



**AGENDA  
FOR  
184<sup>th</sup> OCC MEETING**

**Date: 26.10.2021**

**Eastern Regional Power Committee**

**14, Golf Club Road, Tollygunge**

**Kolkata: 700033**

## **EASTERN REGIONAL POWER COMMITTEE**

**AGENDA FOR 184<sup>TH</sup> OCC MEETING TO BE HELD ON 26.10.2021 (TUESDAY) AT 10:30 HRS**

### **PART – A**

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

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

**Members may confirm the minutes of 183<sup>rd</sup> OCC meeting.**

### **PART B: ITEMS FOR DISCUSSION**

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

In the 183<sup>rd</sup> 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.

<b>Odisha Feeder list for Disconnection</b>	
<b>Old feeders</b>	<b>New feeders</b>
<b>ISTS feeders</b>	
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)
<b>Intra-state feeders</b>	
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

<b>DVC Feeder list for Disconnection</b>	
<b>Old 33kV feeders</b>	<b>New 33kV feeders</b>
<b>Intra-state feeders</b>	
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

<b>Jharkhand feeder list</b>	
<b>Old feeders</b>	<b>New feeders</b>
<b>ISTS feeders</b>	
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)
<b>Intra-state feeder</b>	
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
<b>Bihar feeder list</b>	
<b>Old feeders</b>	<b>New feeders</b>
<b>ISTS feeders</b>	
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
<b>Intra-state feeder</b>	
<b>West Bengal feeder list</b>	
<b>Old feeders</b>	<b>New feeders</b>
<b>ISTS feeders</b>	
220 kV Dalkohla (PG)-Dalkohla(WB)	
132 kV Malda (PG)-Malda(WB)	
132 kV Birpara(PG)-Birpara(WB)	
<b>Intra-state feeder</b>	
<b>Sikkim feeder list</b>	
<b>Old feeders</b>	<b>New feeders</b>
<b>ISTS feeders</b>	

**Member may discuss.**

**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.**

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

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

In the meeting held on 28<sup>th</sup> 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 106<sup>th</sup> 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 44<sup>th</sup> 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.**

## **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 106<sup>th</sup> 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 44<sup>th</sup> 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.**

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 be 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 44<sup>th</sup> 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.**

#### **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 106<sup>th</sup> 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 44<sup>th</sup> 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.**

## **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 44<sup>th</sup> 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.**

### **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 28<sup>th</sup> December 2020. Further, on 19<sup>th</sup> 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.**

## **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 181<sup>st</sup> OCC Meeting, JUSNL representative submitted that they had got a letter from NTPC on 19<sup>th</sup> July '21 regarding anti-theft charging of the 220kV 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-Lalmatia 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 10<sup>th</sup> 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 182<sup>nd</sup> 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 4<sup>th</sup> 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 220kV Lamatia-Godda line for reliable power supply to Lalmatia.

In the 183<sup>rd</sup> 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.**

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

In 179<sup>th</sup> 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 181<sup>st</sup> 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 15<sup>th</sup> August 21.

In the 182<sup>nd</sup> 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 10<sup>th</sup> Sept'21.

In the 183<sup>rd</sup> 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.**

### **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 103<sup>rd</sup> 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 181<sup>st</sup> 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 15<sup>th</sup> August 21.

In the 182<sup>nd</sup> 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 1<sup>st</sup> week of September'2021.

In the 183<sup>rd</sup> 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.**

## **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 181<sup>st</sup> 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 182<sup>nd</sup> OCC meeting, Sikkim informed that the matter is under persuasion.

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

**Sikkim may update.**

## **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 Pandiabili 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 182<sup>nd</sup> 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 183<sup>rd</sup> 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.**

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

400KV/220KV 315 MVA ICT 2 at Meeramundali 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 182<sup>nd</sup> 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 183<sup>rd</sup> 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.**

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

Since 180<sup>th</sup> 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.

<b>Name of generating units</b>	<b>Maximum MVAr absorption limit (as per capability curve)</b>	<b>MVAr absorption during maximum voltage (as per ERLDC SCADA data)</b>	<b>Maximum voltage during August 2021</b>
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
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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.**

### 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 183<sup>rd</sup> 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 183<sup>rd</sup> 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.**

**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.**

## 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.**

### 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
<b>Event 1: On 28<sup>th</sup> September 2021 at 17:48:31:960 Hrs, 1500 MW smelter load loss at Sterlite in ER.</b>	<b>49.962 Hz to 50.090 Hz. Later stabilized at 50.031 Hz.</b>	<b>58.5 %</b>


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

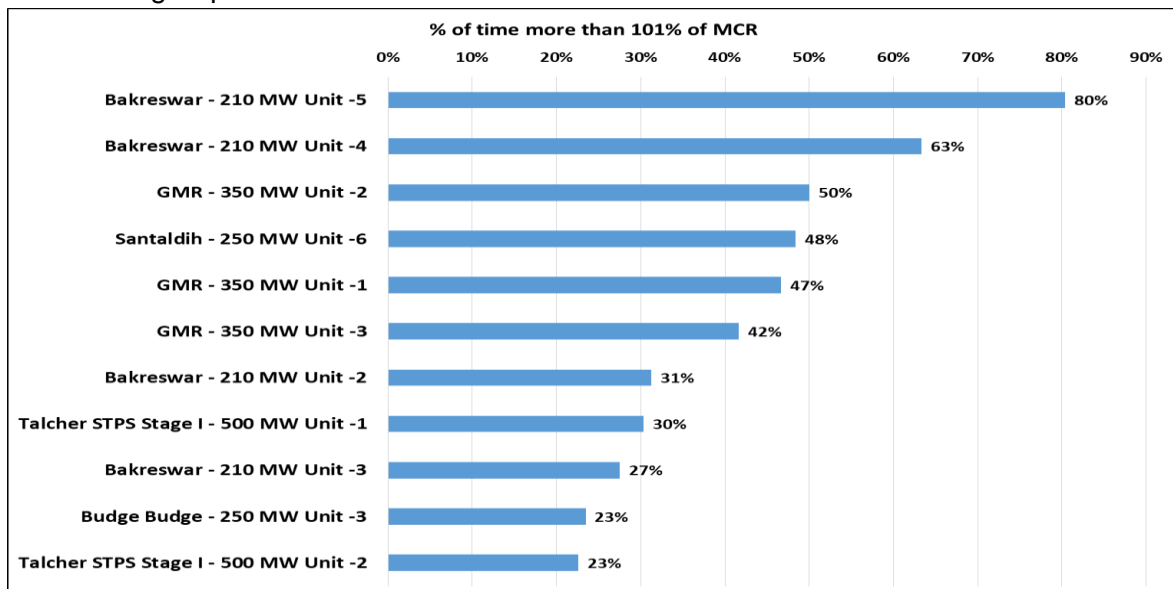
**Reason for non-sharing of generator end data/FRC may be shared.**

### 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.**



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

In 10<sup>th</sup> 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.**

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

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

WBPDCCL 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 182 <sup>nd</sup> 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 27 <sup>th</sup> 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 183<sup>rd</sup> 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.**

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

In the 180<sup>th</sup> OCC meeting, ERLDC representative informed that as per communication received from 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 181<sup>st</sup> 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 1<sup>st</sup> week of August'21 respectively.

