'21 for detailed discussion on the incidents*

**4. Event of Smelter Load tripping at Sterlite CPP on 20th & 28th September 2021-ERLDC**

Smelter load tripping of 400 kV Sterlite CPP was observed on two occasions i.e., on 20 & 28th September 2021 due to electrical disturbance in the downstream side which resulted into Smelter load reduction of more than 1000 MW.
- This has caused under drawl of Odisha by more than 1000 MW. Subsequently with SPS action at Sterlite, injection to grid was limited up to 800 MW.
- Intimation of such events is necessary in real time as grid flow pattern gets affected considerably and also this is important for frequency response assessment purpose.

Report by ERLDC is attached at **Annexure C.**

SLDC Odisha may explain.

**Deliberation in the meeting:**

*ERLDC representative submitted that due to the Smelter load tripping at Sterlite CPP, there was huge under drawl on that day. Odisha tried to mitigate the problem by reducing their hydro but the under drawl persisted for more than one hour.*

*Odisha representative mentioned that they had taken remedial actions like reducing the hydro generation but still the issue of under drawl persisted. He further added that the matter would be discussed with their higher authority and the details of the same would be shared with ERPC and ERLDC by 10th November'21.*

*OCC advised Odisha to send their action plan regarding mitigating the above mentioned issue so that it can be discussed further in next OCC.*

**5. Technical overview of AMR Data Center hardware and application refreshment program for Eastern Region**

AMR Hardware and Software/ Application installed and running since 2013 at ERLDC for all the constituents of ER. All the Hardware equipments installed in the system has already elapsed almost 08 Years and being IT equipment, as per present CERC regulation already usable life is consumed.

Accordingly for running the system smoothly, with latest Cyber security aspects/compliances, both, Hardware and Software refreshment is required. New Hardware will be installed as per the CEA/CERC guideline for IT Network equipment along with New AMR application will be developed, with latest JAVA version and new features.

In view of above, M/S. TCS shall deliver a presentation on above for better understanding. Further, after finalization of technical aspects/features, necessary commercial offer shall be submitted.

Member may please discuss.

**Deliberation in the meeting:**

*Powergrid representative submitted that AMR Hardware and Software/ Application which have been running since 2013 at ERLDC for all the constituents of ER became old and have already consumed its usable life. He also added that as per CERC guidelines regarding Cyber security aspects/compliances both the Hardware & Software need to be updated.*

*M/s TCS representative gave a brief presentation on the same.*

*OCC agreed to give go ahead to Powergrid for finalizing the technical aspects so that financial cost assessment can be done. Powergrid representative informed that they would provide the cost estimate for the upgradation project within 10 days.*

*Further, OCC advised Powergrid to co-ordinate with ERLDC for finalization of the technical aspects.*

**6. PLCC Issue in 400kV Baripada-Kharagpur T/L : Agenda by West Bengal**

**Deliberation in the meeting:**

*West Bengal SLDC submitted that in 400kV Baripada-Kharagpur T/L there are some issues in PLCC. Among the two nos. channels, channel one has been rectified earlier but it has not been working properly and channel two is faulty. He further added that channel one is not stable and spare*

*parts for the same are also not available.*

*On query, Powergrid Odisha representative submitted that channel one is healthy but in channel two there is fault at Kharagpur end, however, Baripada end is healthy. He further mentioned that they had already written a letter to WBSETCL on this issue.*

*After detailed deliberation it was decided that, as per the prevailing practice, since both ends' PLCCs are owned by WBSETCL, the PLCCs at both ends are to be replaced by WBSETCL.*

## PART C: ITEMS FOR UPDATE

### ITEM NO. C.1: ER Grid performance during September 2021

The average and maximum consumption of Eastern Region and Max/Min Demand (MW), Energy Export for the month September-2021 were as follows:

| Average Consumption (MU) | Maximum Consumption (MU)/ Date | Maximum Demand (MW) Date/Time | Minimum Demand(MW) Date/Time | Schedule Export (MU) | Actual Export (MU) |
|---|---|---|---|---|---|
| 500.27 | 529.04 04-09-2021 | 25110 MW, 04-09-2021 22:21 Hrs. | 15515MW, 15-09-2021 at 05:53 Hrs. | 4003 | 3916 |

Members may note.

**Deliberation in the meeting:**

*Members noted.*

### ITEM NO. C.2: Performance of Primary frequency response of ER generating units

Frequency response characteristics (FRC) have been analyzed pan India for one event of sudden frequency change that occurred in September 2021.
The details of this event and the overall response of the Eastern region have been summarized in following table.

| Event | Frequency Change | ER FRC |
|---|---|---|
| **Event 1: On 28th September 2021 at 17:48:31:960 Hrs, 1500 MW smelter load loss at Sterlite in ER.** | **49.962 Hz to 50.090 Hz.** Later stabilized at 50.031 Hz. | **58.5 %** |

Summary of the response of regional generating stations/SLDCs are given in following table.

| Generating Station/ SLDC | Response observed |
|---|---|
| NTPC Farakka | |
| NTPC Kahalgaon | |
| NTPC Talcher | |
| NTPC Barh | |
| NTPC Darlipalli | |
| BRBCL | |
| NPGC Nabinagar | |
| GMR | |
| JITPL | |
| MPL | |
| Adhunik | |
| Teesta V HEP | |
| Teesta III HEP | |
| Dikchu HEP | |
| Bihar SLDC | |
| Jharkhand SLDC | |

| | |
|---|---|
| DVC SLDC | |
| GRIDCO SLDC | |
| WB SLDC | |

Non Satisfactory response

Response observed but non adequate

Satisfactory response

**Reason for non-satisfactory response may be explained.** Detailed analysis is attached at **Annexure-C2.**

Generator end data/FRC are yet to be received from following generating stations/SLDCs

- NTPC Kahalgaon
- NTPC Talcher
- Bihar SLDC
- Jharkhand SLDC
- WB SLDC

Reason for non-sharing of generator end data/FRC may be shared.

**Deliberation in the meeting:**

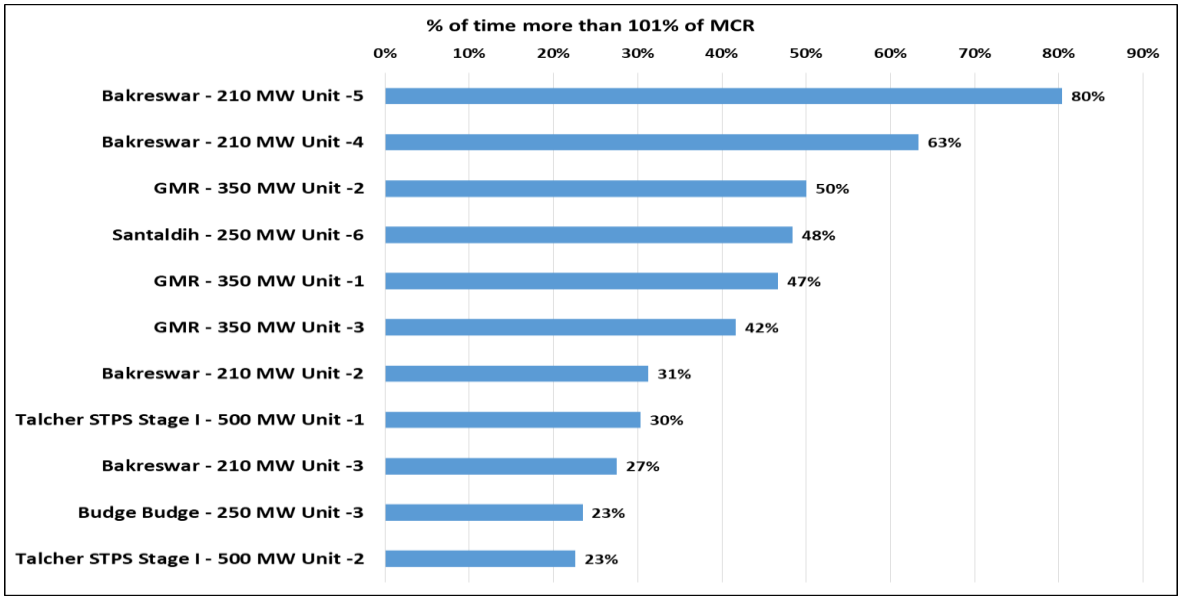
*OCC advised all the concerned utilities to attend the meeting going to be held on 28th Oct'21 by ERLDC and if any decision/action taken in the meeting needs further deliberation, that would be placed in the next OCC meeting.*

**ITEM NO. C.3: Running Generating units at more than MCR**

As per IEGC 5.2 (h), the generating station shall not resort to Valve Wide Open (VWO) operation of units whether running on full load or part load, and shall ensure that there is margin available for providing Governor action as primary response.

Generating stations failed to provide adequate primary frequency response because of running units at more than MCR and running machines with insufficient PFR margin. Same issue was highlighted and discussed during meeting held on 31st May 2021 and 31st August 2021 to evaluate the performance of primary frequency response provided by ER generating units.

As per SCADA data stored at ERLDC, injection more than 101% of MCR limit (1% margin is considered to offset SCADA measurement error) has been captured for following generating units during September 2021:




Same issue is being highlighted by ERLDC since 180th ER OCC meeting and over injection has been observed for above generating units in spite of repeated intimation.

**WBSLDC/WBPDCL/CESC, GMR/Odisha SLDC, Talcher STPS & GMR are requested to avoid over injection more than MCR limit.**

**Deliberation in the meeting:**

*OCC advised all the concerned utilities to attend the meeting going to be held on 28th Oct'21 by ERLDC and if any decision/action taken in the meeting needs further deliberation, that would be placed in the next OCC meeting.*

**ITEM NO. C.4: Review of implementation of PSDF approved projects of ER.**

In 10th NPC meeting held on 09.04.2021, RPCs were advised take up the matter for improvement of the fund disbursement and expeditious implementation of the sanctioned projects under PSDF.

In view of the above, status review of the projects being executed under PSDF funding in Eastern Region would be carried out on regular basis for expediting the projects. All the constituents are requested to furnish/update the status of their respective project in every month.

Concerned utilities may update the present status of the project as given in the **Annexure-C4**.

Members may update.

**Deliberation in the meeting:**

*The updated status is enclosed as **Annexure-C4**.*

**ITEM NO. C.5: Status of implementation of AGC as a pilot project in States.**

In 42nd TCC, DVC intimated that AGC shall be implemented in unit 7 and 8 of Mejia as per the given schedule by 31st July 2020.

WBPDCL informed that they have already collected offer from Siemens for implementation of AGC and they are awaiting the concurrence from SLDC.

SLDC, WB informed that they are not in a position to implement AGC unless a clear direction is given by WBERC. Further, implementation of intra state DSM is a prerequisite for implementation of AGC in the states.

It was decided to request CERC to include this as an issue in the Agenda for discussion in the meeting of Forum of Regulators.

OCC advised SLDC Odisha and OPGC to interact with Barh NTPC & ERLDC to get the technical specifications & the procedure for implementation of AGC.

| State | Station/Unit | Deliberation in 182nd OCC Meeting |
|---|---|---|
| DVC | Mejia unit#7 &8 | DVC representative informed that NIT is to be floated. |
| West Bengal | Unit-5 of Bakreswar TPP | OCC referred it to next TCC meeting. |
| Odisha | Unit#3 of OPGC | OPGC representative submitted that PO would be issued to M/s Siemens by 27th August'2021. He further informed that shutdown for the Unit#3 would be taken during the month of Oct'21 and AGC would be implemented during that period. |

In the 183rd OCC meeting, OPGC representative informed that work order has been issued to M/s Siemens for implementation of AGC. The work would be carried out during the unit shutdown which is scheduled from 18.10.2021.

Members may update.

**Deliberation in the meeting:**

| State | Station/Unit | Deliberation in 182nd OCC Meeting |
|---|---|---|
| DVC | Mejia unit#7 &8 | *DVC representative informed tha NIT is to be floated.* |
| Odisha | Unit#3 of OPGC | *OPGC vide email dated 25th Oct'21 informed that some additional data is needed from SLDC Odisha and after getting the same AGC would be implemented.* |

**ITEM NO. C.6: Primary Frequency Response Testing of ISGS Generating Units**

In the 180th OCC meeting, ERLDC representative informed that as per communication received form GMR and JITPL PFR testing has been scheduled by Siemens in August'21.

MPL representative submitted that they would carry out the PFR testing in the month of July'21.

In the 181st OCC meeting, ERLDC representative informed that PFR testing of MPL got postponed due to some technical issue. He further informed that PFR testing is going on in APNRL and that of NPGC and BRBCL is scheduled in the last week of July'21 and 1st week of August'21 respectively.

In the 182nd OCC meeting, ERLDC representative submitted that During July – August 2021, PFR testing has been conducted at the following generating units:

1. Adhunik TPS Unit 1 & 2
2. BRBCL TPS Unit 2 & 3
3. Nabinagar STPS Unit 1
4. Kahalgaon STPS Unit 1

In the 183rd OCC meeting, ERLDC representative updated that PFR testing for Unit# 1 & 2 of GMR had been completed.

The updated status is enclosed at **Annexure-C6**.

Members may update.

**Deliberation in the meeting:**

*The updated status is enclosed as **Annexure-C6**.*

**ITEM NO. C.7: Testing of Primary Frequency Response of State Generating units by third party agency.**

In the 171st OCC Meeting, OCC advised all the SLDC's to prepare the action plan for their state generators and submit the details to ERPC and ERLDC at the earliest.

DVC vide-mail dated 6th Oct 2020 informed that the Primary Frequency Response Testing may be carried out for the following generating units:

| Sl. No. | Name of the Units | Capacity (MW) |
|---|---|---|
| 1 | BTPS-A | 500 |
| 2 | CTPS Unit #7&8 | 2X250 |
| 3 | DSTPS Unit#1&2 | 2X500 |
| 4 | KTPS Unit # 1&2 | 2X500 |
| 5 | MTPS Unit # 3 to 8 | 2 X 210 +2 X 250 + 2X 500 |
| 6 | RTPS Unit # 1 & 2 | 2 X 600 |

In the 181st OCC meeting, WBPDCL representative submitted that they had received budgetary offer from M/s Siemens and M/s Solvina. Subsequently they had raised some

queries to M/s Solvina in this regard. After getting the response they would be in a position to place the order.

SLDC, Jharkhand representative submitted that no update has been received from Tenughat. OCC advised SLDC, Jharkhand to collect the necessary details and intimate ERPC and ERLDC at the earliest.

DVC representative submitted they would update the details by 22nd July'21.

OHPC representative informed that response of some financial queries is yet to be received from
Solvina and after getting the response they would place the order by August'21.

In the 182nd OCC meeting, WBPDCL representative submitted that they had taken the budgetary offer form Siemens and Solvina and the same is in process for administrative approval. PO would be issued to the selected party after getting the necessary approval.

Jharkhand representative submitted that no update has been obtained from Tenughat in this regard.

DVC representative submitted that the Indent for this work had been placed in April'21 and they are in the process for floating the NIT.

OHPC representative submitted that the order would be issued to M/s Solvina by 1st week of September'2021.

In the 183rd OCC meeting, OHPC representative submitted that work order has been placed on M/s Slovania and they are planning to conduct the test in the month of Nov'21 for unit#5 of Rengali & Unit #4 of Indravati HEP.

TVNL representative submitted that due to coal shortage issue, the PFR testing of Unit #1 could not be planned. The same would be taken up once the coal supply gets improved.

WBPDCL representative submitted that they are yet to receive the administrative approval. The work order would be placed after getting the approval.

Members may update.

**Deliberation in the meeting:**

*OHPC representative submitted that the order has been placed to M/s Solvina on 3rd Sept'21 and the testing of unit#5 of Rengali & Unit #4 of Indravati HEP are scheduled to be conducted in the month of Nov'21.*

*TVNL representative was not available in the meeting.*

*WBPDCL representative submitted that the tender has been floated and the bid opening is scheduled in the 1st week of Nov'21. He further informed that the order would be placed by 3rd week of November'21.*

**ITEM NO. C.8: PSS tuning of Generators in Eastern Region.**

The PSS tuning activity is mandatory in line with IEGC and CEA regulations. The Procedure of PSS tuning for helping utilities in getting this activity carried out has been approved in 171st OCC Meeting and shared with all concerned utilities.

In the 182nd OCC meeting, WBPDCL representative informed that PSS tuning for Sagardighi unit#2 PSS tuning had been done on 21st Aug'21. OCC advised WBPDCL to share the report of the same to ERLDC & ERPC.

CESC representative submitted that PSS tuning for Budge Budge unit#1 & 2 was done on 16th& 17th Aug'21 respectively.

ERLDC representative informed that PSS tuning for Mejia unit#4, Mangdechu unit#3 & 4, DPL unit#7 and Kahalgaon unit#2 was done satisfactorily. However PSS tuning for APNRL was not successful.

DGPC Bhutan representative submitted that for Chuka, Tala and Mangdechu they had shared their report to ERPC.

The updated schedule for PSS tuning of the units is attached at **Annexure-C8**.

In the 183rd OCC meeting, DVC representative informed that for PSS tuning for Unit#1 of Koderma TPS was carried out on 07/09/2021.

OCC advised DVC to submit the test report to ERLDC/ERPC.

Members may update.

**Deliberation in the meeting:**

*ERLDC representative submitted that PSS tuning for Teesta-III is scheduled on 17th Nov'21. However, update from Bhutan is still pending.*

*OHPC representative mentioned that PSS tuning for all the units of Rengali was carried out from 10th to 13th Oct'21 and was tuned properly. He further added that the report would be shared to ERPC and ERLDC.*

**ITEM NO. C.9: Status of UFRs healthiness installed in Eastern Region.**

**Members may update** the status of UFR healthiness installed in Eastern Region.

**Deliberation in the meeting:**

*Status of UFR healthiness has been received from all the concerned utilities.*

**ITEM NO. C.10: Status of Islanding Schemes healthiness installed in Eastern Region.**

As per the decision taken in the meeting held on 8th July 2021 and chaired by member (GO&D), CEA, data in prescribed formats may be submitted by concerned utilities to RPCs on monthly basis to certify the healthiness of the Islanding Schemes.

**a. Format - I for RLDC/SLDCs**

| S.NO | Name of Islanding Scheme | Healthiness of Communication channel |
|---|---|---|
| | | |

**b. Format - II for GeneratingStation**

| S.NO | Name of Islanding Scheme | Healthiness of Islanding Relay | Healthiness of Communication channel |
|---|---|---|---|
| | | | |

**c. Format - III for Transmission Utility/DISCOMs**

| S.NO | Name of Islanding Scheme | Elements considered for tripping to from Island | For communication based tripping logic of feeders | For UFR based tripping logic of feeders | |
|---|---|---|---|---|---|
| | | | Healthiness of Communication channel | Healthiness of PT Fuse and status of DC supply to UFR relay* | Healthiness of Relay# |
| | | | | | |

* Where dedicated UFR relay have been installed for tripping of the feeders under islanding scheme.
# Where UFR functions have been enabled within backup protection relay of the line.