In the 182<sup>nd</sup> 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 183<sup>rd</sup> 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.**

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

In the 171<sup>st</sup> 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 6<sup>th</sup> 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 181<sup>st</sup> OCC meeting, WBPDC 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 22<sup>nd</sup> 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 182<sup>nd</sup> OCC meeting, WBPDC representative submitted that they had taken the budgetary offer from 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 1<sup>st</sup> week of September'2021.

In the 183<sup>rd</sup> OCC meeting, OHPC representative submitted that work order has been placed on M/s Slovenia 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.

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

**Members may update.**

#### **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 171<sup>st</sup> OCC Meeting and shared with all concerned utilities.

In the 182<sup>nd</sup> OCC meeting, WBPDC representative informed that PSS tuning for Sagardighi unit#2 PSS tuning had been done on 21<sup>st</sup> Aug'21. OCC advised WBPDC 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 16<sup>th</sup> & 17<sup>th</sup> 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 183<sup>rd</sup> 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.**

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

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

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

As per the decision taken in the meeting held on 8<sup>th</sup> 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 Generating Station**

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.

**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**

SI 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	<a href="http://www.bsptcl.in/ViewATCTTCWeb.aspx?GL=12&amp;PL=10">http://www.bsptcl.in/ViewATCTTCWeb.aspx?GL=12&amp;PL=10</a>	Yes	Static Link-Table
2	JUSNL	Yes	<a href="http://www.jusnl.in/pdf/download/ttc_atc_nov_2020.pdf">http://www.jusnl.in/pdf/download/ttc_atc_nov_2020.pdf</a>	Yes	Static link –pdf file
3	DVC	Yes	<a href="https://application.dvc.gov.in/CLD/atcttcmenu.jsp#">https://application.dvc.gov.in/CLD/atcttcmenu.jsp#</a>	Yes	Static Link-Word file
4	OPTCL	Yes	<a href="https://www.sldcorissa.org.in/TTC_ATC.aspx">https://www.sldcorissa.org.in/TTC_ATC.aspx</a>	Yes	Static Link-pdf file
5	WBSETCL	Yes	<a href="http://www.wbsldc.in/atc-ttc">http://www.wbsldc.in/atc-ttc</a>	No (Not updating)	Static Link-Table
6	Sikkim	No	<a href="https://power.sikkim.gov.in/atc-and-ttc">https://power.sikkim.gov.in/atc-and-ttc</a>	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.**

#### **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 9 <sup>th</sup> 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 179<sup>th</sup> OCC meeting, ERLDC submitted that Chuzachen had done the Mock Black Start on 9<sup>th</sup> April 2021.

In the 181<sup>st</sup> OCC meeting, SLDC, Jharkhand representative submitted that they would go for Mock Black Start in the 2<sup>nd</sup> 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 the 2<sup>nd</sup> week of August '21.

In the 182<sup>nd</sup> OCC meeting, OHPC representative submitted that Mock Black Start had been done for Rangali on 18<sup>th</sup> August'21 and they would go 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 183<sup>rd</sup> 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.**

## 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.**

### 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		
WBPDC	Bakreswar TPS	1	210	01.11.2021	25.11.2021	25	AOH / BOH
	Bakreswar 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 <b>(Already availed in Aug'21)</b>

#### 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.**



## 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<sup>th</sup> 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<sup>th</sup> OCC meeting.

Element Name	Element Type	Daily/Continuous	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.**

### 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 184<sup>th</sup> OCC Outage Coordination meeting wherein it was decided to refer the issue to 184<sup>th</sup> OCC Meeting for fruitful discussion.

Element Name	Element Type	Daily/Continuous	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 equipments 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 equipments 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-	Ac transmiss	D	Isolation of Jumpers of 400kv	01-11-2021	08:00	01-11-2021	17:00	1

MAITHON RB-2	ion line		MPL Maithon-2 Main Bay(406) for upgradation of equipment under ERSS-XVII project work at MPL end.					
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Members may discuss.

**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 BOILER MODIFICATION.	19-Sep-2021
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	WBPDC	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	INITIALLY 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/HIRAKU D I	ODISHA	OHPC	5	37.5	R & M WORK	25-Oct-2016
4	BURLA HPS/HIRAKU D 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 TRANSFORMER 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.**

**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	24-Sep-21	16:18	

		B/R-2 AT NEW JEERAT			
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 400KV- KISHANGANJ-2) AT SAHARSA	10-Sep-21	18:11	
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 NEW JEERAT	15-Sep-21	16:38	
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	28-Sep-21	14:12	

		SUBHASGRAM(PG) -2 AT NEW JEERAT			
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 JEERAT	28-Sep-21	14:11	
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.**



**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 13:04 Hrs& 25.09.2021 at 18:01 Hrs.	49.50 Hz on 24.09.2021 at 18:42 Hrs	4.18	77.01	18.81

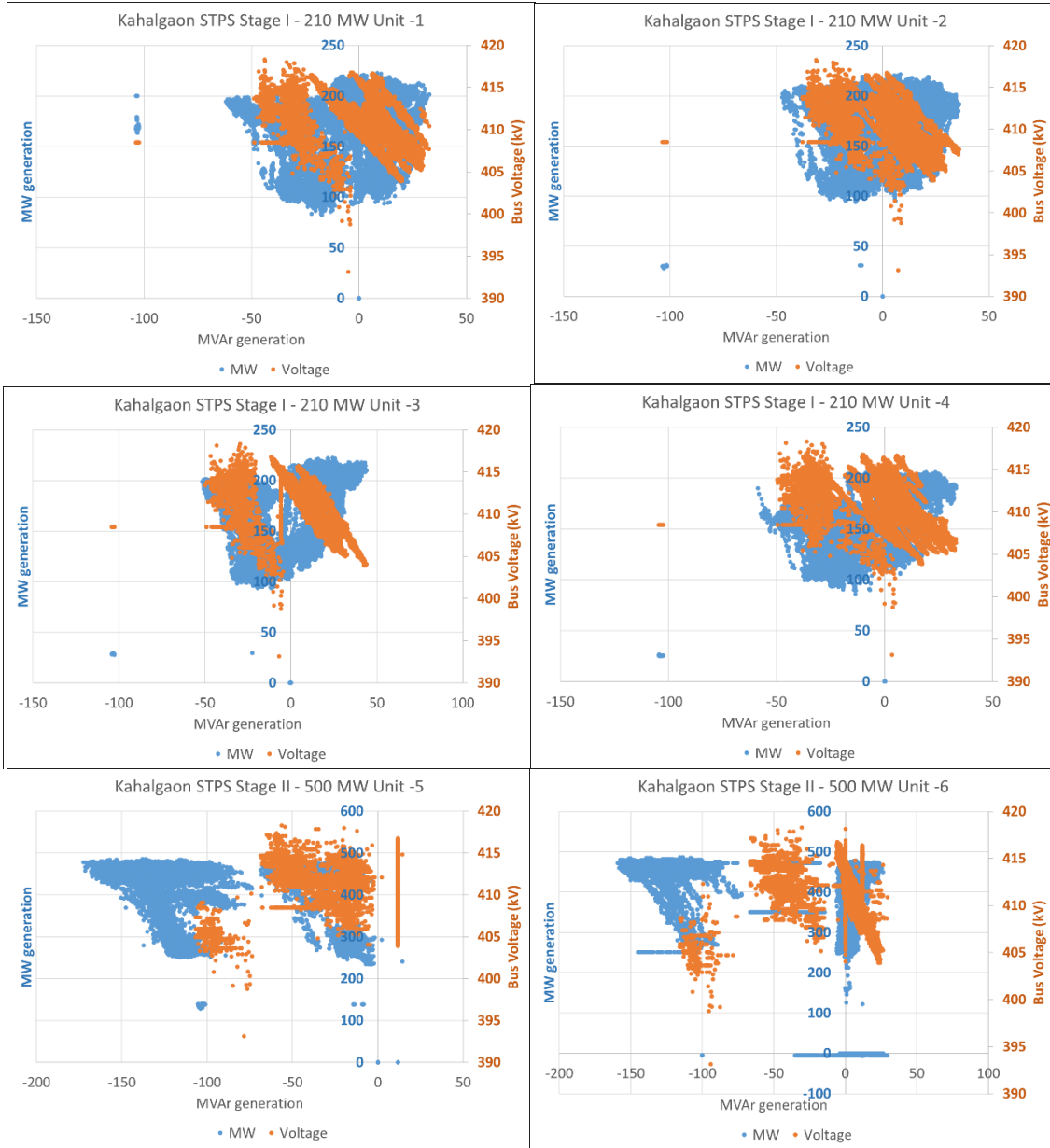
Hence, no report of operation of UFR has been received from any of the constituents.

**Members may note.**

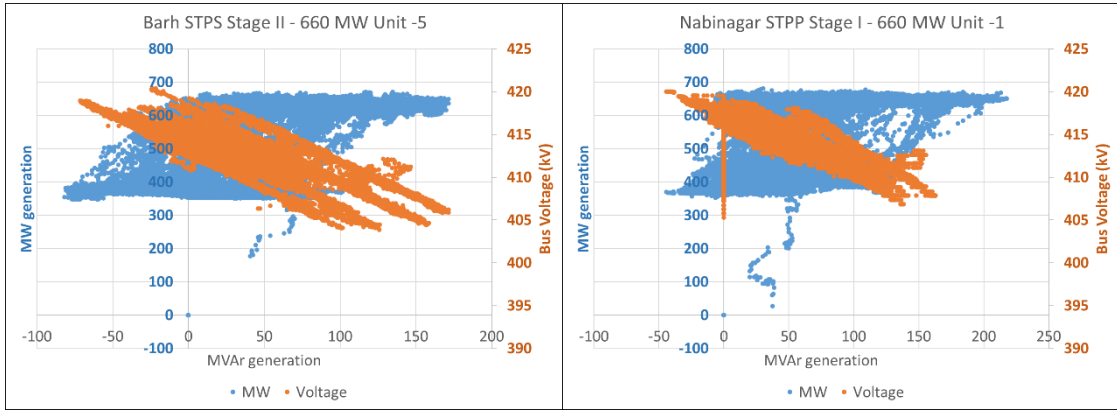
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## MVAr injection/absorption by generating units with inadequate reactive power support during September 2021