**d. Format - IV for collecting Relay details of the Islanding scheme.**

The following format may be used to get Relay details of the Islanding scheme:

| S.NO | Description | UFRs-for load relief (A) | df/dt -for load relief (B) | Relay for Island creation(C) |
|---|---|---|---|---|
| 1 | Relay location (S/s name) | | | |
| 2 | Relay make & model | | | |
| 3 | Frequency setting of the relay (at which load shedding is envisaged) | | | |

| | | | | |
|---|---|---|---|---|
| 4 | Feeder name (voltage level and source-destination name) signaled by the Islanding Relay for separation /load shedding/separation from outside grid | | | |
| 5 | Quantum of load relief due to tripping of feeder (as per state's peak of previous year) | | | |
| 6 | Quantum of load (Min, Avg, Max in MW) on the feeder (as perstate's peak of previous year) | | | |

**e. Format - V for Contact details of all Nodal Officers**

| Utility Name &Location | Name | Designation | Organization | Email ID | Mobile No. |
|---|---|---|---|---|---|
| | | | | | |

Members may update.

**Deliberation in the meeting:**

*OCC advised SLDC West Bengal to submit the status of Islanding Schemes healthiness as per the new format as given.*

**ITEM NO. C.11: Transfer capability determination by the states.**

**Latest status of State ATC/TTC declared by states during the month of Jan-2021**

| Sl No | State/Utility | TTC (MW) | | RM(MW) | | ATC Import (MW) | | Remark |
|---|---|---|---|---|---|---|---|---|
| | | Import | Export | Import | Export | Import | Export | |
| 1 | BSPTCL | 5000 | -- | 100 | -- | 4900 | -- | Nov-21 |
| 2 | JUSNL | 1499 | -- | 46 | -- | 1453 | -- | Dec-21 |
| 3 | DVC | 1458 | 2838 | 61 | 48 | 1397 | 2790 | Oct-21 |
| 4 | OPTCL | 2437 | 1412 | 85 | 59 | 2352 | 1360 | Nov-21 |
| 5 | WBSETCL | 5243 | -- | 450 | -- | 4793 | -- | Oct-21 |
| 6 | Sikkim | 189 | -- | 2.6 | -- | 186.4 | -- | Nov-21 |

**Declaration of TTC/ATC on SLDC Website:**

| Sl. No | SLDC | Declared on Website | Website Link | Constraint Available on Website | Type of Website Link |
|---|---|---|---|---|---|
| 1 | BSPTCL | Yes | http://www.bsptcl.in/ViewATCTTCWeb.aspx?GL=12&PL=10 | Yes | Static Link-Table |

| | | | | | |
|---|---|---|---|---|---|
| 2 | JUSNL | Yes | http://www.jusnl.in/pdf/download/ttc_atc_nov_2020.pdf | Yes | Static link –pdf file |
| 3 | DVC | Yes | https://application.dvc.gov.in/CLD/atcttcmenu.jsp# | Yes | Static Link-Word file |
| 4 | OPTCL | Yes | https://www.sldcorissa.org.in/TTC_ATC.aspx | Yes | Static Link-pdf file |
| 5 | WBSETCL | Yes | http://www.wbsldc.in/atc-ttc | No (Not updating) | Static Link-Table |
| 6 | Sikkim | No | https://power.sikkim.gov.in/atc-and-ttc | No (Not updating) | Static Link-Excel file |

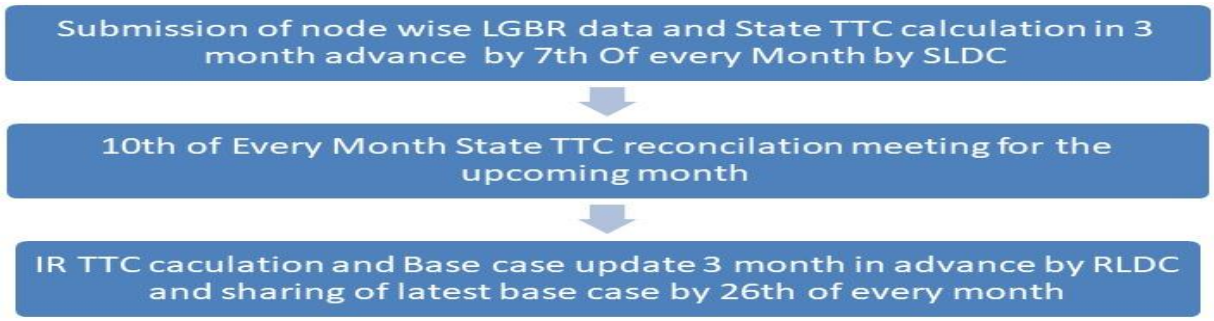
It is necessary to highlight that the ATC/TTC declaration on website need to be updated in timely manner. It is suggested that along with PDF copies, a tabular format may also kindly be provided so that it can be utilized for preparing ERLDC portal on State ATC/TTC.

In addition, ATC/TTC may be declared three months in advance and periodically reviewed based on any shutdown causing leading to any constraint.

Members may update.

**Deliberation in the meeting:**

*ERLDC representative submitted that data for the month of Jan'22 has been received from Jharkhand and data for the month of Dec'21 has been received from West Bengal. He further added that a separate meeting was conducted with each SLDC regarding for fixing the timeline for submission of ATC/TCC data and the timeline, as given below, has been agreed by all the States.*




**ITEM NO. C.12: Mock Black start exercises in Eastern Region**

Mock black start date for financial year 2021-22 is as follows:

| Sl. No | Name of Hydro Station | Schedule | Tentative Date | Schedule | Tentative Date |
|---|---|---|---|---|---|
| | | Test-I | | Test-II | |
| 1 | U. Kolab | Last week of Oct 2021 | | Second Week of Feb 2022 | |
| 2 | Balimela | Second week of Nov 2021 | | First Week of March 2022 | |
| 3 | Rengali | Second week of Nov 2021 | | First 2eek of March 2022 | |
| 4 | Burla | Second week of Nov 2021 | | First Week of March 2022 | |

| | | | | | |
|---|---|---|---|---|---|
| 5 | U. Indravati | Last week of Oct 2021 | | Second Week of Feb 2022 | |
| 6 | Maithon | Third Week of Nov 2021 | | First Week of March 2022 | |
| 7 | TLDP-III | Second week of Nov 2021 | | Second Week of Feb 2022 | |
| 8 | TLDP-IV | Third Week of Nov 2021 | | First Week of March 2022 | |
| 9 | Subarnarekha | Second week of Nov 2021 | | Second Week of Feb 2022 | |
| 10 | Teesta-V | Third Week of Nov 2020 | | Third Week of March 2022 | |
| 11 | Chuzachen | Done on 9th April'21 | | First Week of March 2022 | |
| 12 | Teesta-III | Third Week of Nov 2021 | | First Week of March 2022 | |
| 13 | Jorethang | Third Week of Nov 2021 | | First Week of March 2022 | |
| 14 | Tasheding | Second week of Nov 2021 | | First Week of March 2022 | |
| 15 | Dikchu | Second week of Nov 2021 | | Second Week of Feb 2022 | |

In the 179th OCC meeting, ERLDC submitted that Chuzachen had done the Mock Black Start on 9th April 2021.

In the 181st OCC meeting, SLDC, Jharkhand representative submitted that they would go for Mock Black Start in the 2nd week of August '21. ERLDC representative advised Jharkhand to give prior intimation regarding the Mock Black Start.

SLDC, Odisha representative informed that they would go for Mock Black Start of Balimela in the2nd week of August '21.

In the 182nd OCC meeting,OHPC representative submitted that Mock Black Start had been done for Rangali on 18th August'21 and they wouldgo for Mock Black Start of Balimela in Sept'21.

OCC advised the concerned utilities to give prior intimation to ERLDC and ERPC regarding Mock Black Start.

In the 183rd OCC meeting, SLDC Odisha representative informed that mock black start for Balimela has been scheduled in Nov-21.

Teesta III HEP representative submitted that mock black would be carried out for their plant in Nov'21 as per the schedule.

Members may update.

**Deliberation in the meeting:**

*No further update.*

## PART D: OPERATIONAL PLANNING

### ITEM NO. D.1: Anticipated power supply position during November 2021

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of November 2021 were prepared by ERPC Secretariat on the basis of LGBR for 2021-22 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is enclosed at **Annexure D1.**

Members may update.

**Deliberation in the meeting:**

*The updated anticipated power supply position for the month of November' 2021 is placed at* ***Annexure D1****.*

### ITEM NO. D.2: Shutdown proposal of generating units for the month of November 2021

Generator unit shutdown schedule for November' 2021 is given in the table:

**Proposed Maintenance Schedule of Thermal Generating Units of ER during 2020-21 in the month of Nov'2021 (as finalised in LGBR meeting for 2020-21)**

| System | Station | Unit | Capacity (MW) | Period (as per LGBR 2020-21) | | No.of Days | Reason |
|---|---|---|---|---|---|---|---|
| | | | | From | To | | |
| WBPDCL | Bakareswar TPS | 1 | 210 | 01.11.2021 | 25.11.2021 | 25 | AOH / BOH |
| | Bakareswar TPS | 3 | 210 | 28.11.2021 | 07.12.2021 | 10 | PG Test |
| | Sagardishi TPS | 4 | 500 | 10.11.2021 | 19.11.2021 | 10 | PG Test |
| CESC | Budge-Budge TPS | 1 | 250 | 20.11.2021 | 26.11.2021 | 7 | Boiler Certification |
| | Budge-Budge TPS | 2 | 250 | 28.11.2021 | 12.12.2021 | 15 | Boiler Overhauling |
| DVC | Raghunathpur TPS | 2 | 600 | 15.11.2021 | 20.12.2021 | 36 | AOH, DeNOx Burner, FGD, LPT, Gen. maint. |
| NTPC | FSTPS | 3 | 200 | 09.11.2021 | 08.12.2021 | 30 | Boiler + FGD works |
| | KhSTPS | 7 | 500 | 15.11.2021 | 29.12.2021 | 45 | Boiler+Turbine+ Combustion Modification **(Already availed in Aug'21)** |

**Note:**

1. NTPC Darlipali STPS requested for shutdown of Unit 1 (800MW) from 15.11.2021 for 30 days.

2. MPL submitted that overhauling of Unit 2 (525MW) as per LGBR was decided in the month of Dec'21, but due to unavailability of spares and deployment of service contractors at site, they want to carry out their overhauling from 22.01.22 to 28.02.22.

Member may discuss.

**Deliberation in the meeting:**

**Approved Maintenance Schedule of Thermal Generating Units of ER during 2021-22 in the month of November'2021**

** MPL is requested to take consent from WBSEDCL who is a major beneficiary of MPL

| System | Station | Unit No. | Capacity (MW) | Period | | No. of Days | Reason |
|---|---|---|---|---|---|---|---|
| | | | | From | To | | |
| WBPDCL | Bakareswar TPS | 2 | 210 | 08.11.2021 | 07.12.2021 | 30 | AOH/BOH |
| WBPDCL | Santhaldih TPS | 5 | 250 | 20.11.2021 | 19.12.2021 | 30 | AOH/BOH |
| CESC | Budge-Budge TPS | 1 | 250 | 18.11.2021 | 24.11.2021 | 7 | Boiler Certification |
| | Budge-Budge TPS | 2 | 250 | 26.11.2021 | 10.12.2021 | 15 | Boiler Overhauling |
| | Southern TPS | 2 | 67.5 | 06.11.2021 | 17.11.2021 | 12 | Boiler Certification |
| DVC | Mejia TPS | 7 | 500 | 10.11.2021 | 15.12.2021 | 36 | AOH |
| NTPC | Kahalgaon STPS | 4 | 210 | 15.11.2021 | 14.12.2021 | 30 | AOH |
| | Darlipalli STPS | 1 | 800 | 25.11.2021 | 24.12.2021 | 30 | AOH |
| IPP | MPL** | 2 | 525 | 22.01.2022 | 28.02.2022 | 38 | COH |

**ITEM NO. D.3: Shutdown proposal of Transmission lines/equipment**

**A. Shutdown proposal for erection & Commissioning of 500 MVA ICT-5 at Malda S/s under ERSS-XVII-B**

The shutdown for 315 MVA ICT-5 at Malda was proposed for 62 days for replacement of the same ICT with 500 MVA ICT. In 184$^{th}$ OCC Outage Coordination meeting held on 18/10/2021, Powergrid was advised to submit the detailed action plan along with the timeline for carrying out the replacement work and further it was decided to discuss this shutdown in 184$^{th}$ OCC meeting.

| Element Name | Element Type | Daily/ Continous | Reason | From Date | From Time | To Date | To Time | No. of days |
|---|---|---|---|---|---|---|---|---|
| 400KV/ 220KV 315 MVA ICT 5 AT MALDA | Transformer | D | 500MVA ICT-V erection & commissioning under ERSS-XVII-B | 15-11-2021 | 07:00 | 15-01-2022 | 17:00 | 62 |

**Members may discuss.**

**Deliberation in the meeting:**

*Powergrid representative submitted that the time schedule would be optimized and a revised schedule would be shared with ERLDC and ERPC.*

**B. Shutdown proposals related to re-conductoring work of 400 kV Maithon-MPL D/C line.**

The following shutdowns are proposed in the month of Nov-21 for carrying out the re-conductoring work in 400 kV Maithon-MPL D/C line. The shutdown was discussed in 184th OCC Outage Coordination meeting wherein it was decided to refer the issue to 184th OCC Meeting for fruitful discussion.

| Element Name | Element Type | Daily/ Continous | Reason | From Date | From Time | To Date | To Time | No. of days |
|---|---|---|---|---|---|---|---|---|
| 400KV-MAITHON-MAITHON RB-1 | Ac transmission line | D | To be kept in Non-Auto Mode during Re-conductoring work in Ckt-II | 01-11-2021 | 08:00 | 30-11-2021 | 17:00 | 30 |
| 400KV-MAITHON-MAITHON RB-2 | Ac transmission line | C | Re-conductoring work of 400KV Maithon - Right Bank Line | 01-11-2021 | 08:00 | 30-11-2021 | 17:00 | 30 |
| 400KV TIE BAY OF MAITHON-2 AND ST#1 AT MAITHON RB | Bay | C | Upgradation of Bay equipmenets under ERSS-XVII Project work. | 25-11-2021 | 08:00 | 20-12-2021 | 17:00 | 26 |
| 400KV MAIN BAY OF MAITHON -2 AT MAITHON RB | Bay | C | Upgradation of Bay equipmenets under ERSS-XVII Project work. | 01-11-2021 | 07:00 | 20-11-2021 | 17:00 | 20 |
| 400KV MAIN BAY OF MAITHON RB-II AT MAITHON | Bay | C | Bay upgradation work under ERSS-XVII | 15-11-2021 | 08:00 | 30-11-2021 | 18:00 | 16 |
| 400KV-MAITHON-MAITHON RB-2 | Ac transmission line | D | Isolation of Jumpers of 400kV MPL Maithon-2 Main Bay(406) for upgradation of equipment under ERSS-XVII project work at MPL end. | 01-11-2021 | 08:00 | 01-11-2021 | 17:00 | 1 |

Members may discuss.

**Deliberation in the meeting:**

*After detailed deliberation it was decided that the shutdown may be allowed initially for a period of 15 days. Powergrid was advised to take all possible measures for optimizing the time schedule and complete the reconductoring work. The subsequent shutdown requirement may be decided based on status of the work completed during the initial shutdown.*

**ITEM NO. D.4: Major Generating Units/Transmission Element outages/shutdown in ER Grid (as on 12.10.2021)**

**a) Thermal Generating Stations outage report:**

| Sl. No | Station | State | Agency | Unit No. | Capacity in Mw | Reason(s) | Outage Date |
|---|---|---|---|---|---|---|---|
| 1 | BARH | BIHAR | NTPC | 5 | 660 | FOR OVERHAULING AND | 19-Sep-2021 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | BOILER MODIFICATION. | |
| 2 | FSTPP | WEST BENGAL | NTPC | 4 | 500 | ANNUAL OVERHAULING | 23-Aug-2021 |
| 3 | JITPL | ODISHA | JITPL | 1 | 600 | ANNUAL OVERHAULING | 25-Sep-2021 |
| 4 | KOLAGHAT | WEST BENGAL | WBPDCL | 1 | 210 | INITIALLY TAKEN UNDER ESP R & M. PRESENTLY UNDER CONSIDERATION FOR DE-COMMISSIONING. | 07-Jun-2018 |
| 5 | MUZAFFARPUR TPS | BIHAR | BSPHCL | 1 | 110 | COMPLETION OF TENURE OF PPA | 08-Sep-2021 |
| 6 | MUZAFFARPUR TPS | BIHAR | BSPHCL | 2 | 110 | COMPLETION OF TENURE OF PPA | 08-Sep-2021 |
| 7 | DARLIPALI | ODISHA | NTPC | 2 | 800 | BTL | 11-Oct-2021 |
| 8 | JITPL | ODISHA | JITPL | 2 | 600 | PA FAN 2A HIGH VIBRATION PROBLEM | 11-Oct-2021 |
| 9 | TSTPP | ODISHA | NTPC | 1 | 500 | BTL | 12-Oct-2021 |
| 10 | BARAUNI TPS | BIHAR | BSPHCL | 6 | 110 | ABNORMAL TSI PARAMETER | 17-Mar-2021 |
| 11 | BARAUNI TPS | BIHAR | BSPHCL | 7 | 110 | GENERATOR TRANSFORMER PROBLEM | 16-Aug-2021 |
| 12 | BARAUNI TPS | BIHAR | BSPHCL | 9 | 250 | AUXILIARY POWER FAILURE | 23-Sep-2021 |
| 13 | BOKARO'B' | DVC | DVC | 3 | 210 | INITAILLY OUT DUE TO ASH PONDAGE PROBLEM UPTO 31/12/21. LATER OUT DUE TO POLLUTION CLERANCE ISSUE | 21-Oct-2020 |
| 14 | DSTPS | DVC | DVC | 1 | 500 | INITIALLY OUT DUE TO WATER LOGGING LATER ON STRUCTURAL BREAKDOWN OF CONVEYOR BELT 10 A/B | 30-Sep-2021 |
| 15 | DSTPS | DVC | DVC | 2 | 500 | STRUCTURAL BREAKDOWN OF CONVEYOR BELT 10 A/B | 01-Oct-2021 |

**Generators/ constituents are requested to update the expected date of revival of the units.**

**b) Major Generating stations Out on Reserve Shutdown due to low system demand:**

| S.No | Station | State | Agency | Unit No. | Capacity in Mw | Reason(s) | Outage Date |
|---|---|---|---|---|---|---|---|
| NIL | | | | | | | |

**c) Hydro Unit Outage Report:**

| Sl. No. | Station | State | Agency | Unit No | Capacity | Reason(s) | Outage |
|---|---|---|---|---|---|---|---|
| 1 | BALIMELA HPS | ODISHA | OHPC | 1 | 60 | R & M WORK | 05-Aug-2016 |
| 2 | BALIMELA HPS | ODISHA | OHPC | 2 | 60 | R & M WORK | 20-Nov-2017 |
| 3 | BURLA HPS/HIRAKUD I | ODISHA | OHPC | 5 | 37.5 | R & M WORK | 25-Oct-2016 |
| 4 | BURLA HPS/HIRAKUD I | ODISHA | OHPC | 6 | 37.5 | R & M WORK | 16-Oct-2015 |