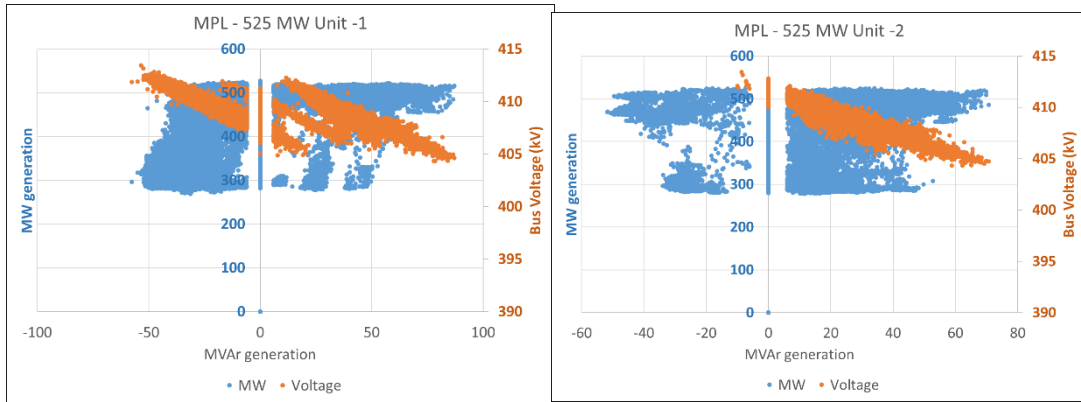
### Kahalgaon STPS



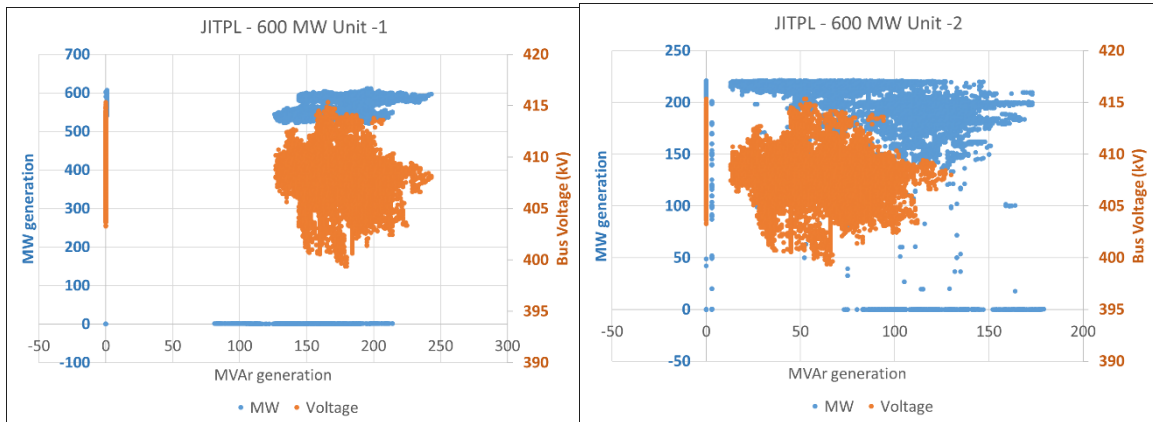
## Barh and Nabinagar STPS



## 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 फ़ैक्स : 033-24235809/5029 Website: [www.erldc.org](http://www.erldc.org), Email ID- [erldc@posoco.in](mailto: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 विद्युत 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 28 <sup>th</sup> 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 12<sup>th</sup> 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	<b>Response observed.</b> But non adequate.
GMR TPS (Unit 3)	<b>Satisfactory</b> (In data shared by GMR, frequency rise and generation back down are not synchronized)
Sagardighi	<b>Non-Satisfactory</b>

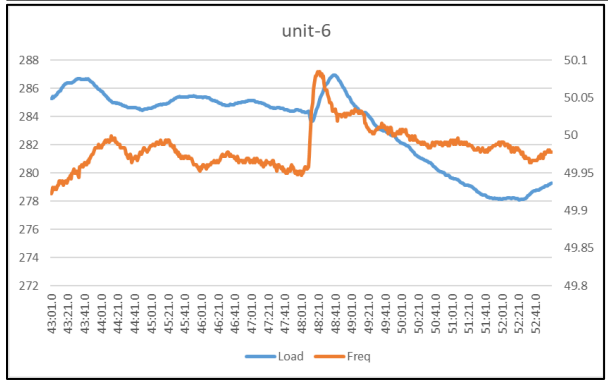
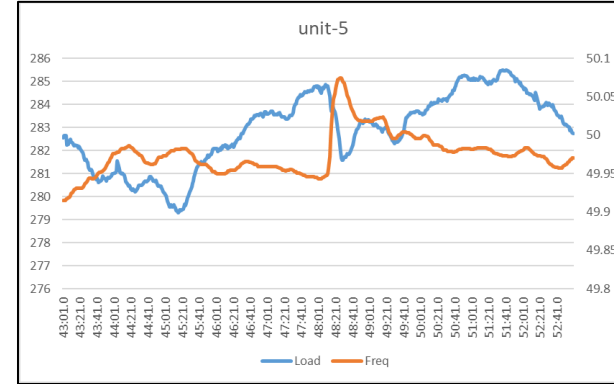
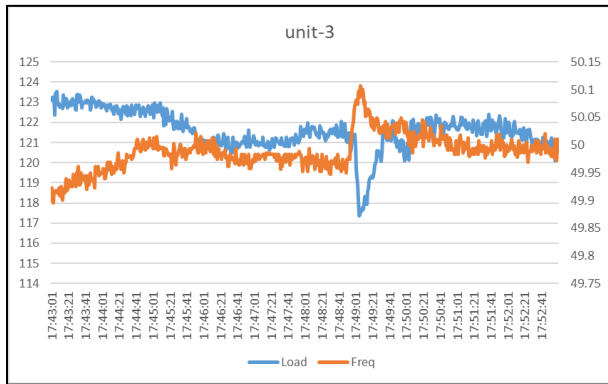
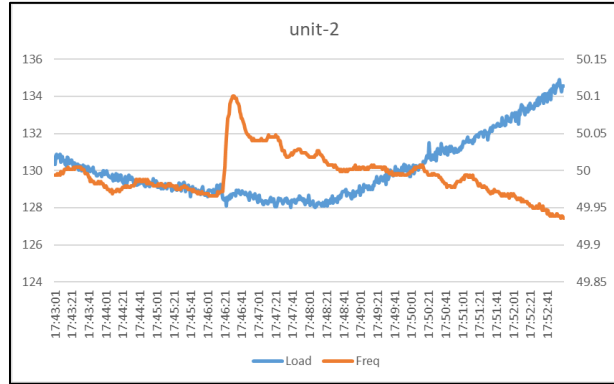
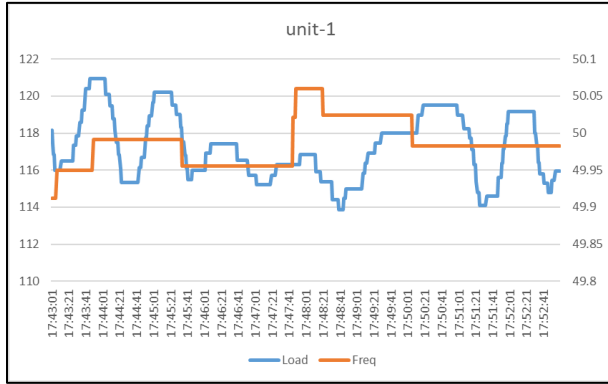
**\*\*Response of these generating stations are shown in Annexure 2**

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

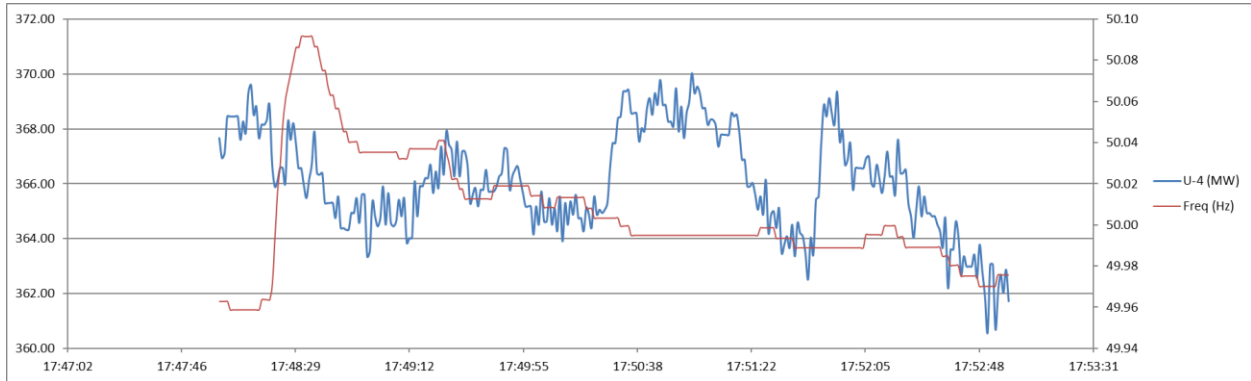
- **JITPL:** As per data shared maximum frequency captured was 50.017 Hz. But Maximum frequency is captured in PMU was 50.09 Hz. JITPL may check the calibration of RPM recording.
- **BBGS Unit 3:** As per DCS stamping observed, Unit #3 rpm changed from 2994.479 to 3002.55 rpm. Since RGMO response was 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