**It is seen that about 195 MW hydro capacities in Odisha is under forced outage / planned outage and therefore not available for providing the much-needed peaking support during evening peak.**

**SLDC / OHPC may please indicate restoration plan of the units.**

**d) Long outage report of transmission lines:**

| SL NO | Transmission Element / ICT | Agency | Outage DATE | Reasons for Outage |
|---|---|---|---|---|
| 1 | 400 KV IBEUL JHARSUGUDA D/C | IBEUL | 29.04.2018 | TOWER COLLAPSE AT LOC 44,45 |
| 2 | 220/132 KV 100 MVA ICT II AT LALMATIA | FSTPP/ JUSNL | 22.01.2019 | FAILURE OF HV SIDE BREAKER |
| 3 | 220 KV PANDIABILI - SAMANGARA D/C | OPTCL | 03.05.2019 | 49 NOS OF TOWER COLLAPSED.AS REPORTED BY SLDC OPTCL, TOTAL 60 NOS OF TOWER IN BETWEEN 220KV PANDIABILI – SAMANGARA LINE IN WHICH 48 NOS TOWERS FULLY DAMAGED AND 12 NOS TOWERS PARTIALLY DAMAGED. WORK UNDER PROGRESS.PRESENTLY CHARGED FROM PANDIABILLI END (LOC 156) TO LOC 58 |
| 4 | 220KV BARAUNI-HAJIPUR CKT-1 | BSPTCL | 28.09.2019 | TOWER COLLAPSE AT LOCATION 38 & 39. CKT-2 IS ON ERS SINCE 13.01.2020. |
| 5 | 220/132 KV 100 MVA ICT 3 AT CHANDIL | JUSNL | 30.04.2020 | ICT BURST AND DAMAGED AFTER FIRE REPORTED |
| 6 | 220KV/132 KV 100 MVA ICT 4 AT RANGPO | PGCIL | 08.04.2021 | HAND TRIPPED AFTER TRIPPING OF ALL 400/220 ICTS AT RANGPO ON 8.4.21 AFTER DISTURBANCE AND THERAFTER DEVELOPED RELAY RESET PROBLEM. NOT COMMISIONED. |
| 7 | 400KV/220KV 315 MVA ICT 2 AT MEERAMANDALI | OPTCL | 21.02.2021 | FIRE HAZARD |
| 8 | 400KV/220KV 315 MVA ICT 4 AT JEERAT | WBSETCL | 09.04.2021 | VERBALLY CONFIRMED BY WB THAT NEW TRANSFROMER PROCUREMENT UNDER PIPELINE AND SHALL BE REPLACED IN THE NEAR FUTURE. |
| 9 | 220KV-FSTPP-LALMATIA | JUSNL | 21.04.2021 | THREE TOWER COLLAPSED NEAR LALMATIA |
| 10 | 400KV-ALIPURDUAR (PG)-PUNATSANGCHUN-1 | PGCIL/ Bhutan | 12.09.2021 | BHUTAN REQUESTED TO OPEN CKT1 AS THERE WAS A CLOSING PROBLEM OF MAIN BREAKER AT JIGMELLING END. (BOTH THE CKTS VIA PHUNATSANGCHU ARE IN SAME DIA AT JIGMELLING END) |
| 11 | 765KV-JHARSUGUDA-RAIPUR PS (DURG)-1 | PGCIL | 23.09.2021 | VOLTAGE REGULATION |
| 12 | 400KV/220KV 315 MVA ICT 2 AT JEYPORE | PGCIL | 16.09.2021 | 220 KV CABLE TERMINATION, CONTROL & RELAY PANEL TESTING & FINAL COMMISSIONING OF ICT-IV UPTO 26/09/21. S/D EXTENDED UPTO 30.09.2021 |

Transmission licensees/ Utilities are requested to update expected restoration date & work progress regarding restoration regularly to ERLDC/ERPC on monthly basis by 5th of each month so that status of restoration can be reviewed in OCC. Utilities are also requested to update outage of any elements within their substation premises like isolator/breaker to ERLDC/ERPC regularly. (Reported as per Clause 5.2(e) of IEGC).

Members may update.

**Deliberation in the meeting:**

*OCC advised all the utilities to share the updated status, if any, to ERPC & ERLDC.*

**ITEM NO. D.5: Commissioning of new units and transmission elements in Eastern Grid in the month of September-2021**

The details of new units/transmission elements commissioned in the month of September-2021 based on the inputs received from beneficiaries:

| Monthly commissioning List of Transmission element and generators: September 2021 | | | | | |
|---|---|---|---|---|---|
| **SL. No** | **Location** | **Owner/Unit Name** | **Date** | **Time** | **Remarks** |
| 1 | Bihar | BRBCL unit#4 (IC-250MW) | 20-Sep-21 | 10:45 | BRBCL Unit 4 (250 MW) was first time synchronized with grid at 10:45 hrs and de-synchronized from grid at 11:13 Hrs. Prior to tripping generation was 49.9 MW and unit was on oil guns support. |
| 2 | PMJTL | 765/400kV ICT-1 at New Jeerat | 13-Sep-21 | 14:52 | |
| 3 | PMJTL | 765/400kV ICT-2 at New Jeerat | 26-Sep-21 | 12:35 | Charged from 400kv side only dated 25-09-2021 14:21 hours; first time loaded on 26-Sep-21 12:35 Hours |
| 4 | PMTL | 400/220kV ICT-1 at Saharsa | 10-Sep-21 | 18:11 | |
| 5 | PMTL | 400/220kV ICT-2 at Saharsa | 25-Sep-21 | 12:09 | 400 KV Main Bay charged at 21/09/2021 17:07 hours |
| 6 | PMTL | 220/132kV ICT-1 at Saharsa | 30-Sep-21 | 11:45 | Charged from 220 KV SIDE ONLY dated 28-09-2021 13:33 Hours;132KV Bay charged at 11:45 Hours 30-09-2021 |
| 7 | PMTL | 220/132kV ICT-2 at Saharsa | 30-Sep-21 | 11:48 | Charged from 220 KV side only dated 28-09-2021 15:37 Hours ;132KV BAY charged at 11:48 Hours 30-09-2021 |
| 8 | JUSNL | 220KV-DALTONGANJ-CHATRA-1 | 16-Sep-21 | 14:53 | Line first time anti-theft charged from Daltonganj end date 08-09-2021 at 12:02 hours.First time charged at 14:53 hours 16-09-2021 |
| 9 | JUSNL | 220KV-DALTONGANJ-CHATRA-2 | 15-Sep-21 | 14:56 | Line first time anti-theft charged from Daltonganj end date 08-09-2021 at 12:56 hours.First time charged at 14:46 hours 15-09-2021 |

| | | | | | |
|---|---|---|---|---|---|
| 10 | PMJTL | 765KV-MEDINIPUR-NEW JEERAT-1 | 8-Sep-21 | 10:43 | |
| 11 | PMJTL | 765KV-MEDINIPUR-NEW JEERAT-2 | 8-Sep-21 | 14:00 | |
| 12 | PMTL | 400KV-SAHARSA-KISHANGANJ-2 (LILO OF 400 kV Patna-Kishanganj-2 at Saharsa ) | 10-Sep-21 | 18:01 | |
| 13 | PMTL | 400KV-PATNA-SAHARSA-2 (LILO OF 400 kV Patna-Kishanganj-2 at Saharsa ) | 11-Sep-21 | 12:27 | |
| 14 | PMTL | 125MVAR 400KV B/R-2 AT SAHARSA | 10-Sep-21 | 18:22 | |
| 15 | PMTL | 125MVAR 400KV B/R-1 AT SAHARSA | 11-Sep-21 | 11:25 | |
| 16 | PMJTL | 125MVAR 400KV B/R-1 AT NEW JEERAT | 16-Sep-21 | 17:19 | |
| 17 | PMJTL | 330MVAR 765KV B/R-1 AT NEW JEERAT | 16-Sep-21 | 13:57 | |
| 18 | PMJTL | 240MVAR SWITCHABLE L/R OF 765KV-MEDINIPUR-NEW JEERAT-1 AT NEW JEERAT | 8-Sep-21 | 10:43 | |
| 19 | PMJTL | 240MVAR SWITCHABLE L/R OF 765KV-MEDINIPUR-NEW JEERAT-2 AT NEW JEERAT | 8-Sep-21 | 14:00 | |
| 20 | PMJTL | 125MVAR 400KV B/R-2 AT NEW JEERAT | 24-Sep-21 | 14:08 | |
| 21 | PMJTL | 330MVAR 765KV B/R-2 AT NEW JEERAT | 24-Sep-21 | 16:18 | |
| 22 | PGCIL | 400KV MAIN BAY OF NORTH KARANPURA-1 AT CHANDWA | 7-Sep-21 | 17:20 | |
| 23 | PGCIL | 400KV MAIN BAY OF NORTH KARANPURA-2 AT CHANDWA | 7-Sep-21 | 17:34 | |
| 24 | PMTL | 400KV MAIN BAY OF KISHANGANJ-2 AT SAHARSA | 10-Sep-21 | 18:01 | |
| 25 | PMTL | 400KV TIE BAY OF ( 400KV/220KV 500 MVA ICT 1 AND | 10-Sep-21 | 18:11 | |

| | | | | | |
|---|---|---|---|---|---|
| | | 400KV-KISHANGANJ-2) AT SAHARSA | | | |
| 26 | PMTL | 400KV MAIN BAY OF 400KV/220KV 500 MVA ICT 1 AT SAHARSA | 10-Sep-21 | 18:11 | |
| 27 | PMTL | 400KV MAIN BAY OF 125MVAR 400KV B/R-2 AT SAHARSA | 10-Sep-21 | 18:22 | |
| 28 | PMTL | 400KV TIE BAY OF ( 125 MVAR B/R- 2 AND 400KV-PATNA-2) AT SAHARSA | 11-Sep-21 | 12:28 | |
| 29 | PMTL | 400KV MAIN BAY OF PATNA -2 AT SAHARSA | 11-Sep-21 | 12:24 | |
| 30 | PMJTL | 400KV MAIN BAY OF 765KV/400KV 1500 MVA ICT 1 AT NEW JEERAT | 13-Sep-21 | 16:21 | |
| 31 | PMJTL | 765KV MAIN BAY OF 765KV/400KV 1500 MVA ICT 1 AT NEW JEERAT | 13-Sep-21 | 17:27 | |
| 32 | PMJTL | 765KV MAIN BAY OF 330MVAR 765KV B/R-2 AT NEW JEERAT | 14-Sep-21 | 16:46 | |
| 33 | PMJTL | 765KV TIE BAY OF ( 330MVAR 765KV B/R-1 AND 330MVAR 765KV B/R-2) AT NEW JEERAT | 14-Sep-21 | 16:46 | |
| 34 | PMJTL | 765KV MAIN BAY OF 330MVAR 765KV B/R-1 AT NEW JEERAT | 14-Sep-21 | 16:46 | |
| 35 | PMJTL | 765KV MAIN BAY OF MEDINIPUR -2 AT NEW JEERAT | 15-Sep-21 | 12:00 | |
| 36 | PMJTL | 765KV MAIN BAY OF MEDINIPUR -1 AT NEW JEERAT | 15-Sep-21 | 13:28 | |
| 37 | PMJTL | 765KV TIE BAY OF( MEDINIPUR -1 AND 1500 MVA ICT-1) AT NEW JEERAT | 15-Sep-21 | 13:30 | |
| 38 | PMJTL | 765KV TIE BAY OF( MEDINIPUR -2 AND 1500 MVA ICT-2) AT NEW JEERAT | 15-Sep-21 | 16:28 | |
| 39 | PMJTL | 400KV MAIN BAY OF 765KV/400KV 1500 MVA ICT 2 AT | 15-Sep-21 | 16:38 | |

| | | | | | |
|---|---|---|---|---|---|
| | | NEW JEERAT | | | |
| 40 | PMJTL | 400KV TIE BAY OF ( 125MVAR 400KV B/R-1 AND 400KV-JEERAT-2) AT NEW JEERAT | 15-Sep-21 | 18:15 | |
| 41 | PMJTL | 400KV MAIN BAY OF 125MVAR 400KV B/R-1 AT NEW JEERAT | 15-Sep-21 | 18:14 | |
| 42 | PMTL | 400KV MAIN BAY OF 400KV/220KV 500 MVA ICT 2 AT SAHARSA | 21-Sep-21 | 17:07 | |
| 43 | PMJTL | 400KV MAIN BAY OF 125MVAR 400KV B/R-2 AT NEW JEERAT | 24-Sep-21 | 14:08 | |
| 44 | PMTL | 400KV MAIN BAY OF 400KV/220KV 500 MVA ICT 2 AT SAHARSA | 21-Sep-21 | 17:07 | |
| 45 | PMTL | 220KV MAIN BAY OF 400KV/220KV 500 MVA ICT 2 AT SAHARSA | 25-Sep-21 | 12:09 | |
| 46 | PMTL | 220KV BUS COUPLER BAY AT SAHARSA | 25-Sep-21 | 12:22 | |
| 47 | PMTL | 220KV MAIN BAY OF 220KV/132KV 200 MVA ICT 1 AT SAHARSA | 28-Sep-21 | 13:33 | |
| 48 | PMJTL | 400KV MAIN BAY OF SUBHASGRAM(PG) -1 AT NEW JEERAT | 28-Sep-21 | 14:16 | |
| 49 | PMJTL | 400KV MAIN BAY OF SUBHASGRAM(PG) -2 AT NEW JEERAT | 28-Sep-21 | 14:12 | |
| 50 | PMJTL | 400KV TIE BAY OF ( 125MVAR 400KV B/R-2 AND 400KV--SUBHASGRAM(PG) -2) AT NEW JEERAT | 28-Sep-21 | 14:14 | |
| 51 | PMJTL | 400KV TIE BAY OF ( 765KV/400KV 1500 MVA ICT 2 AND 400KV--SUBHASGRAM(PG) -1) AT NEW JEERAT | 28-Sep-21 | 14:16 | |
| 52 | PMJTL | 400KV MAIN BAY OF 125MVAR 400KV B/R-2 AT NEW | 28-Sep-21 | 14:11 | |

| | | | | | |
|---|---|---|---|---|---|
| | | JEERAT | | | |
| 53 | PMTL | 220KV MAIN BAY OF 220KV/132KV 200 MVA ICT 1 AT SAHARSA | 28-Sep-21 | 13:33 | |
| 54 | PMTL | 220KV MAIN BAY OF 220KV/132KV 200 MVA ICT 2 AT SAHARSA | 28-Sep-21 | 15:37 | |
| 55 | PMTL | 132KV MAIN BAY OF 220KV/132KV 200 MVA ICT 1 AT SAHARSA | 30-Sep-21 | 11:45 | |
| 56 | PMTL | 132KV MAIN BAY OF 220KV/132KV 200 MVA ICT 2 AT SAHARSA | 30-Sep-21 | 11:48 | |
| 57 | PMTL | 400KV MAIN BUS - 2 AT SAHARSA | 10-Sep-21 | 18:01 | |
| 58 | PMTL | 400KV MAIN BUS - 1 AT SAHARSA | 10-Sep-21 | 18:11 | |
| 59 | PMJTL | 400KV MAIN BUS- 1 AT NEW JEERAT | 13-Sep-21 | 16:21 | |
| 60 | PMJTL | 765KV MAIN BUS- 2 AT NEW JEERAT | 13-Sep-21 | 17:27 | |
| 61 | JUSNL | 220KV - Bus 1 - Chatra | 14-Sep-21 | 14:53 | |
| 62 | JUSNL | 220KV - Bus 2 - Chatra | 14-Sep-21 | 16:10 | |
| 63 | PMTL | 220KV MAIN BUS - 1 AT SAHARSA | 25-Sep-21 | 12:09 | |
| 64 | PMTL | 220KV MAIN BUS - 2 AT SAHARSA | 25-Sep-21 | 12:22 | |
| 65 | PMTL | 132KV MAIN BUS - 1 AT SAHARSA | 30-Sep-21 | 11:45 | |

Members may update.

**Deliberation in the meeting:**

*OCC advised all the concerned utilities to submit the necessary details regarding the commissioning of any new intra-state elements to ERPC and ERLDC.*

## ITEM NO. D.6: UFR operation during the month of September 2021

Frequency profile for the month as follows:

| Month | Max (Date/Time) | Min (Date/Time) | Less IEGC Band (%) | Within IEGC Band (%) | More IEGC Band (%) |
|---|---|---|---|---|---|
| **Sept, 2021** | 50.23 Hz on 10.09.2021 at | 49.50 Hz on 24.09.2021 at | 4.18 | 77.01 | 18.81 |

| | | | | | |
|---|---|---|---|---|---|
| | 13:04 Hrs& 25.09.2021 at 18:01 Hrs. | 18:42 Hrs | | | |

Hence, no report of operation of UFR has been received from any of the constituents.

Members may note.

**Deliberation in the meeting:**

*Members noted.*

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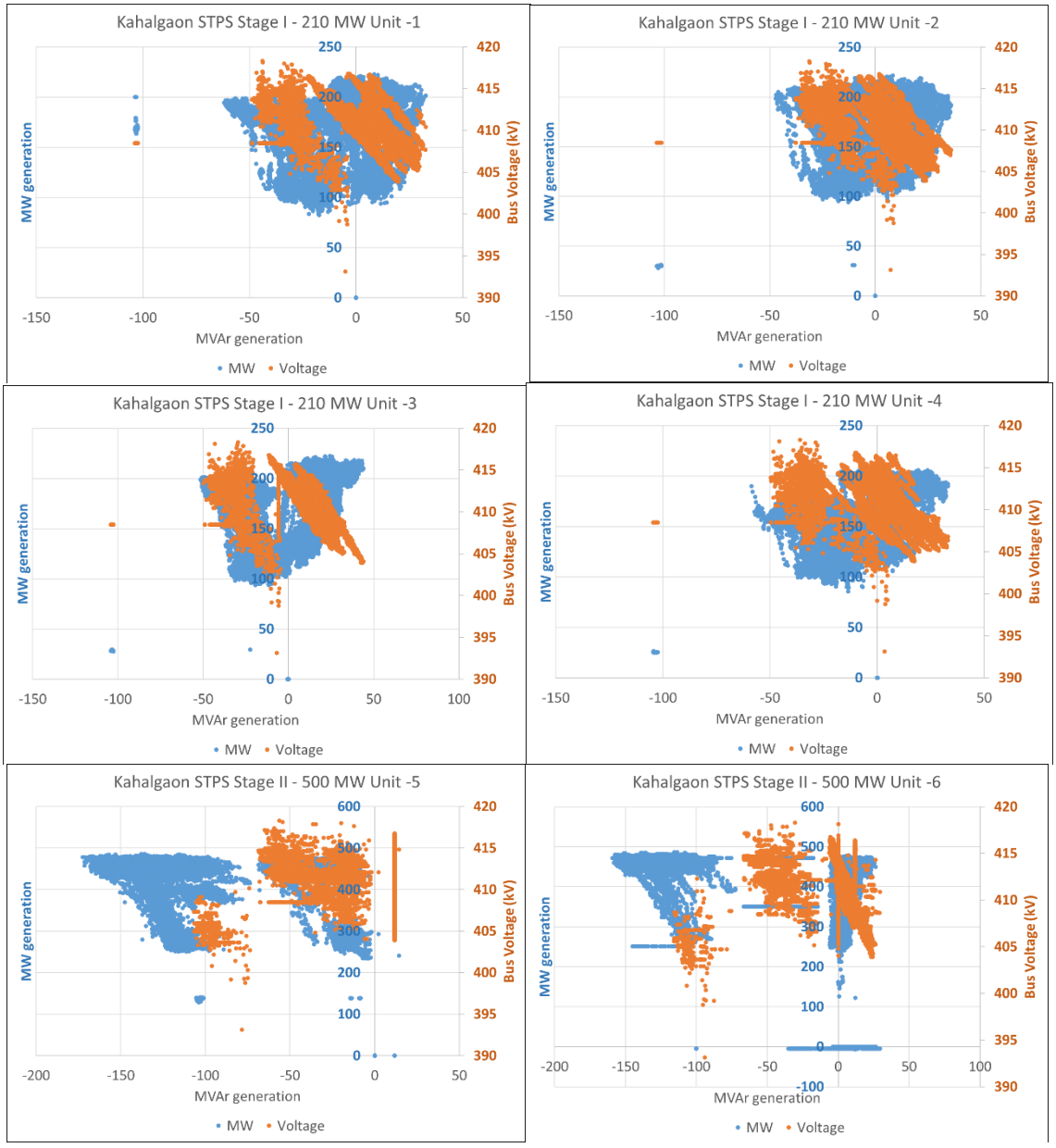
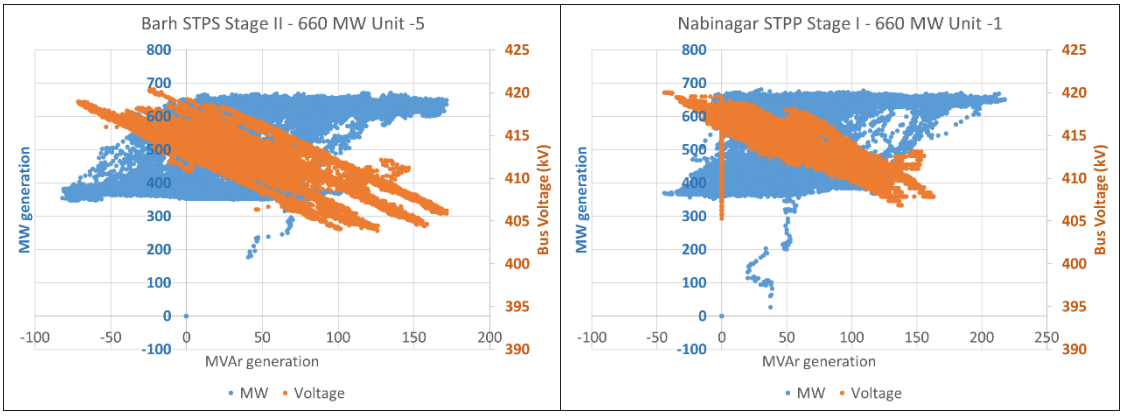
## MVAr injection/absorption by generating units with inadequate reactive power support during September 2021

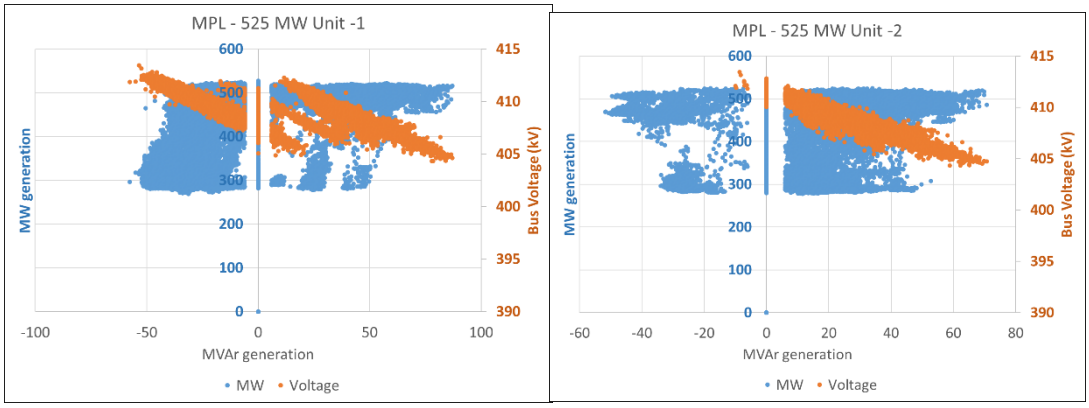
### Kahalgaon STPS



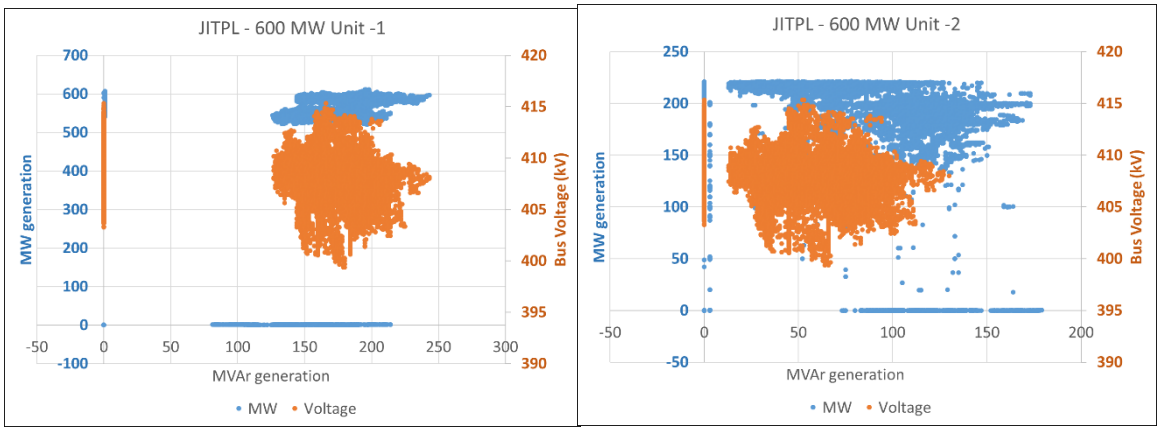
## Barh and Nabinagar STPS




## MPL




## JITPL



पावर सिस्टम ऑपरेशन करपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)
Eastern Regional Load Despatch Centre: 14, Golf Club Road, Tollygunge, Kolkata-700 033.
CIN: U40105DL2009GOI188682
फ़ोन: 033- 24235755, 24174049 फैक्स : 033-24235809/5029 Website:www.erldc.org, Email ID- erldc@posoco.in

Date: 13-10-2021

# Report on primary frequency response observed in the generating units of Eastern Region for September 2021 (September 2021 के लिए पूर्वी क्षेत्र के विधुत इकाइयों पर प्राथमिक आवृत्ति प्रतिक्रिया पर रिपोर्ट)

Frequency response characteristics (FRC) have been analyzed pan India for one event of sudden frequency change that occurred in the month of September 2021. The details of these events and the overall response of the Eastern region have been summarized in Table 1.

**Table 1: Summary of the events and Frequency Response Characteristic (FRC) of the Eastern Region for the events**

| Event | Frequency Change | ER FRC |
|---|---|---|
| **Event 1: On 28th September 2021 at 17:48:31:960 Hrs, 1500 MW smelter load loss at Sterlite in ER.** | **49.962 Hz to 50.090 Hz**. Later stabilized at 50.031 Hz. | **58.5 %** |

**Analysis of Frequency Event is provided below and covers the following aspects :**

1. Non Sharing of **generation end data (generation output in MW and frequency/speed measured at generator end) and FRCs** despite of repeated reminders to generating stations and **SLDCs**. List of regional generating stations/SLDCs from which generation end data/FRC yet to be received is shown in table 2.
2. Based on data received from generating stations & SLDCs and SCADA data archived at ERLDC, regional generating stations and state control areas performance have been analyzed and summarized in table 3.
3. Based on data received from generating stations & SLDCs, the performance of state generating stations has been analyzed and summarized in table 4.
4. Some thermal units were found to be running at higher than installed capacity causing their poor response and governor response margin was not available. This practice to be avoided and Governor Response Margin has not to be utilised in line with IEGC regulation.

**Table 2: List of regional generating stations/SLDCs from which generation end data/FRC yet to be received (as per status on 12th October 2021)**

- NTPC Kahalgaon
- NTPC Talcher
- Bihar SLDC
- Jharkhand SLDC
- WB SLDC

**Table 3: performance of regional generating stations and state control areas for the events in September 2021***

| Generating Station/ SLDC | Response observed |
|---|---|
| NTPC Farakka | **Non-Satisfactory except for unit 3** |
| NTPC Kahalgaon | **Non-Satisfactory (as per FRC calculated based on ERLDC SCADA data)** |
| NTPC Talcher | **Non-Satisfactory (as per ERLDC SCADA data)** |
| NTPC Barh | **Non-Satisfactory** |
| NTPC Darlipalli | **Non-Satisfactory** |
| BRBCL | **Satisfactory for unit 2; non satisfactory for unit 3** |
| NPGC Nabinagar | **Satisfactory** |
| GMR | **Satisfactory** |
| JITPL | **Non-Satisfactory** |
| MPL | **Satisfactory** |
| Adhunik | **Non-Satisfactory** |
| Teesta V HEP | **Non-Satisfactory** |
| Teesta III HEP | **Response observed.** But non adequate. |
| Dikchu HEP | **Satisfactory** |
| Bihar SLDC | **Satisfactory (as per ERLDC SCADA data)** |
| Jharkhand SLDC | **Satisfactory (as per ERLDC SCADA data)** |
| DVC SLDC | **Satisfactory** |
| GRIDCO SLDC | **Satisfactory (as per ERLDC SCADA data)** |
| WB SLDC | **Non-Satisfactory (as per ERLDC SCADA data)** |

***Response of the generating stations are shown in Annexure 1**

**Table 4: performance of state generating stations for the events in September 2021 (Based on data received from SLDC/generating stations) ****

| Generating Station | Event 1 |
|---|---|
| Koderma | **Non-Satisfactory** |
| RTPS | **Non-Satisfactory** |
| Mejia B | **Satisfactory** |
| Mejia | **Non-Satisfactory** |
| HEL | **Satisfactory** |

| Generating Station | Event 1 |
|---|---|
| BBGS | **Response observed.** But non adequate. |
| GMR TPS (Unit 3) | **Satisfactory** (In data shared by GMR, frequency rise and generation back down are not synchronized) |
| Sagardighi | **Non-Satisfactory** |

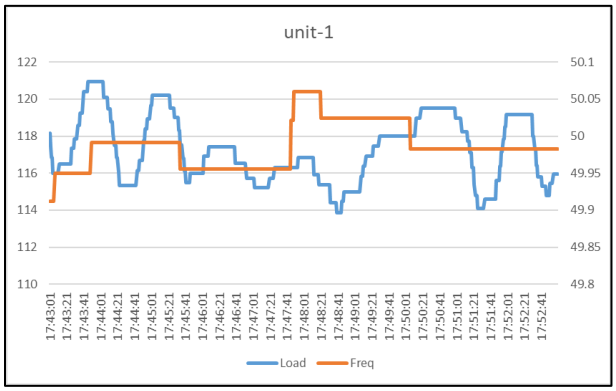
****Response of these generating stations are shown in Annexure 2**

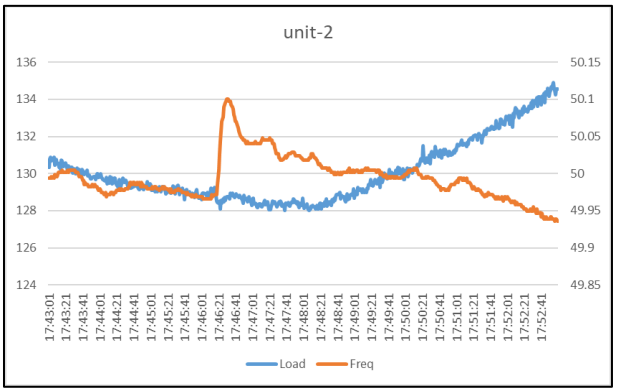
## Remarks on the governor response observed at generating stations:

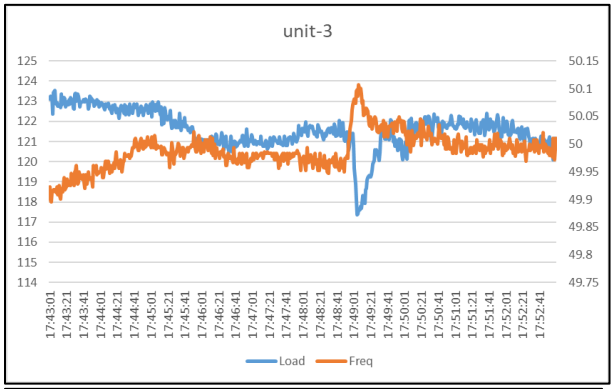
- **JITPL**: As per data shared maximum frequency captured was 50.017 Hz. But Maximum frequency is captured in PMU was 50.09 Hz. JITPL may check the calibration of RPM recording.
- **BBGS Unit 3**: As per DCS stamping observed, Unit #3 rpm changed from 2994.479 to 3002.55 rpm. Since RGMO response was given only when rpm crosses 3000 rpm, ideal response was calculated as 4.23 MW (2.55 rpm * 1.66 MW/rpm). Actual response observed was also 4.23 MW. **BBGS has been advised to check the calibration of the speed sensing system during our upcoming Outage in December**.
- **BBGS Unit #1 and Unit #2**: As per CESC, FGMO acted as per rpm increase. However, since the duration of total rise is 10-12s and rpm started decreasing immediately after that, load increase was restricted to about 50-60 % of ideal response during the available time of 10-12 s.

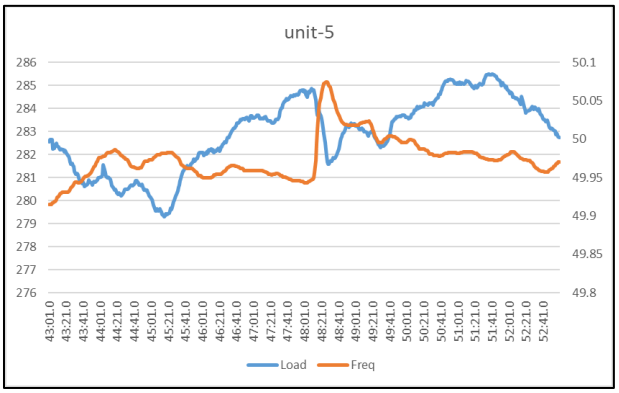
# Annexure 1: Variation of generation of regional generating units during frequency change

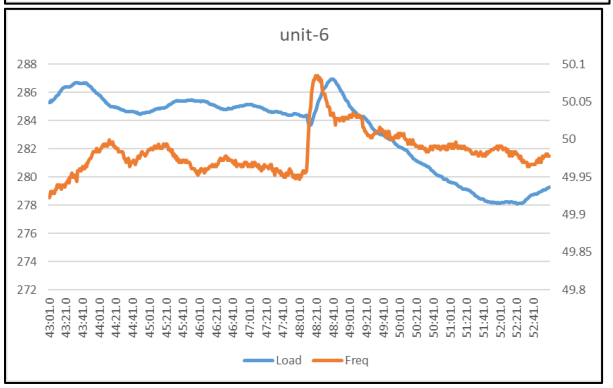
## Farakka STPS



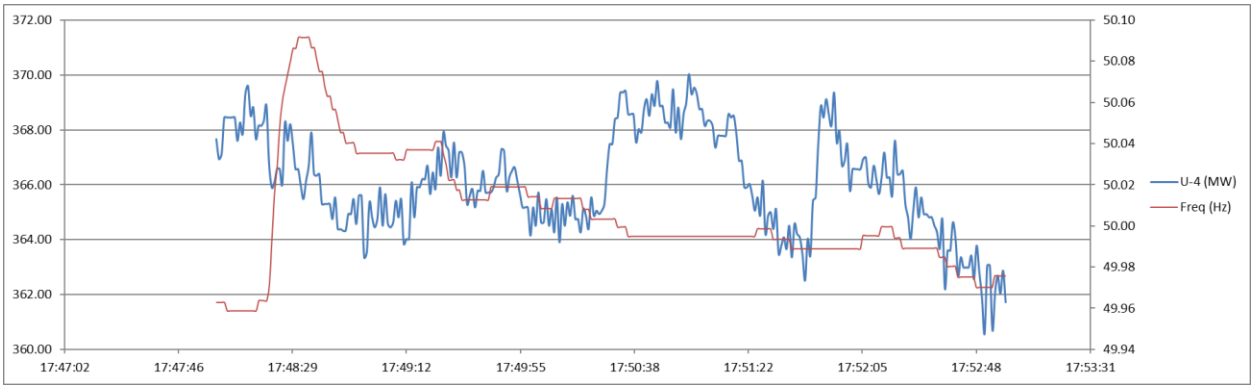



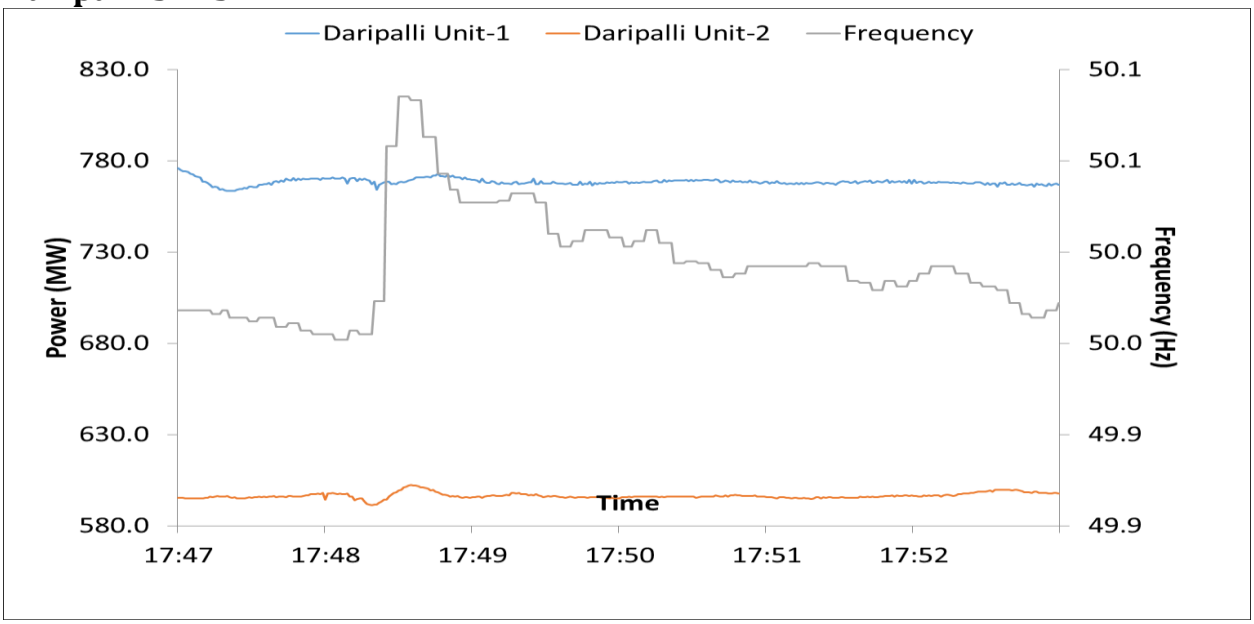



## Barh STPS

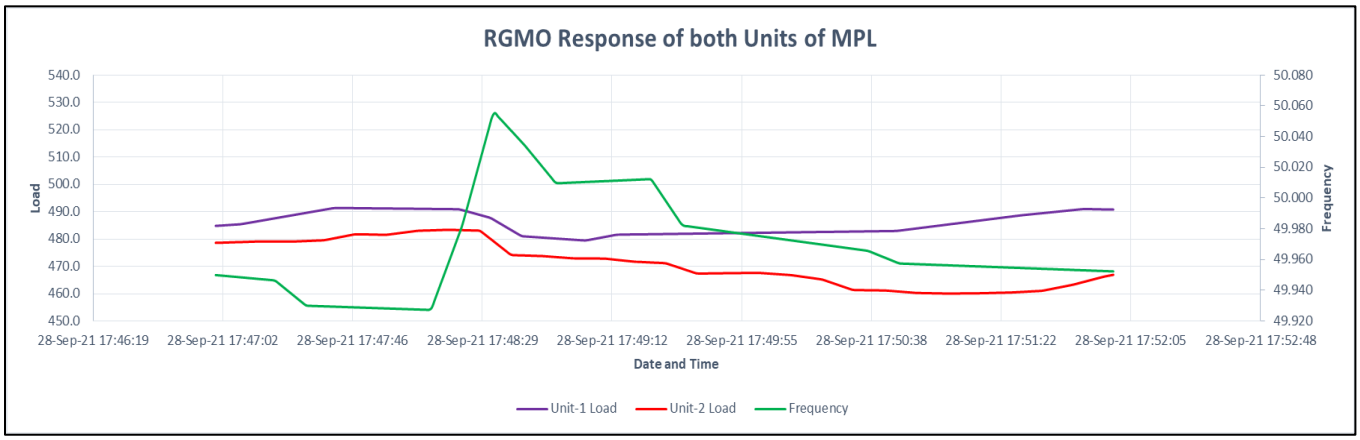



Unit 5 was not in service at the time of the event.