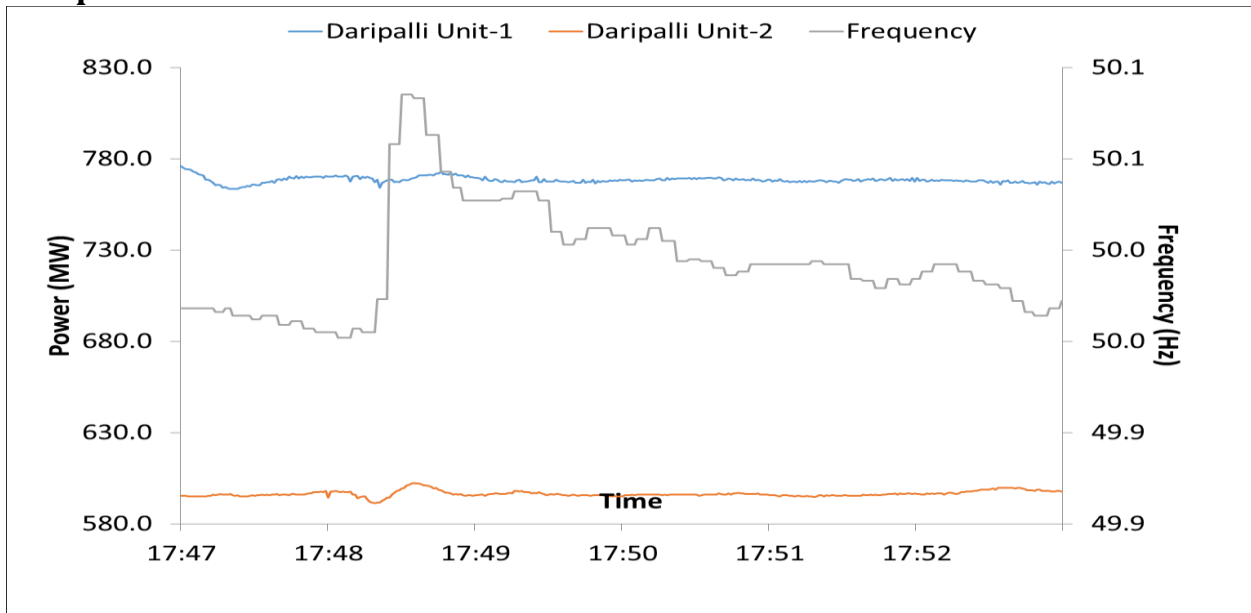


## Barh STPS

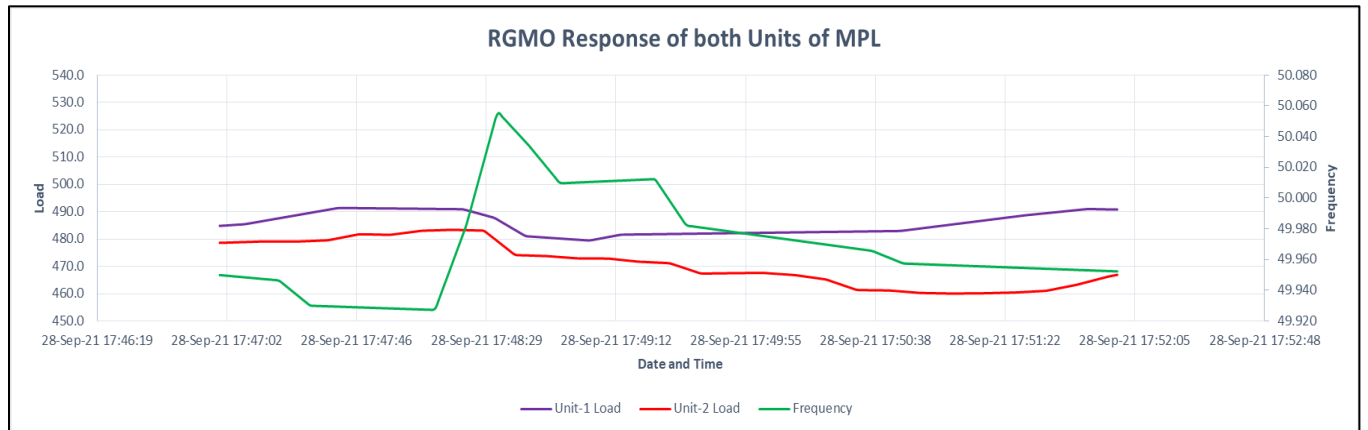


Unit 5 was not in service at the time of the event.