## Daripalli STPS

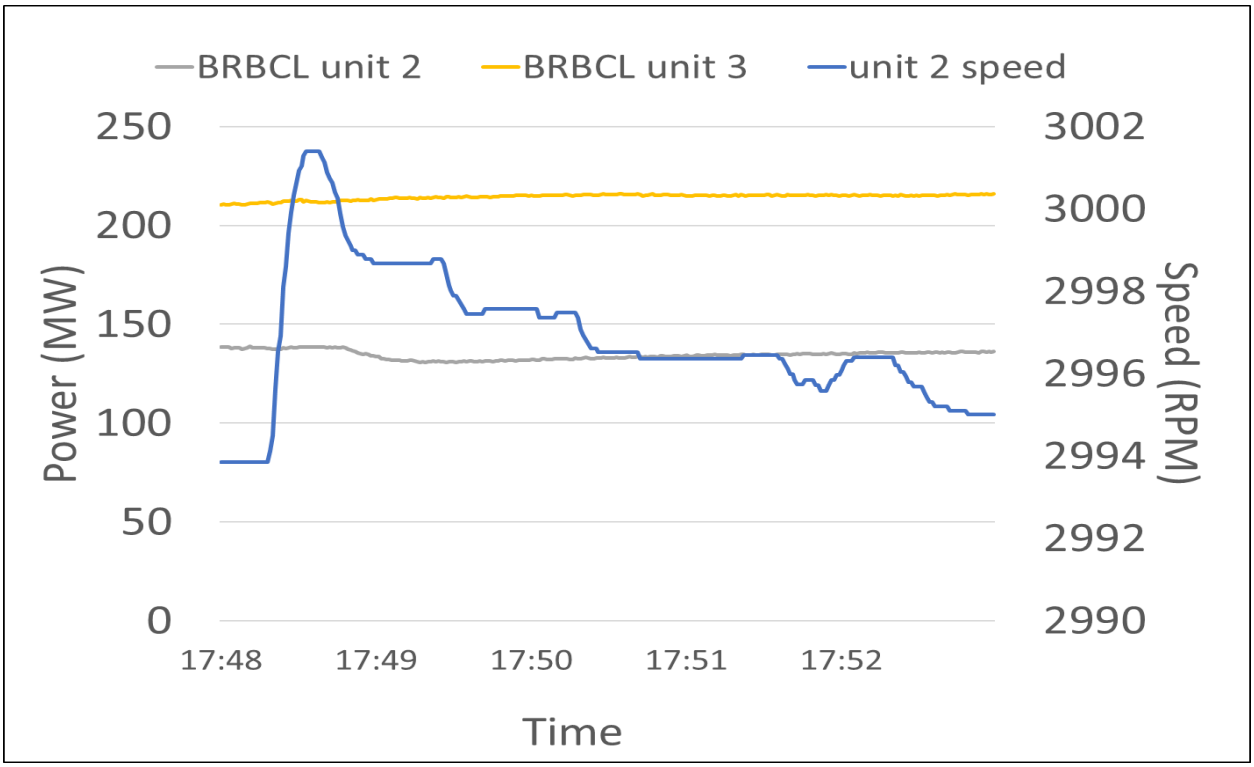



## MPL

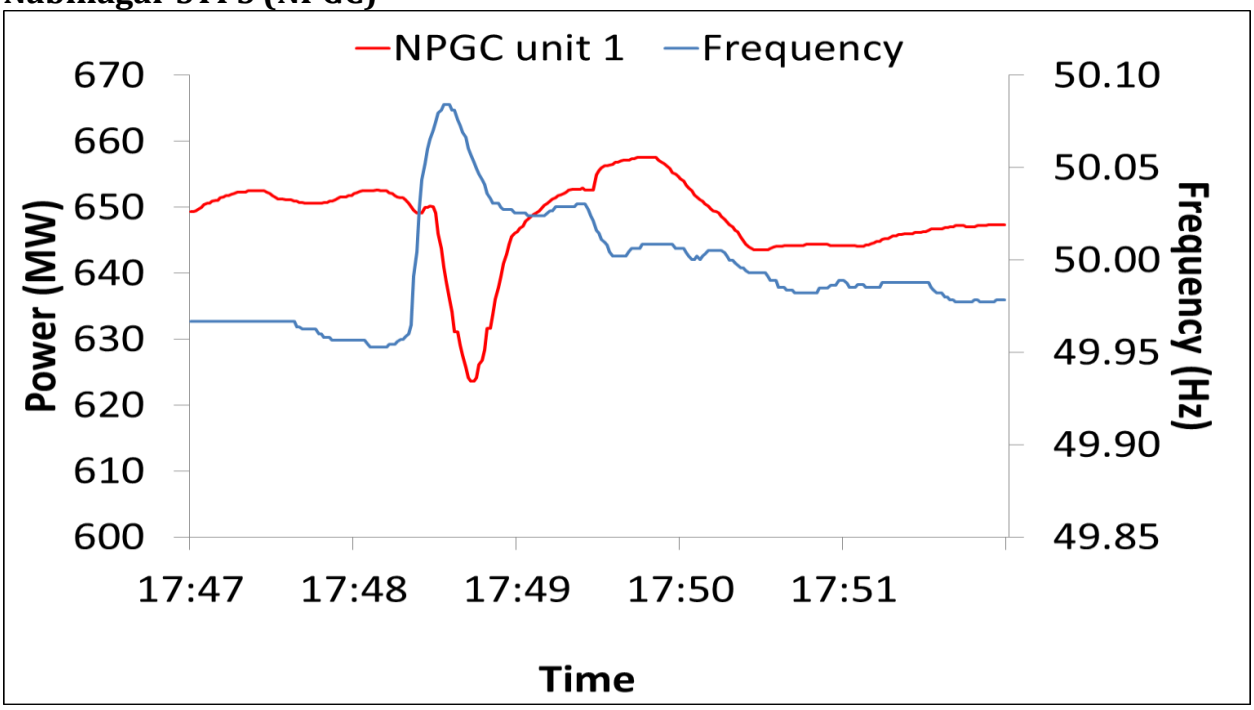



Maximum response observed: -11.2 MW for unit 1 and – 12.8 MW for unit 2.