## Daripalli STPS



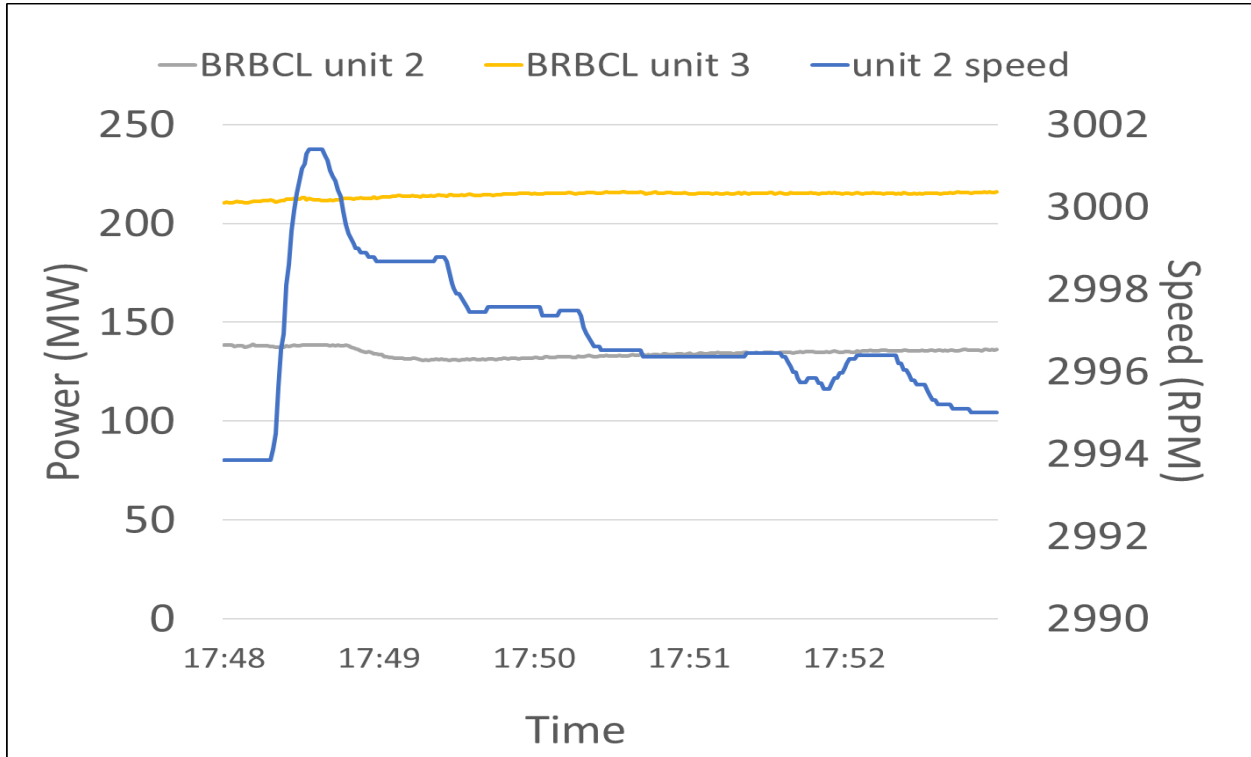
## MPL



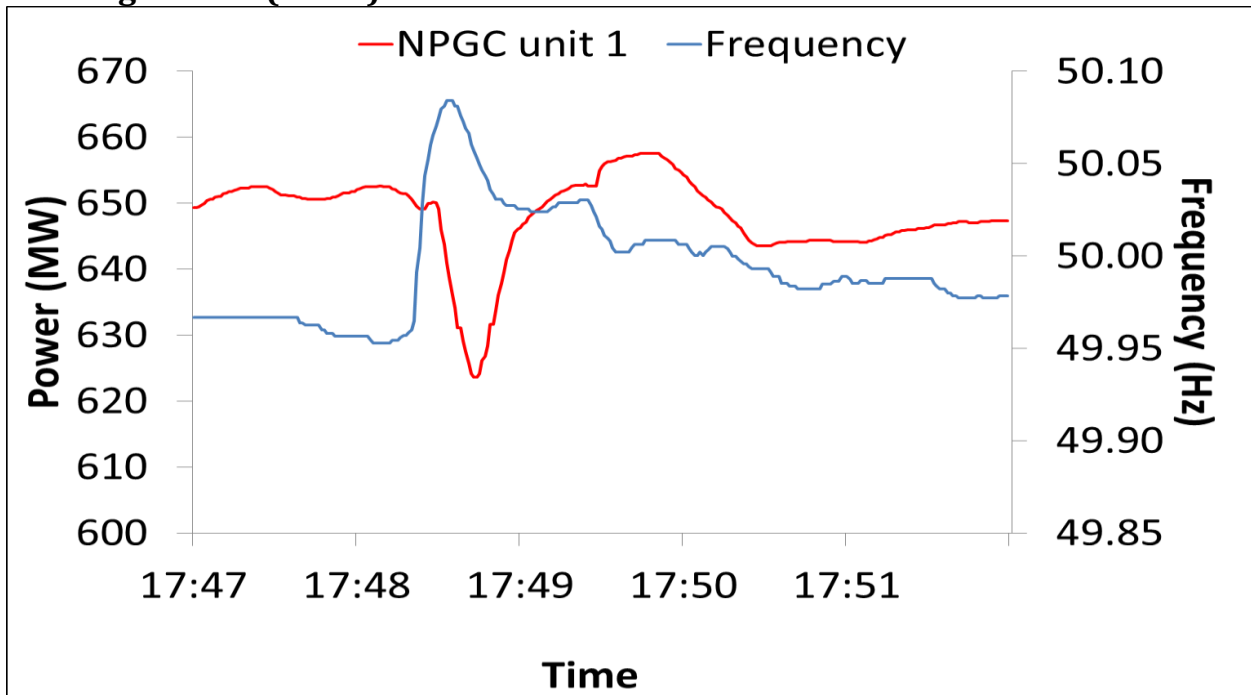
Maximum response observed: -11.2 MW for unit 1 and -12.8 MW for unit 2.



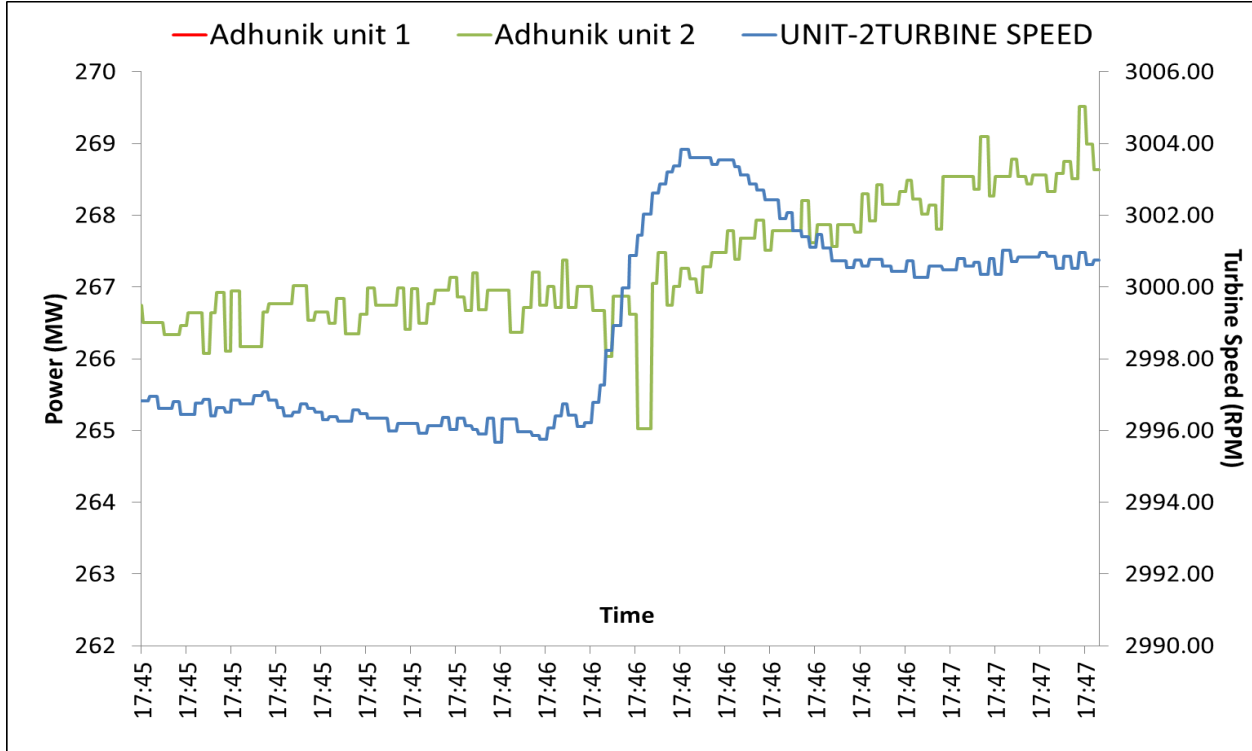
### Nabinagar TPS (BRBCL)