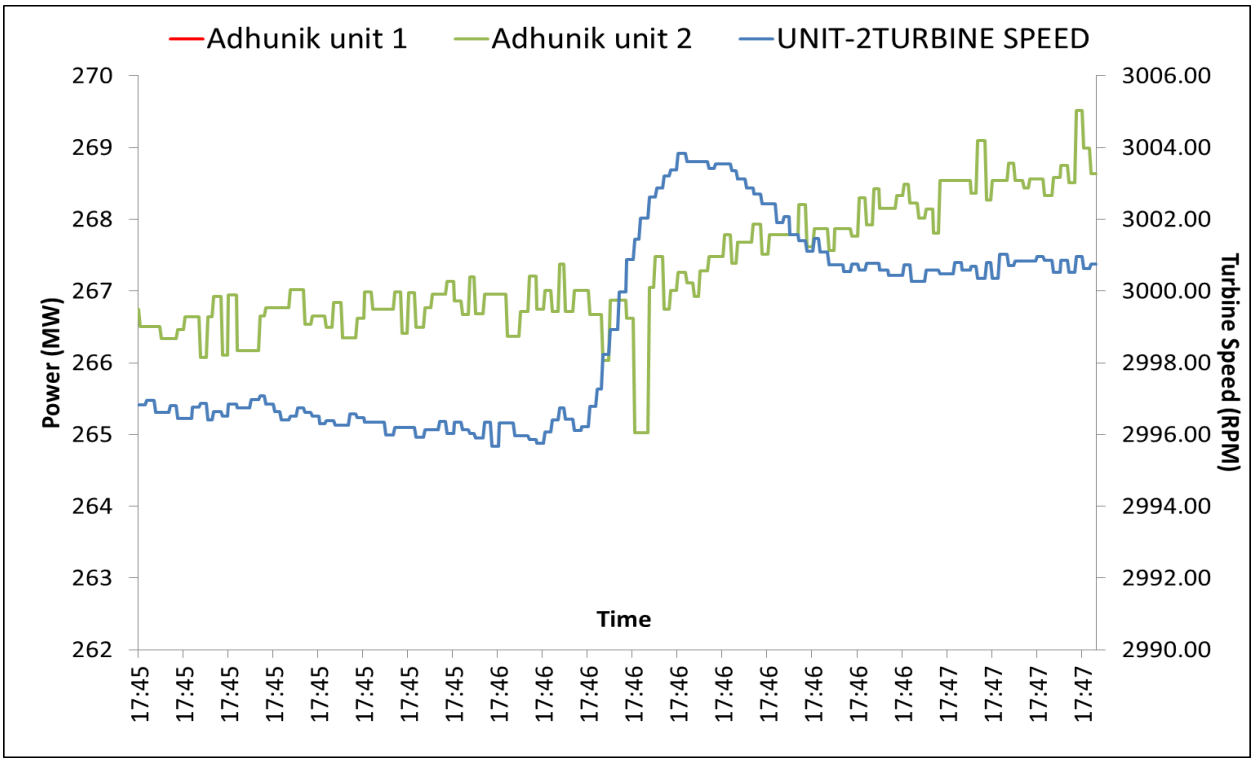
**Nabinagar TPS (BRBCL)**



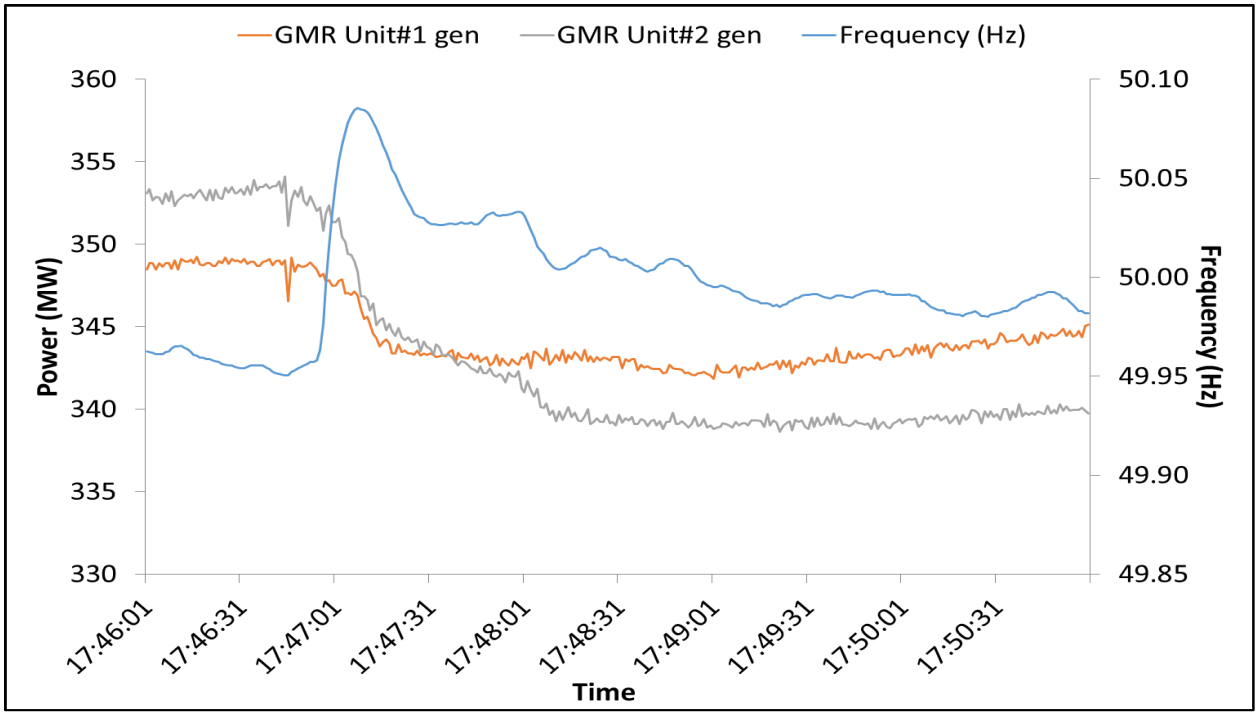

**Nabinagar STPS (NPGC)**



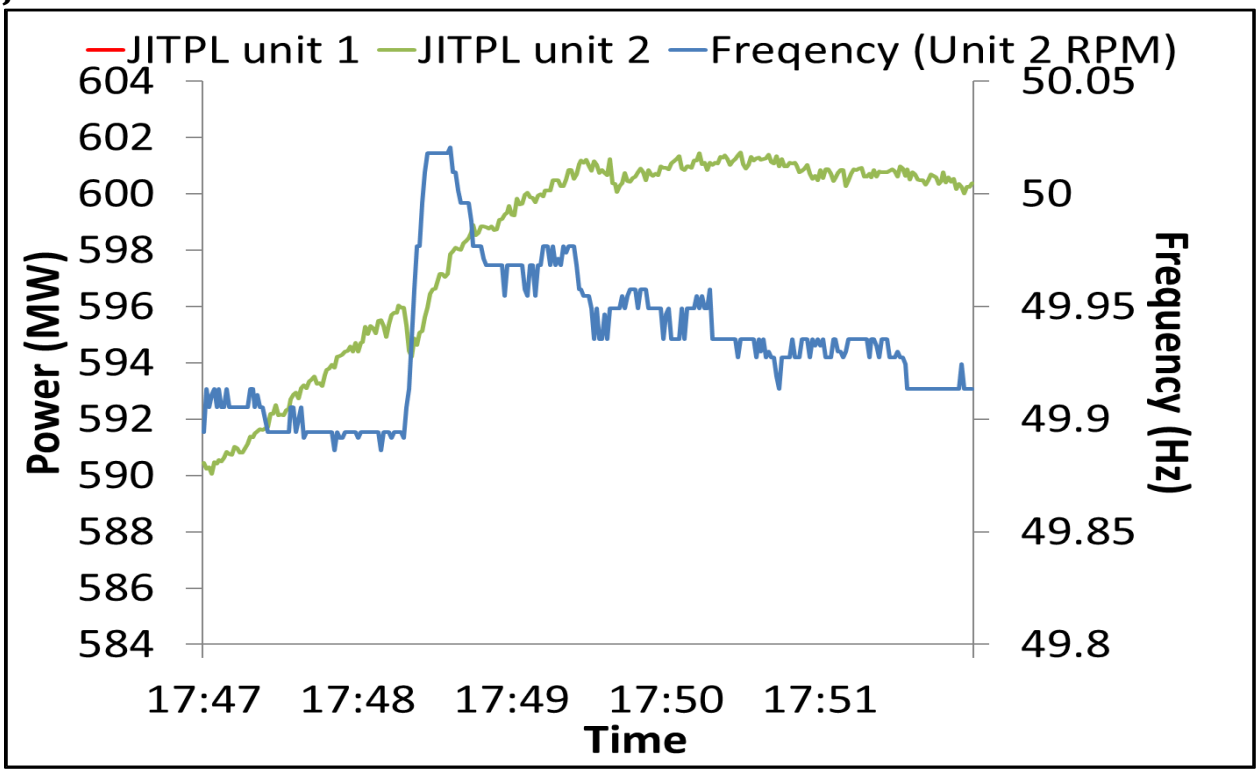
## Adhunik TPS



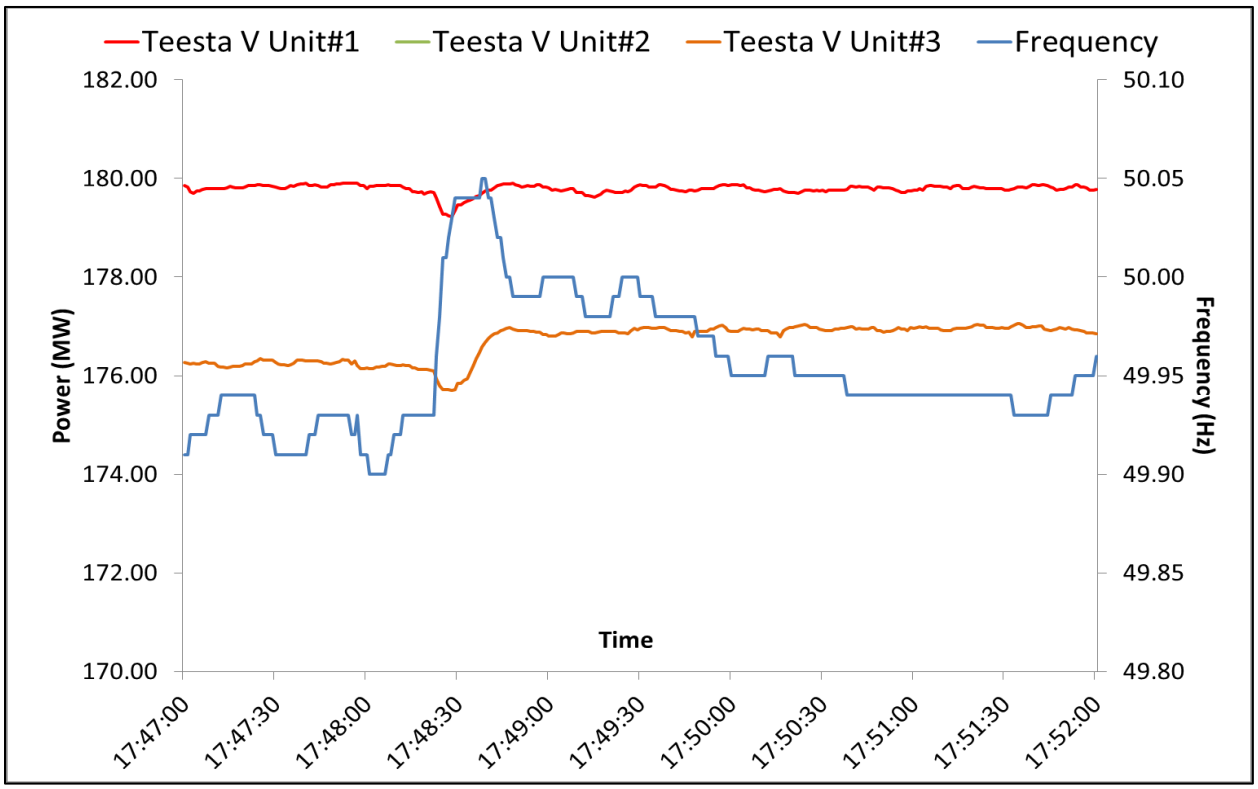

## GMR



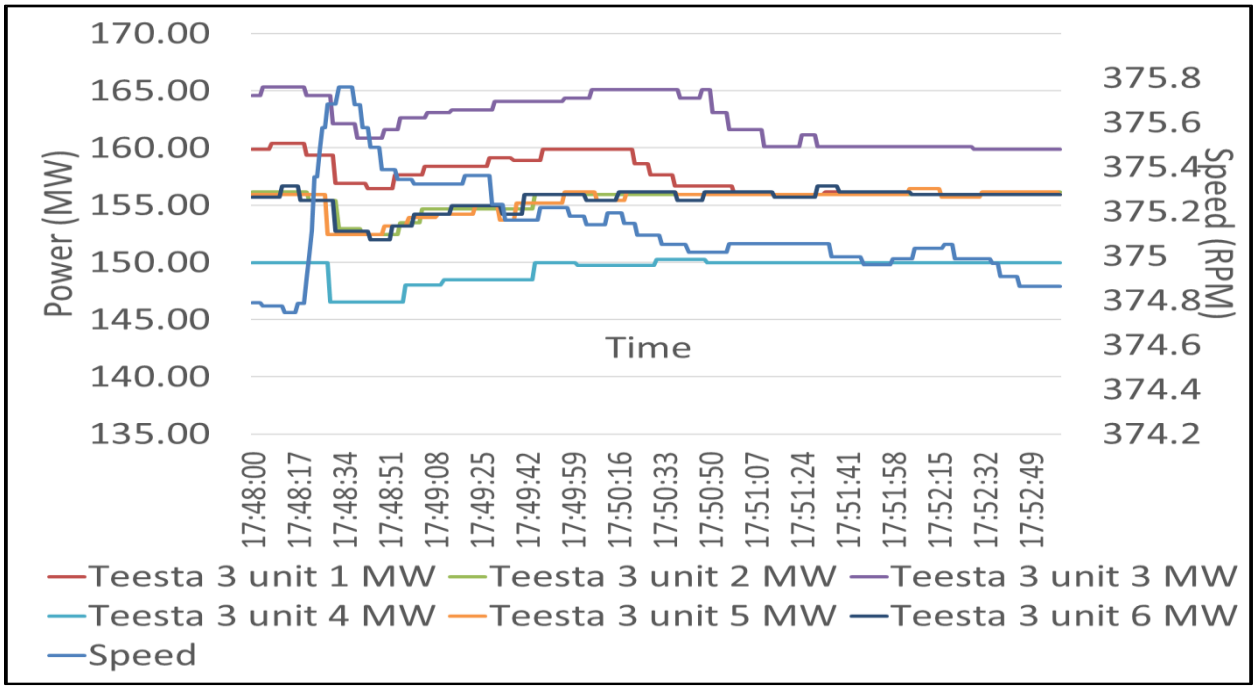
**JITPL**




**Teesta V**

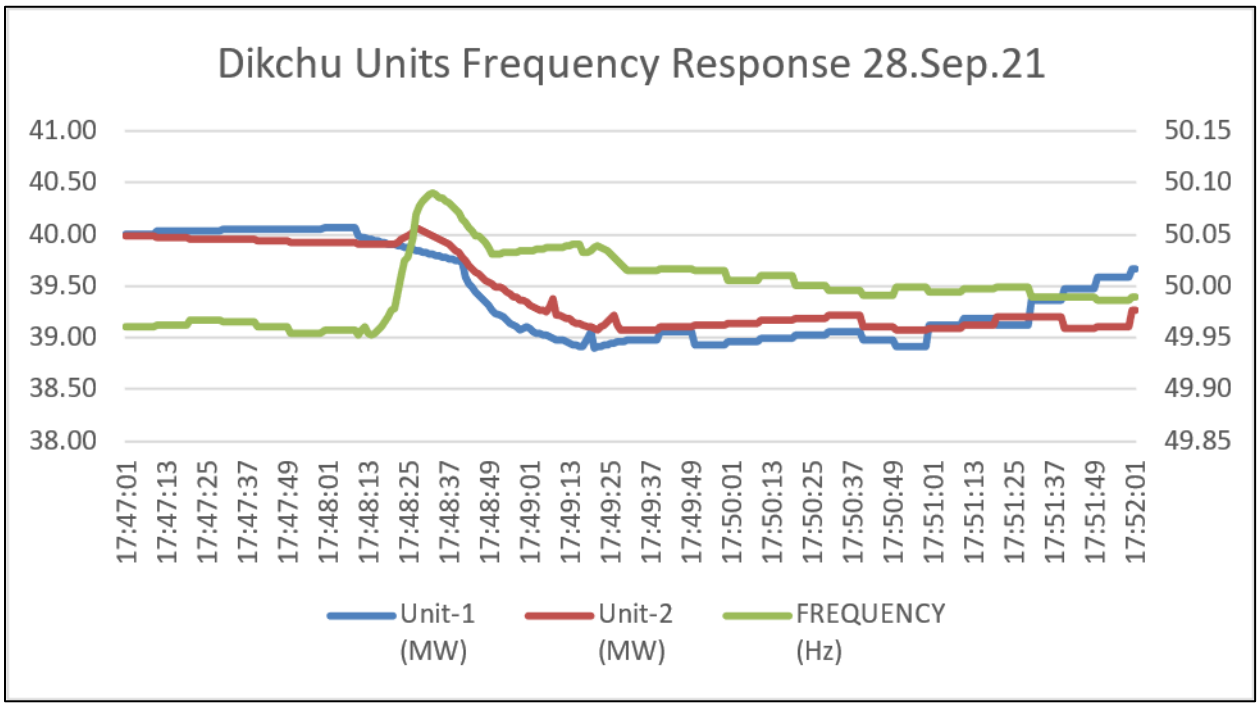


**Teesta III HPS**



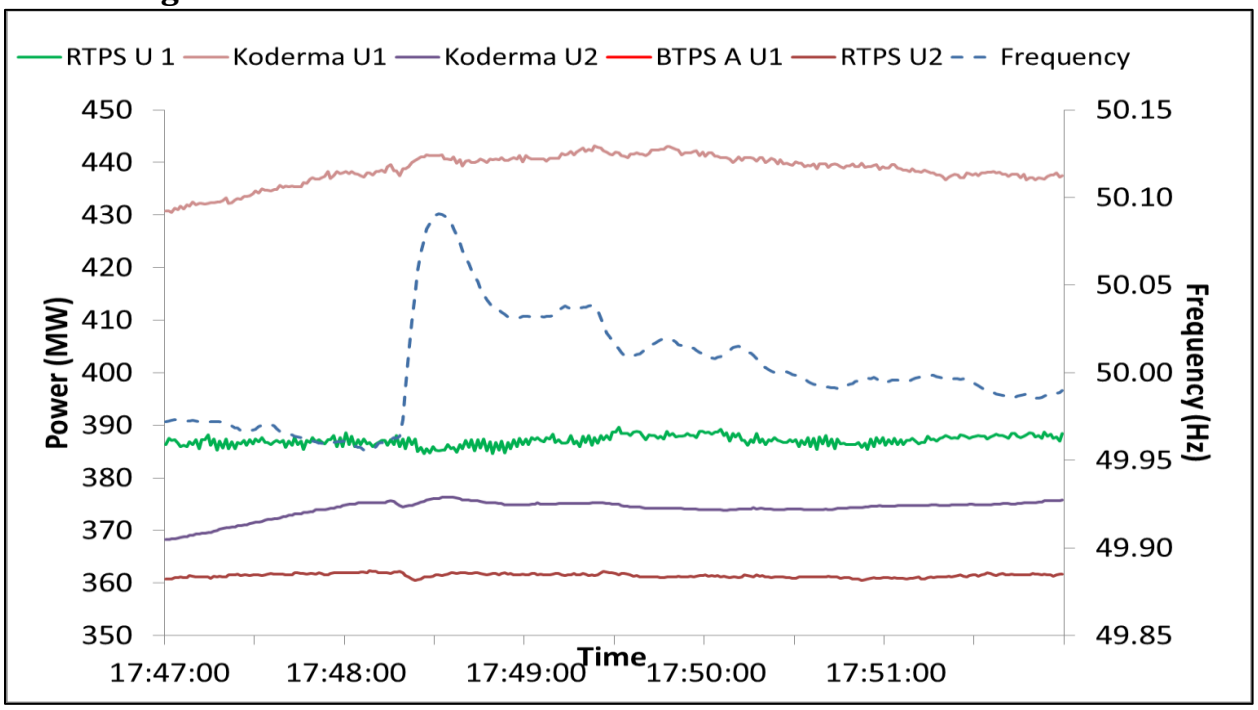

Response observed <5 MW. Ideal response >8 MW

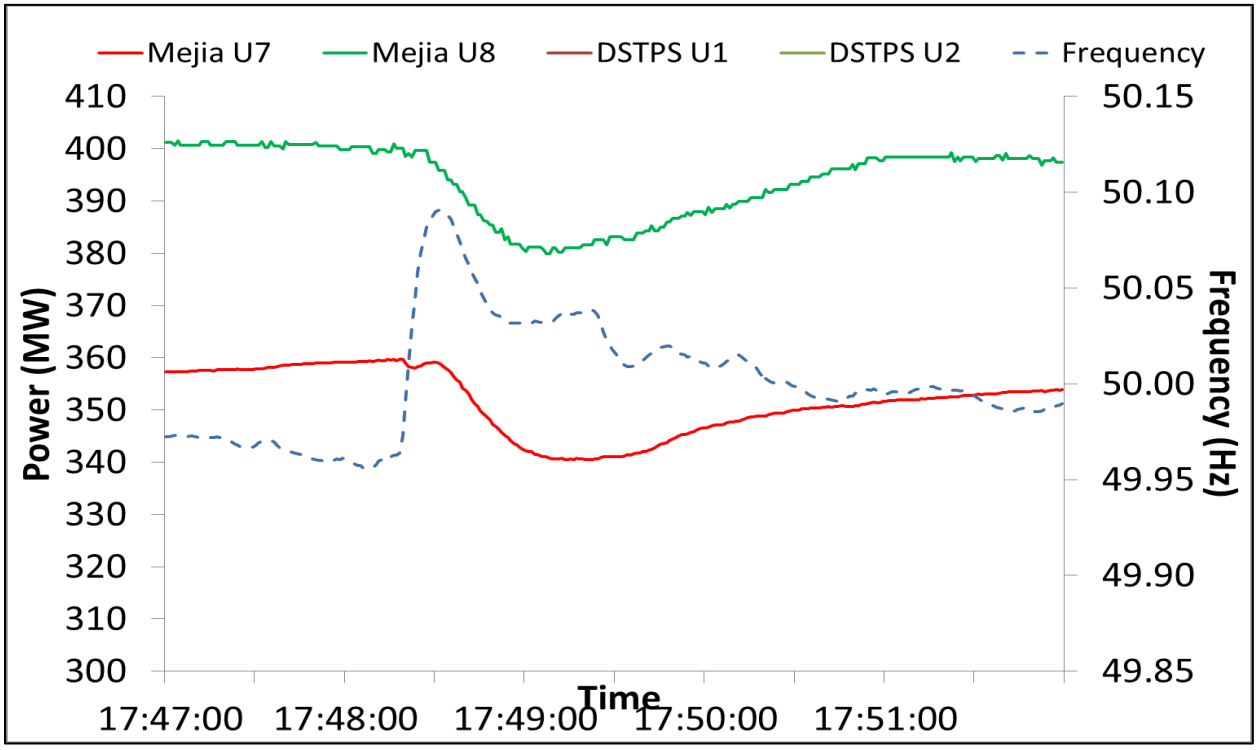
**Dikchu HPS**

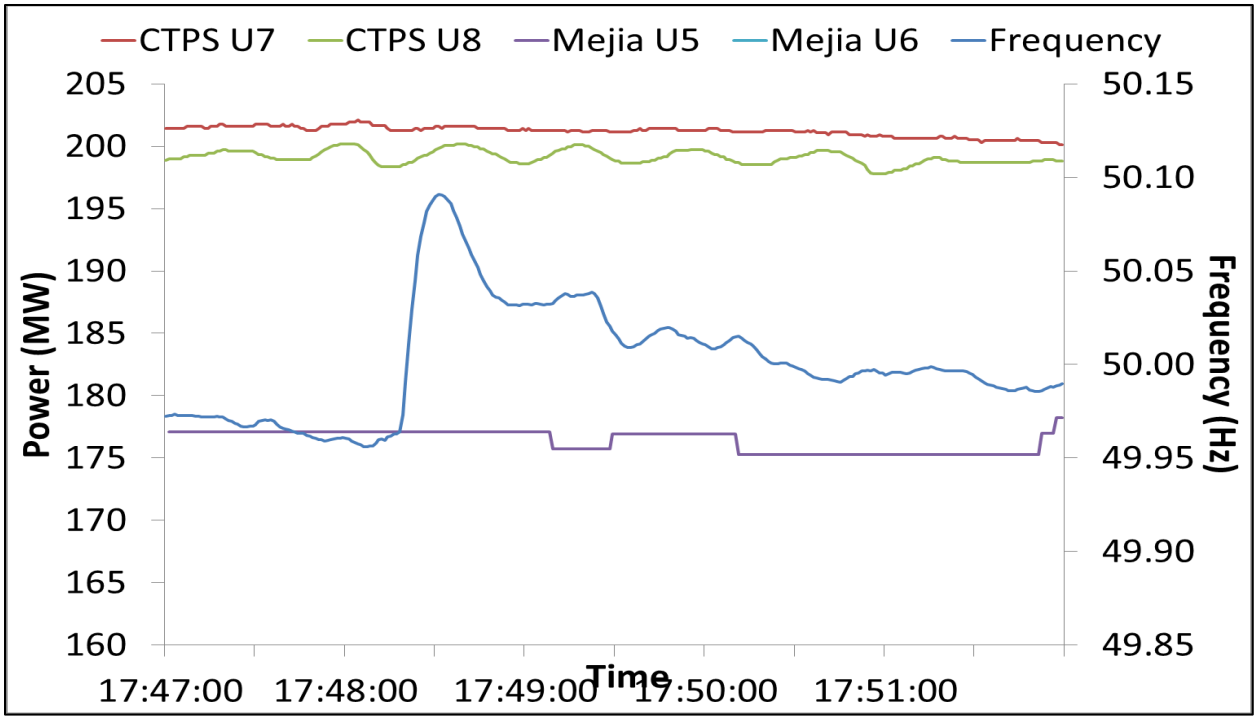


## Annexure 2: Variation of generation of state generating units during frequency change

### Generating units in DVC control area

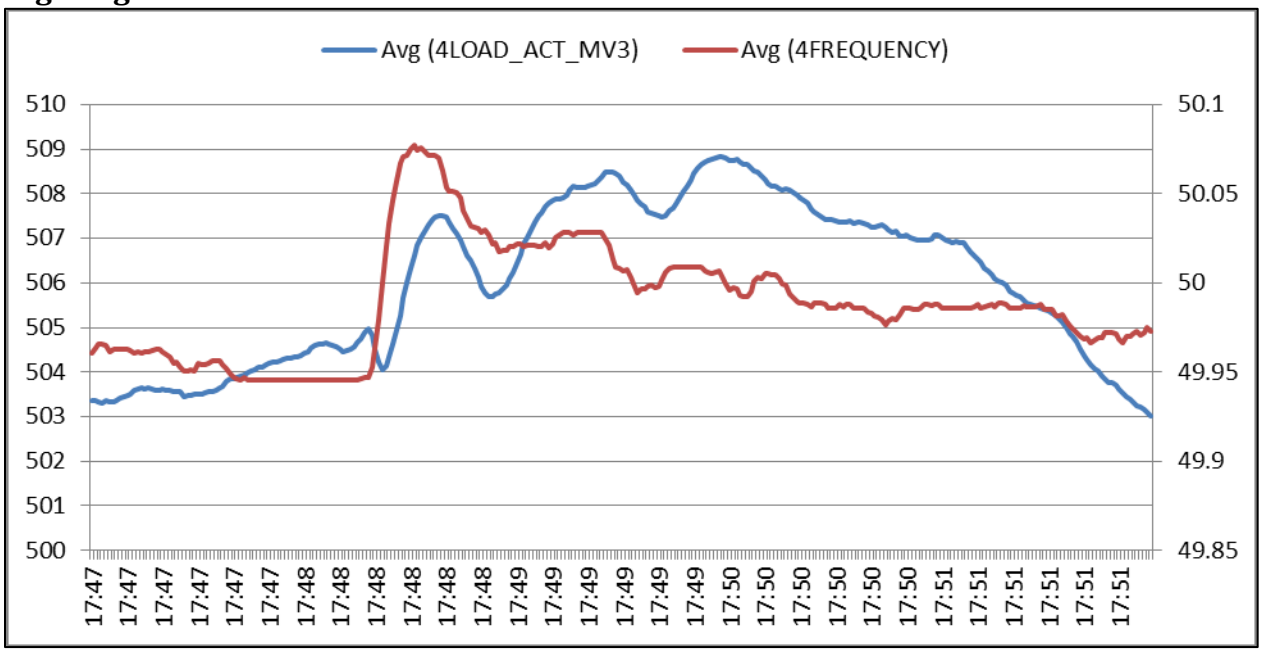


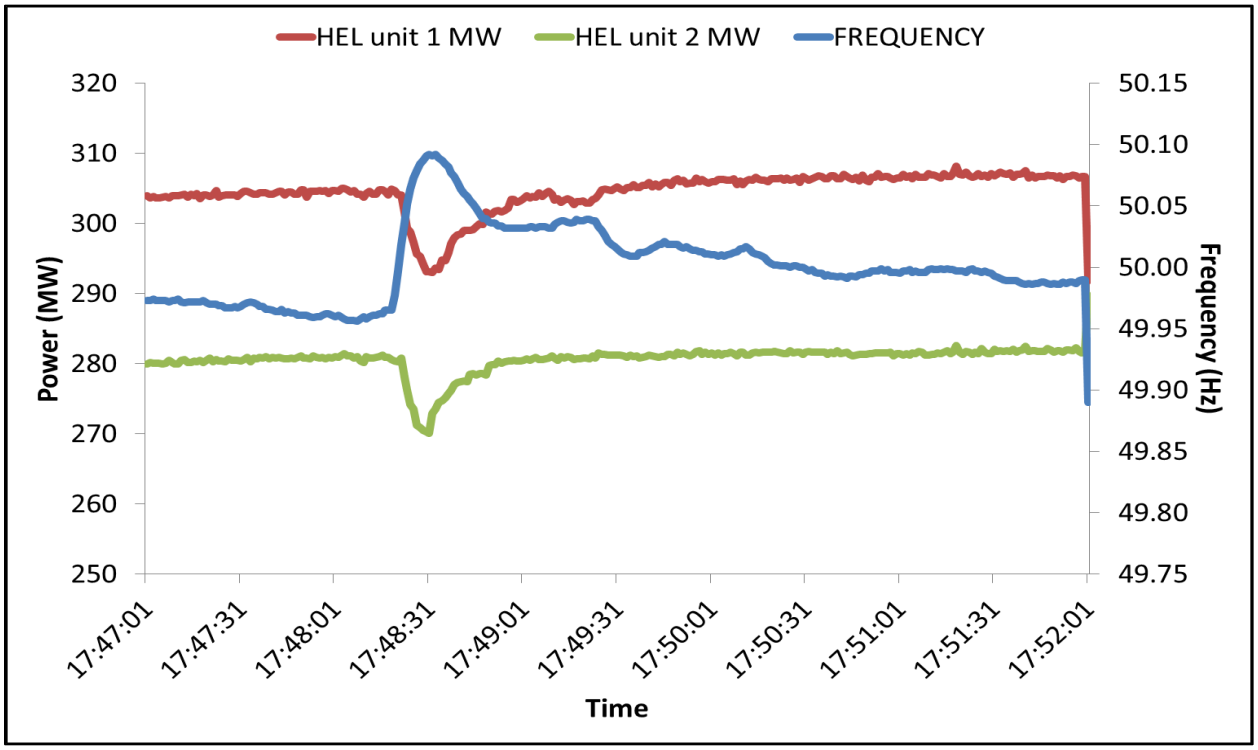



**Generating units in WBPDCL control area**

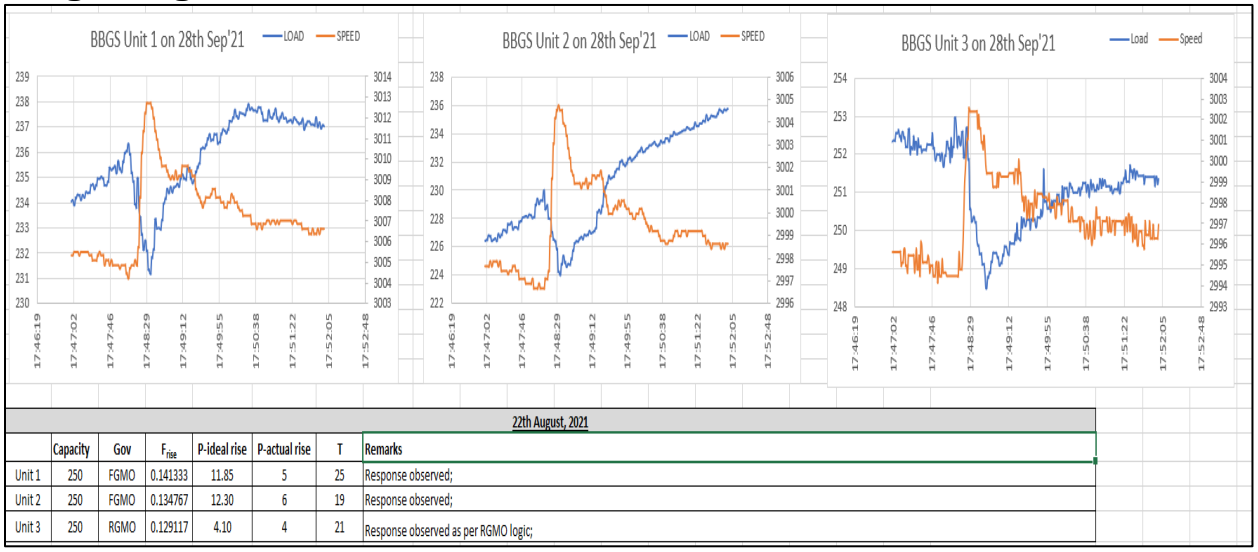
**Sagardighi TPS**



## HEL TPS



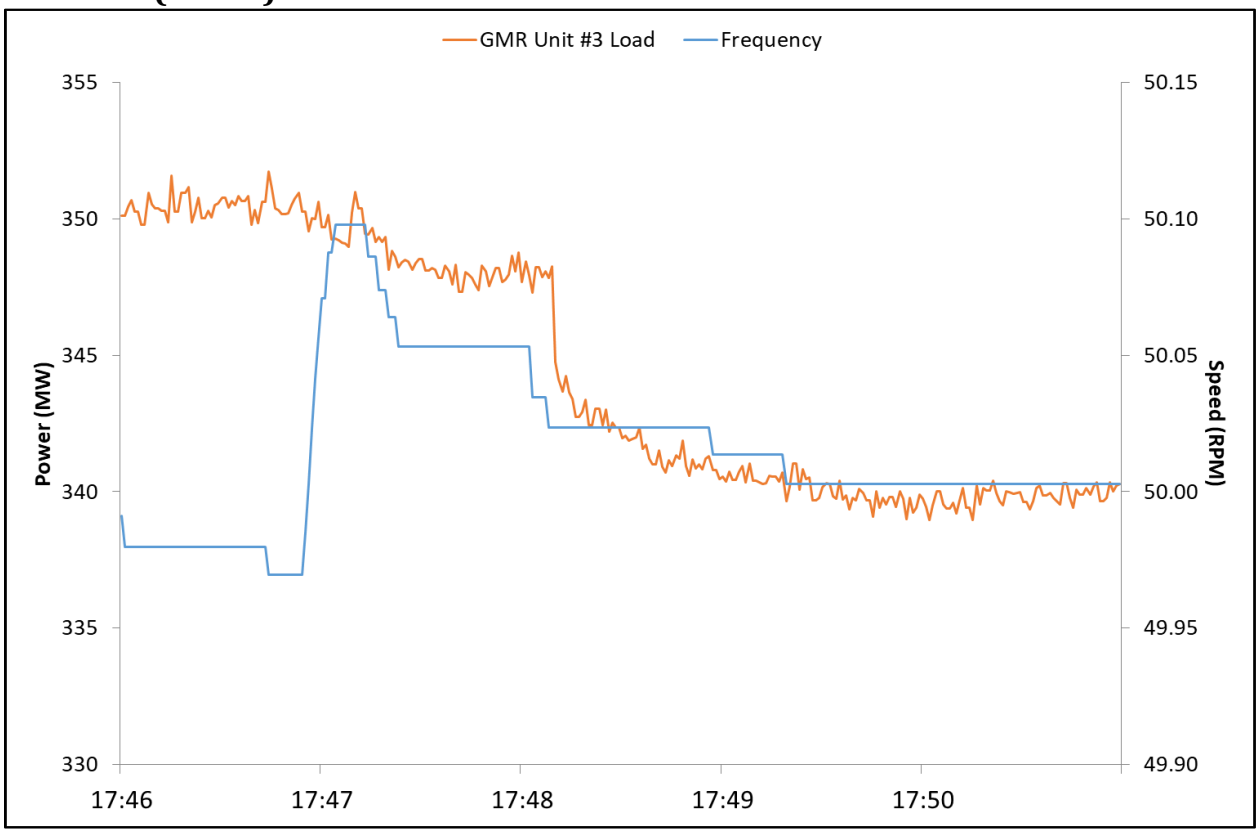

## Budge Budge TPS




22th August, 2021

| | Capacity | Gov | $F_{rise}$ | P-ideal rise | P-actual rise | T | Remarks |
|---|---|---|---|---|---|---|---|
| Unit 1 | 250 | FGMO | 0.141333 | 11.85 | 5 | 25 | Response observed; |
| Unit 2 | 250 | FGMO | 0.134767 | 12.30 | 6 | 19 | Response observed; |
| Unit 3 | 250 | RGMO | 0.129117 | 4.10 | 4 | 21 | Response observed as per RGMO logic; |

## GMR TPS (Unit 3)



## Annexure 3: FRC shared by DVC SLDC

| Frequency Response Characteristic Calculation in Eastern Region | | | |
|---|---|---|---|
| | On 28th-Sep-2021 at 17:48 hrs, around 1500 MW smelter load loss occurred at STERLITE. It led to the frequency rise from 49.962 Hz to 50.090 Hz at nadir point | | |
| | | | |
| S No | Pariculars | Dimension | DVC Interchange |
| 1 | Actual Net Interchange before the Event (17:48:20) | MW | -1790 |
| 2 | Actual Net Interchange before the Event (17:49:10) | MW | -1648 |
| 3 | Change in Net Interchange (2 - 1) | MW | 141.4 |
| 4 | Generation Loss (+) / Load Throw off (-) during the Event | MW | 0.0 |
| 5 | Control Area Response (3 - 4) | MW | 141.4 |
| 6 | Frequency before the Event | HZ | 49.96 |
| 7 | Frequency after the Event | HZ | 50.08 |
| 8a | Change in Frequency (7 - 6) | HZ | 0.120 |
| 8 | Effective change in Frequency considering RGMO * | HZ | 0.081 |
| 9 | Frequency Response Characteristic (5 / 8) | MW/HZ | 1750 |
| 10 | Net System Demand met before the Event | MW | 2640 |
| 11 | Internal Generation before the Event (10 - 1) | MW | 4430 |
| 12 | Ideal load response assuming 4% per Hz (0.04*Row 10) | MW/Hz | 105.6 |
| 13 | Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11) | MW/Hz | 1771.9 |
| 14 | Composite ideal response (12 + 13) | MW/Hz | 1877.5 |
| 15 | Percentage of ideal response {(9/14)x100} | % | 93.2% |

## Annexure 4: FRC shared by Odisha SLDC

| Frequency Response Characteristic Calculation in GRIDCO | | | |
|---|---|---|---|
| | On 28th-Sep-2021 at 17:48 hrs, around 1500 MW smelter load loss occurred at STERLITE. It led to the frequency rise from 49.962 Hz to 50.090 Hz at nadir point. Later it stabilized at | | |
| | | | |
| S No | Pariculars | Dimension | GRIDCO Interchange |
| 1 | Actual Net Interchange before the Event (17:48:00) | MW | 1572 |
| 2 | Actual Net Interchange after the Event (17:48:22) | MW | 1556 |
| 3 | Change in Net Interchange (2 - 1) | MW | -15.2 |
| 4 | Generation Loss (+) / Load Throw off (-) during the Event | MW | -1500.0 |
| 5 | Control Area Response (3 - 4) | MW | 1484.8 |
| 6 | Frequency before the Event | HZ | 49.96 |
| 7 | Frequency after the Event | HZ | 50.09 |
| 8a | Change in Frequency (7 - 6) | HZ | 0.128 |
| 8 | Effective change in Frequency considering RGMO * | HZ | 0.090 |
| 9 | Frequency Response Characteristic (5 / 8) | MW/HZ | 16498 |
| 10 | Net System Demand met before the Event | MW | 4414 |
| 11 | Internal Generation before the Event (10 - 1) | MW | 2843 |
| 12 | Ideal load response assuming 4% per Hz (0.04*Row 10) | MW/Hz | 176.6 |
| 13 | Ideal generator response assuming 5% droop…….40% per Hz (40% of Row 11) | MW/Hz | 1737.1 |
| 14 | Composite ideal response (12 + 13) | MW/Hz | 1913.6 |
| 15 | Percentage of ideal response {(9/14)x100} | % | 862.1% |

Annexure-C4

**POWER SYSTEM DEVELOPMENT FUND**

**Status of the Projects in Eastern Region**

| Sl No | State | Entity | Name of the scheme | Grant Approved | Grant sanctioned on | 1st Installment grant released on | Completion Schedule | Completion schedule w.r.t date of 1st instalment | Grant aviled so far | Under process of release | Total awards amount of placed of till date | Latest status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **Bihar** | **BSPTCL** | Renovation and Upgradation of protection system of substations. (18) | 64.22 | 42135 | 42506 | 24 | 43236 | 56.04 | | 69.195 | 90% grant availed on award cost. |
| 2 | | | Installation of Capacitor bank in 20 Nos of Grid Sub Station. (74) | 18.882 | 42618 | 43550 | 24 | 44281 | 16.99 | | 21.55 | |
| | | | **Total** | **83.10** | | | | | **73.03** | | **90.745** | |
| 5 | **Jharkhand** | **JUSNL** | Renovation & Upradation of protection system of Jharkhnad. (161) | 138.13 | 15-Nov-17 | 28-Mar-19 | 16 | 28-Jul-20 | 114.68 | 1.01 | 145.674 | 90% grant availed on award cost. Project closure is expected by Q-2 of 2021-22. |
| 6 | | | Reliable Communication & data acquisition system upto 132kV Substations ER. (177) | 22.36 | 24-May-19 | | 24 | | | | | Price bid has been opened. Tender on awarding stage. |
| | | | **Total** | **160.49** | | | | | **114.68** | | **145.674** | |
| 7 | **Odisha** | **OPTCL** | Renovation and Upgradation of protection system of substaions. (08) | 162.50 | 11-May-15 | 22-Mar-16 | 24 | 22-Mar-18 | 46.04 | | 63.31 | Project Completed on Dec-20. Request for release of final 10 % fund has been placed. |