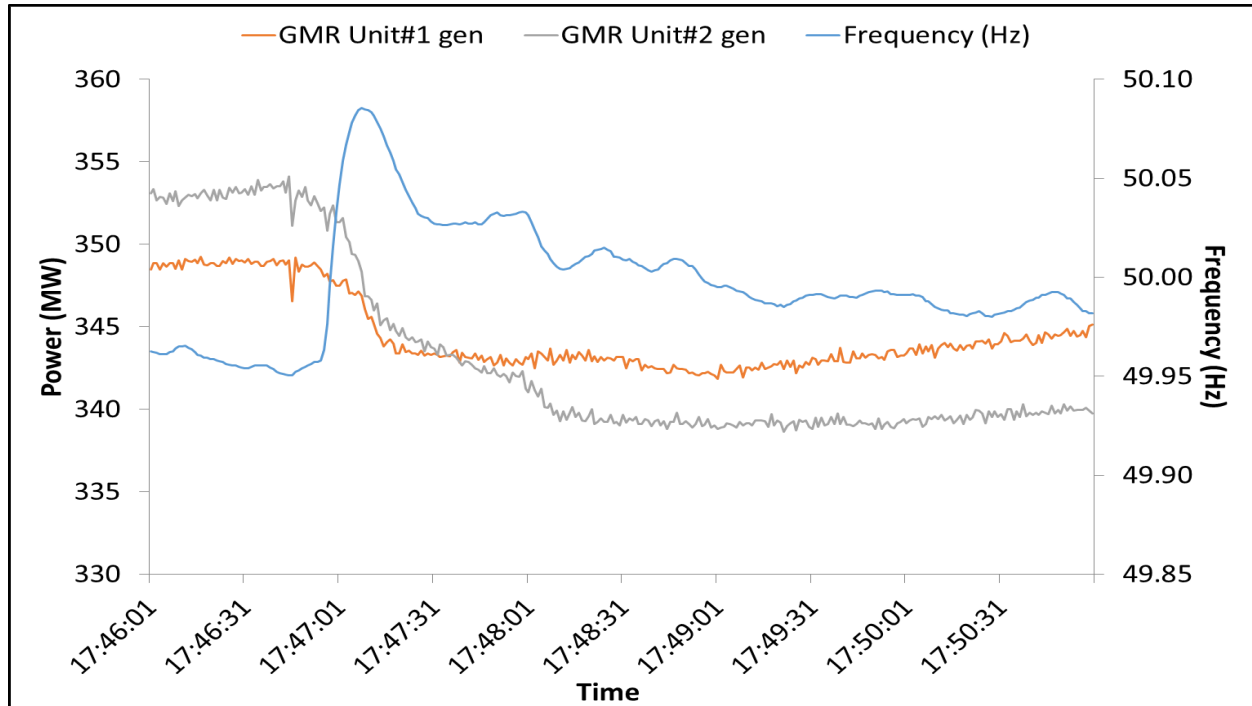
### Nabinagar STPS (NPGC)