| 8 | | | Implementation of OPGW based reliable communication at 132 kv and above substations. (128) | 25.61 | 15-Nov-17 | 29-Mar-19 | 36 | 29-Mar-22 | 23.04 | | 51.22 | 90% grant availed on award cost. Work In Progress |
| 9 | | | Installation of 125 MVAR Bus Reactor along with construction of associated by each at 400kV Grid S/S of Mendhasal, Meramundali & New Duburi for VAR control & stabilisation of system voltage. (179) | 27.23 | 27-Jul-18 | 1-Apr-19 | 18 | 1-Oct-20 | 8.17 | | 24.5 | 90% grant availed . Rest work in progress |
| 10 | | | Implementation of Automatic Demand Management System (ADMS) in SLDC, Odisha. (196) | 2.93 | 24-May-19 | 19-Feb-20 | 10 | 19-Dec-20 | 0.29 | | 0.29 | 10% grant availed |
| 11 | | | Protection Upgradation and installation os Substation Automatic System (SAS) for seven nos of 220/132/33kV Substations (Balasore, Bidanasi, Budhipadar, Katapali, Narendrapur, New-Bolangir & Paradeep). (209) | 29.56 | 24-May-19 | 13-Feb-20 | 18 | 13-Aug-21 | 8.87 | | 32.85 | 30% grant availed. Work in Progress. |
| 12 | | **OHPCL** | Renovation and Upgradation of protection and control system of OHPC. (109) | 22.35 | 22-May-17 | 25-May-18 | 24 | 25-May-20 | 14.94 | | 21.25 | 90% grant availed on award cost. |
| | | | **Total** | **270.18** | | | | | **101.35** | | **193.42** | |
| 14 | **West Bengal** | **WBSETCL** | Installation of switchable reactor & shunt capacitor for voltage improvement. (88) | 43.37 | 22-May-17 | 22-Jun-18 | 19 | 22-Jan-20 | 33.07 | | 40.83 | 90% grant availed on award cost. Will get completed by Oct'21 |
| 15 | | | Renovation & Modernisation of Transmission System. (87) | 70.13 | 22-May-17 | 25-Jun-18 | 25 | 25-Jul-20 | 63.12 | | 96.44 | 90% grant availed on award cost. Will get completed by Mar'22 |
| 16 | | | Installation of Bus Reactors at different 400kV Substation within the state of West Bengal for reactive power management of the Grid. (210) | 71.74 | 24-May-19 | 23-Oct-19 | 19 | 23-May-21 | 39.3 | | 45.62 | 30% grant availed on award cost. 04 Nos. of Reactors will be commissioned by December 2021. LoA of the 5th Reactor is yet to be placed. |
| 17 | | | Project for establishment of reliable communication and data acquisition at different substation at WBSWTCL. (222) | 31.19 | 24-May-19 | 23-Oct-19 | 25 | 23-Nov-21 | 3.12 | | | The tender has been been cancelled for OPGW. Re-tendering has to be done. |
| 18 | | | Implementation of Integated system for Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) system in West Bengal. (197) | 10.08 | 43910 | | 12 | | | | | 10% grant not yet requested |
| 19 | | **WBPDCL** | Renovation and Modernization of 220/ 132 kV STPS switch yard and implementation of Substaion Automation System. (72) | 23.48 | 5-Sep-16 | 18-May-17 | 18 | 18-Nov-18 | 21.13 | | 32.09 | Target date for completion of project is Sept.'21 subject to availability of S/D & Covid scenario. Request for release for final 10% grant has been placed. |
| 21 | | | Renovation and Modernization of switchyard and related protection system of different power stations (BTPS, BKTPS and KTPS) of WBPDCL (155) | 45.16 | 27-Jul-18 | 27-Mar-19 | 12 | 27-Mar-20 | 34.52 | | 41.68 | Target date for completion of project is Oct'21, subject to availability of S/D & Covid scenario. 90% grant availed on award cost. |
| | | | **Total** | **295.15** | | | | | **194.26** | | **256.661** | |

| POWER SYSTEM DEVELOPMENT FUND | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Status of the Projects in Eastern Region | | | | | | | | | | | | |
| **Sl No** | **State** | **Entity** | **Name of the scheme** | **Grant Approved** | **Grant sanctioned on** | **1st Installment grant released on** | **Completion Schedule** | **Completion schedule w.r.t date of 1st instalment** | **Grant aviled so far** | **Under process of release** | **Total awards amount of placed of till date** | **Latest status** |
| 22 | **DVC** | **DVC** | Renovation and Upgradation of the protection and control system of Ramgarh Sub Station. (81) | 25.96 | 2-Jan-17 | 31-May-17 | 24 | 31-May-19 | 22.95 | 2.57 | 28.603 | 90% grant availed on award cost. |
| 23 | | | Renovation and Modernization of control and protection system and replecement of equipment at Parulia, Durgapur, Kalyanewari, Giridhi Jamsedpur, Barjora, Burnpur, Dhanbad and Bundwan substation. (106) | 140.50 | 16-May-17 | 14-Dec-17 | 24 | 14-Dec-19 | 102.43 | 0.98 | 127.684 | |
| | | | **Total** | **166.46** | | | | | **125.38** | | **156.287** | |
| 24 | **Sikkim** | **ENPD, Sikkim** | Drawing of optical ground wire (OPGW) cables on existing 132kV & 66kV transmission lines and integration of leftover substations with State Load Despatch Centre, Sikkim. (173) | 10.00 | 24-May-19 | | 18 | | 3.00 | | 20 | 30% grant availed on award cost |
| | | | | **10.00** | | | | | **3.00** | | **20.00** | |
| 26 | **ERPC** | **ERPC** | Creation and Maintenance of web based protection database management. (67) | 20.00 | 17-Mar-16 | 28-Jun-16 | 18 | 28-Dec-17 | 14.83 | | 16.48 | Project Completed |
| 27 | | | Study Programme on power trading at NORD POOL Academy for Power System Engineers of Eastern Region. (122) | 5.46 | 27-Jul-18 | 27-Mar-19 | 13 | 27-Apr-20 | 4.61 | | 5.37 | |
| 28 | | | Traning Program for Power system Engineers of various constituents of Eastern Region. (117) | 0.61 | 27-Jul-18 | 11-Apr-19 | 24 | 11-Apr-21 | 0.54 | | 0.60888 | 90% grant availed on award cost. |
| | | | **Total** | **26.07** | | | | | **19.98** | | **22.45888** | |
| | | | **GrandTotal** | **1,011.46** | | | | | **631.68** | | **885.25** | |

## Date of PFR testing scheduled /completed for generating stations in ER

| Sr. No | Station | Generating Unit | Test schedule | Remarks |
|---|---|---|---|---|
| 1 | TALCHER STAGE 2 | 3 | Unit 3 - 5: 23-11-2020 to 28-11-2020 | Testing for unit 6 yet to be conducted |
| 2 | | 4 | | |
| 3 | | 5 | | |
| 4 | | 6 | | |
| 5 | Farakka | 2 | 01-02-2021 to 10-01-2021 | Testing completed |
| 6 | | 3 | | |
| 7 | | 4 | | |
| 8 | | 5 | | |
| 9 | | 6 | | |
| 10 | Kahalgaon | 1 | August'21 | Testing completed for Unit 1 |
| 11 | | 5 | | |
| 12 | | 6 | | |
| 13 | | 7 | | |
| 14 | Barh | 4 | 18-02-2021 to 21-02-2021 | Scheduled |
| 15 | | 5 | | |
| 16 | Teesta V | 1 | 07-01-2021 - 08-01-2021 | Testing completed |
| 17 | Teesta III | 1 | 30-01-2021 - 10-02-2021 | Testing completed |
| 18 | | 2 | | |
| 19 | | 3 | | |
| 20 | | 4 | | |
| 21 | | 5 | | |
| 22 | | 6 | | |
| 23 | Dikchu | 1 | Unit#1: 6th & 7th April' 21<br>Unit#2: 8th & 9th April' 21 | Scheduled |
| 24 | | 2 | | |
| 25 | MPL | 1 | - | Postponed due to some technical issue |
| 26 | | 2 | | |
| 27 | GMR | 1 | August'21 | Testing Completed |
| 28 | | 2 | | |
| 29 | | 3 | | |
| 30 | JITPL | 1 | August'21 | Scheduled |
| 31 | | 2 | | |
| 32 | | 3 | | |
| 33 | NPGCL | 1 | August'21 | Testing Completed |
| 34 | BRBCL | | 1st Week of August'21 | Testing Completed |
| 35 | APNRL | 1&2 | July'21-August-21 | Testing Completed |

**Annexure-C8**

| Power Plant | Unit No | PSS tuned (Yes/No) | PSS in Service (Yes/No) | Last PSS Tuning Date | Whether Done in Last 3 Years | Whether Next to be planned | Planned Next PSS Tuning |
|---|---|---|---|---|---|---|---|
| **West Bengal** | | | | | | | |
| Kolaghat-WBPDCL | 1 | No | Yes | Long Back | No | Yes | Under retirement |
| Kolaghat-WBPDCL | 2 | No | Yes | Long Back | No | Yes | Under retirement |
| Kolaghat-WBPDCL | 3 | No | Yes | Long Back | No | Yes | When Unit will be on Bar |
| Sagardighi-WBPDCL | 2 | No | No | Long Back | No | Yes | When Unit will be on Bar |
| Bakreshwar-WBPDCL | 2 | Yes | Yes | 2019 | Yes | Yes | Retuning to be done as from plot response is not good |
| Bakreshwar-WBPDCL | 3 | Yes | Yes | 2019 | Yes | Yes | Retuning to be done as from plot response is not good |
| Bakreshwar-WBPDCL | 4 | Yes | Yes | 2019 | Yes | Yes | Retuning to be done as from plot response is not good |
| Bakreshwar-WBPDCL | 5 | Yes | Yes | 2019 | Yes | Yes | Retuning to be done as from plot response is not good |
| DPL | 7 | No | No | N.A | No | Yes | Planned in March 2021 |
| DPL | 8 | No | Yes | No | No Detail | Yes | To be updated by WBPDCL/DPL |
| PPSP | 1 | No | Yes | 2009 | No | Yes | Dec-21 |
| PPSP | 2 | No | Yes | 2009 | No | Yes | Dec-21 |
| PPSP | 3 | No | Yes | 2009 | No | Yes | Dec-21 |
| PPSP | 4 | No | Yes | 2009 | No | Yes | Dec-21 |
| TLDP III | 4 x 33 | | | No Detail | No Detail | Yes | To be updated by WBSEDCL |
| TLDP IV | 4 X 44 | | | No Detail | No Detail | Yes | To be updated by WBSEDCL |
| **CESC** | | | | | | | |
| Budge Budge-CESC | 1 | Yes | Yes | 2015 | No | Yes | 2021-22 |
| Budge Budge-CESC | 2 | Yes | Yes | 2015 | No | Yes | 2021-22 |
| **DVC** | | | | | | | |
| Bokaro B 210 MW | 3 | | | | No Detail | Yes | Unit Is out of Service |
| Mejia-DVC | 4 | Yes | Yes | 2009 | No | Yes | Jun-21 |
| Raghunathpur-DVC | 1 | No | No | | No Detail | Yes | Will be done after AOH |
| Raghunathpur-DVC | 2 | No | No | | No Detail | Yes | Jun-21 |
| Koderma-DVC | 1 | Yes | Yes | 2013 | No | Yes | Done on 7th Sept'21 |
| Waria | 4 | Yes | Yes | 2008 | No | Yes | Unit Is out of Service |
| **ISGS** | | | | | | | |
| Kahalgaon NTPC | 1 | Yes | Yes | 2017 | Yes | Yes | Apr-21 |
| Kahalgaon NTPC | 2 | Yes | Yes | 2018 | Yes | Yes | April 2021 (During AOH) |
| Kahalgaon NTPC | 3 | Yes | Yes | 2016 | Yes | Yes | Jul-21 |
| Kahalgaon NTPC | 4 | Yes | Yes | 2015 | No | Yes | Mar-21 |
| Kahalgaon NTPC | 6 | Yes | Yes | 2009 | No | Yes | Mar-21 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Talcher Stage 2 | 3 | Yes | Yes | 2016 | Yes | Yes | Nov 2021 (As per SRPC decision) |
| Talcher Stage 2 | 4 | Yes | Yes | No Details | No Details | Yes | Nov 2021 (As per SRPC decision) |
| Talcher Stage 2 | 5 | Yes | Yes | No Details | No Details | Yes | Nov 2021 (As per SRPC decision) |
| Talcher Stage 2 | 6 | Yes | Yes | 2016 | Yes | Yes | Nov 2021 (As per SRPC decision) |
| Barh NTPC | 4 | | | 2015 | | Yes | In Next AOH |
| Barh NTPC | 5 | | | During Unit commissioning | | Yes | June 2021 (AOH) |
| Teesta V | 1 | Yes | Yes | 2008 | No | Yes | Oct-21 |
| Teesta V | 2 | Yes | Yes | 2008 | No | Yes | Oct-21 |
| Teesta V | 3 | Yes | Yes | 2008 | No | Yes | Oct-21 |
| BRBCL | 1 | No | Yes | Vendor to Do | No | Yes | Jun-21 |
| BRBCL | 2 | Yes | Yes | 2019 | Yes | Yes | Jun-21 |
| BRBCL | 3 | No | Yes | Vendor to Do | No | Yes | Jun-21 |
| KBUNL | 1 | Yes | Yes | 2014 | No | Yes | 2021-22 |
| KBUNL | 2 | Yes | Yes | 2014 | No | Yes | 2021-22 |
| KBUNL | 3 | Yes | Yes | Not Available | No | Yes | 2021-22 |
| KBUNL | 4 | Yes | Yes | Not Available | No | Yes | 2021-22 |
| Rangit | 3 x 20 | | | Not Available | No | Yes | To be updated by NHPC |
| **IPP** | | | | | | | |
| Jorethang | 1 | Yes | Yes | 2015 | No | Yes | Done on 14.10.2021 |
| Jorethang | 2 | Yes | Yes | 2015 | No | Yes | Done on 13.10.2021 |
| ADHUNIK | 1 | Yes | YES | 2013 | No | Yes | Aug-21 |
| ADHUNIK | 2 | Yes | YES | 2013 | No | Yes | Aug-21 |
| JITPL | 1 | Yes | Yes | 2016 | Yes | Yes | Jul-21 |
| JITPL | 2 | Yes | Yes | 2016 | Yes | Yes | Jul-21 |
| GMR | 1 | Yes | Yes | 2013 | No | Yes | Dec-21 |
| GMR | 2 | Yes | Yes | 2013 | No | Yes | Dec-21 |
| GMR | 3 | Yes | Yes | 2013 | No | Yes | Dec-21 |
| **Orissa** | | | | | | | |
| IB TPS | 1 | Yes | Yes | 2011 | No | Yes | Mar'2021 |
| IB TPS | 2 | Yes | Yes | 2012 | No | Yes | Mar'2021 |
| Upper Indravati | 1 | Yes | No | 2015 | No | Yes | To be updated by OHPC |
| Upper Indravati | 2 | Yes | No | 2015 | No | Yes | To be updated by OHPC |
| Upper Indravati | 3 | Yes | No | 2000 | No | Yes | To be updated by OHPC |
| Upper Indravati | 4 | Yes | No | 2001 | No | Yes | To be updated by OHPC |
| Balimela | 1 (60 MW) | | | No detail | | Yes | To be updated by OHPC |
| Balimela | 2 (60 MW) | | | No detail | | Yes | To be updated by OHPC |
| Balimela | 3 (60 MW) | No | No | Not tuned | No | Yes | To be updated by OHPC |
| Balimela | 4 (60 MW) | No | No | Not tuned | No | Yes | To be updated by OHPC |
| Balimela | 5 (60 MW) | No | No | Not tuned | No | Yes | To be updated by OHPC |
| Balimela | 6 (60 MW) | No | No | Not tuned | No | Yes | To be updated by OHPC |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Balimela | 7 (75 MW) | No | No | Not tuned | No | Yes | To be updated by OHPC |
| Balimela | 8 (75 MW) | No | No | Not tuned | No | Yes | To be updated by OHPC |
| Upper Kolab | 1 | Yes | Yes | 2007 | No | Yes | To be updated by OHPC |
| Upper Kolab | 2 | Yes | Yes | 2007 | No | Yes | To be updated by OHPC |
| Upper Kolab | 3 | Yes | Yes | 2007 | No | Yes | To be updated by OHPC |
| Upper Kolab | 4 | Yes | Yes | 2007 | No | Yes | To be updated by OHPC |
| Rengali | 1 | Yes | Yes | Not tuned | No | Yes | Done between 10th -13th OCT'21 |
| Rengali | 2 | Yes | Yes | Not tuned | No | Yes | Done between 10th -13th OCT'21 |
| Rengali | 3 | Yes | Yes | Not tuned | No | Yes | Done between 10th -13th OCT'21 |
| Rengali | 4 | Yes | Yes | Not tuned | No | Yes | Done between 10th -13th OCT'21 |
| Rengali | 5 | No | Yes | Not tuned | No | Yes | Done between 10th -13th OCT'21 |
| Sterlite | 4 X 600 | | | No detail | | Yes | To be updated by SLDC Orissa |
| **Jharkhand** | | | | | | | |
| Tenughat | 1 | Yes | Yes | 2017 | Yes | Yes | Dec-21 |
| Tenughat | 2 | Yes | Yes | 2017 | Yes | Yes | Dec-21 |
| Subarnrekha | 2 X 65 | | | | | Yes | To be updated |
| **Bihar** | | | | | | | |
| BTPS | 6 (110) | | | | | Yes | To be updated by BSPGCL |
| BTPS | 7 (110) | | | | | Yes | To be updated by BSPGCL |
| BTPS | 8 | | | | | Yes | To be updated by BSPGCL |
| BTPS | 9 | | | | | Yes | To be updated by BSPGCL |
| **Bhutan** | | | | | | | |
| Tala | 1 | No | Yes | | | Yes | To be updated by BPC |
| Tala | 2 | No | Yes | | | Yes | To be updated by BPC |
| Tala | 3 | No | Yes | | | Yes | To be updated by BPC |
| Tala | 4 | No | Yes | | | Yes | To be updated by BPC |
| Tala | 5 | No | Yes | | | Yes | To be updated by BPC |
| Tala | 6 | No | Yes | | | Yes | To be updated by BPC |
| Chukha | 1 | No | Yes | 2005 | No | Yes | To be updated by BPC |
| Chukha | 2 | No | Yes | 2005 | No | Yes | To be updated by BPC |
| Chukha | 3 | No | Yes | 2005 | No | Yes | To be updated by BPC |
| Chukha | 4 | No | Yes | 2005 | No | Yes | To be updated by BPC |
| Mangdechu | 1 | No | Yes | | | Yes | Sep-21 |
| Mangdechu | 2 | No | Yes | | | Yes | Sep-21 |
| Mangdechu | 3 | No | Yes | | | Yes | To be updated by BPC |
| Mangdechu | 4 | No | Yes | | | Yes | To be updated by BPC |

**Anticipated Peak Demand (in MW) of ER & its constituents**

**Nov-21** **Annexure-D1**

| | | | |
|---|---|---|---|
| **1** | **BIHAR** | **Demand (MW)** | **Energy Requirement (MU)** |
| | NET MAX DEMAND | 5100 | 3315 |
| | NET POWER AVAILABILITY- Own Sources | 425 | 185 |
| | Central Sector+Bi-Lateral | 4900 | 3304 |
| | SURPLUS(+)/DEFICIT(-) | 225 | 174 |
| | | | |
| **2** | **JHARKHAND** | | |
| | NET MAXIMUM DEMAND | 1650 | 1025 |
| | NET POWER AVAILABILITY- Own Source | 359 | 200 |
| | Central Sector+Bi-Lateral+IPP | 1078 | 673 |
| | SURPLUS(+)/DEFICIT(-) | -213 | -152 |
| | | | |
| **3** | **DVC** | | |
| | NET MAXIMUM DEMAND | 3035 | 1939 |
| | NET POWER AVAILABILITY- Own Source | 5131 | 2950 |
| | Central Sector+MPL | 320 | 314 |
| | Bi- lateral export by DVC | 2200 | 1141 |
| | SURPLUS(+)/DEFICIT(-) AFTER EXPORT | 216 | 184 |
| | | | |
| **4** | **ODISHA** | | |
| | NET MAXIMUM DEMAND (OWN) | 4400 | 2649 |
| | NET MAXIMUM DEMAND (In Case,600 MW CPP Drawal) | 5400 | 3250 |
| | NET POWER AVAILABILITY- Own Source | 4247 | 2530 |
| | Central Sector | 1980 | 1036 |
| | SURPLUS(+)/DEFICIT(-) (OWN) | 1827 | 917 |
| | SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal) | 827 | 316 |
| | | | |
| **5** | **WEST BENGAL** | | |
| **5.1** | **WBSEDCL** | | |
| | NET MAXIMUM DEMAND | 6900 | 3610 |
| | NET MAXIMUM DEMAND (Incl. B'Desh+Sikkim) | 6910 | 3701 |
| | NET POWER AVAILABILITY- Own Source (Incl. DPL) | 5308 | 2468 |
| | Central Sector+Bi-lateral+IPP&CPP+TLDP | 2764 | 1478 |
| | EXPORT (TO B'DESH & SIKKIM) | 10 | 7 |
| | SURPLUS(+)/DEFICIT(-) AFTER EXPORT | 1162 | 245 |
| | | | |
| **5.2** | **IPCL** | | |
| | IPCL Demand | 130 | 84 |
| | IPCL Import | 130 | 84 |
| | SURPLUS(+)/DEFICIT(-) | 0 | 0 |
| | | | |
| **5.3** | **CESC** | | |
| | NET MAXIMUM DEMAND | 1780 | 940 |
| | NET POWER AVAILABILITY- Own Source | 700 | 498 |
| | FROM OTHER SOURCE (INCL. IPP/CPP-29-30 MU/M) | 540 | 126 |
| | IMPORT FROM HEL | 540 | 316 |
| | TOTAL AVAILABILITY OF CESC | 1780 | 940 |
| | SURPLUS(+)/DEFICIT(-) | 0 | 0 |
| | | | |
| | **WEST BENGAL (WBSEDCL+CESC+IPCL)** | | |
| | (excluding DVC's supply to WBSEDCL's command area) | | |
| | NET MAXIMUM DEMAND | 8810 | 4634 |
| | NET POWER AVAILABILITY- Own Source | 6008 | 2966 |
| | CS SHARE+BILATERAL+IPP/CPP+TLDP+HEL | 3844 | 1920 |
| | SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXPORT | 1042 | 252 |
| | SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXPORT | 1032 | 245 |
| | | | |
| **6** | **SIKKIM** | | |
| | NET MAXIMUM DEMAND | 113 | 50 |
| | NET POWER AVAILABILITY- Own Source | 8 | 3 |
| | Central Sector | 200 | 120 |
| | SURPLUS(+)/DEFICIT(-) | 95 | 73 |
| | | | |
| | **EASTERN REGION** | | |
| | NET MAXIMUM DEMAND | 22655 | 13612 |
| | NET MAXIMUM DEMAND (In Case, 600 MW CPP Drawal of Odisha) | 23635 | 14213 |
| | BILATERAL EXPORT BY DVC | 1534 | 1141 |
| | EXPORT BY WBSEDCL TO SIKKIM & B'desh | 10 | 7 |
| | EXPORT TO B’DESH & NEPAL OTHER THAN DVC | 642 | 419 |
| | NET TOTAL POWER AVAILABILITY OF ER | 28500 | 16201 |
| | (INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL) | | |
| | SURPLUS(+)/DEFICIT(-) | 3659 | 1022 |
| | SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal of Odisha) | 2679 | 421 |