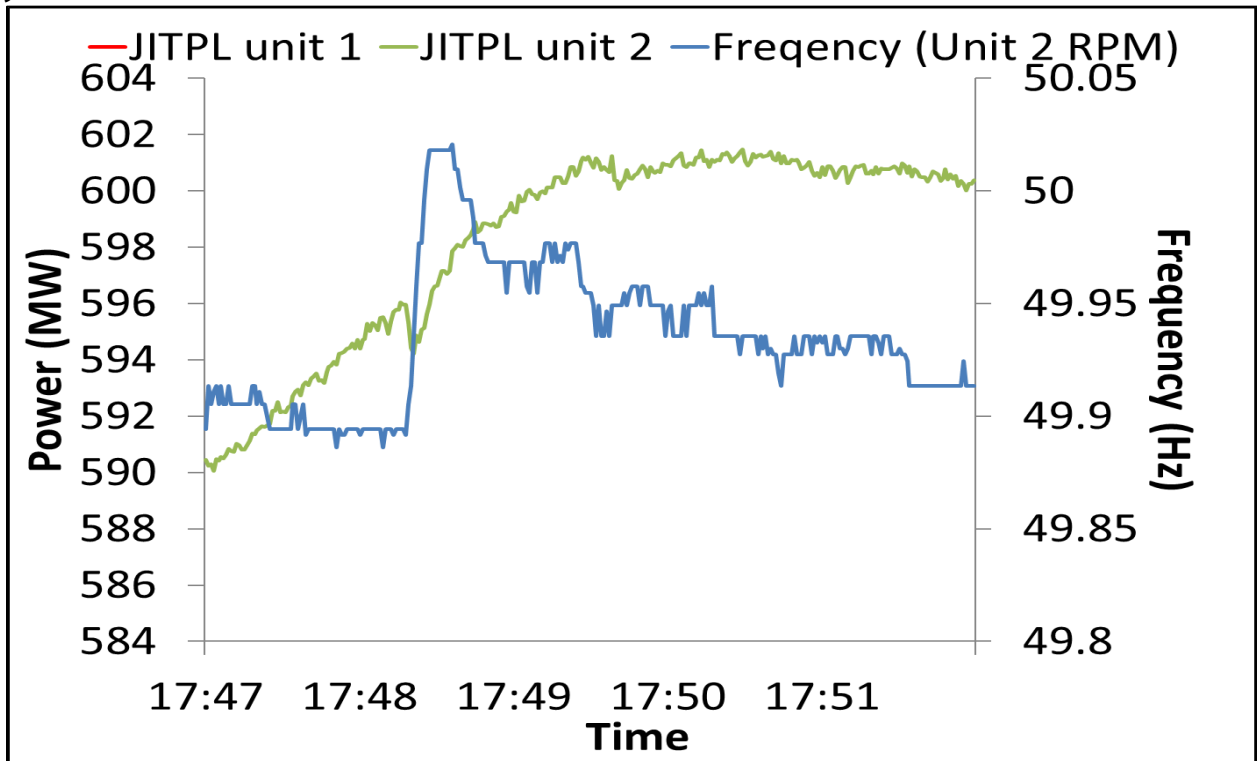
## Adhunik TPS



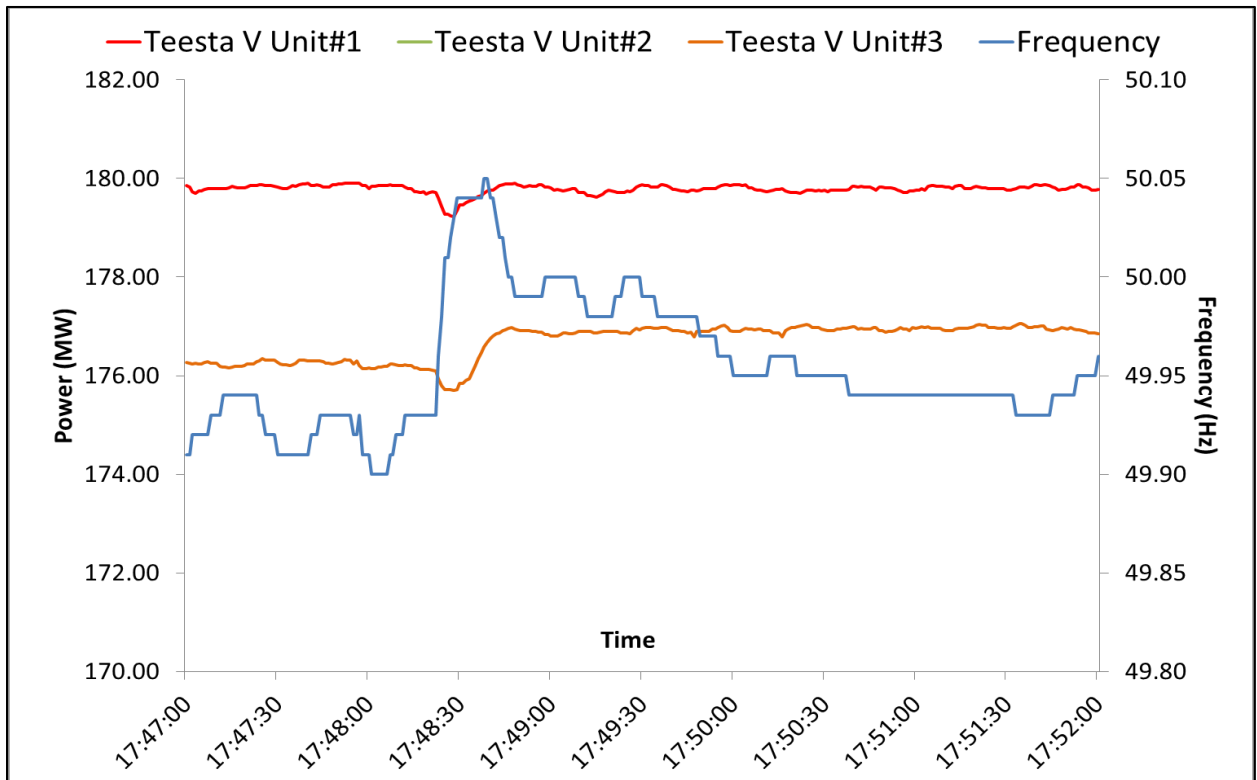
## GMR



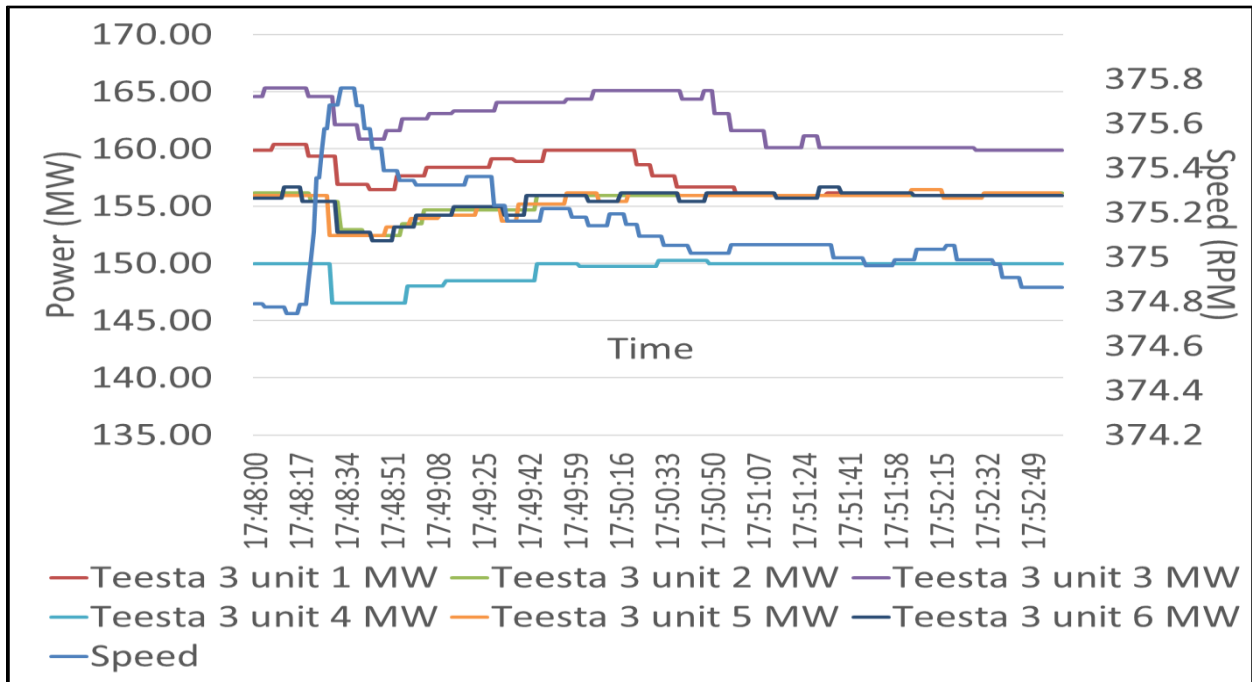
### JITPL



### Teesta V

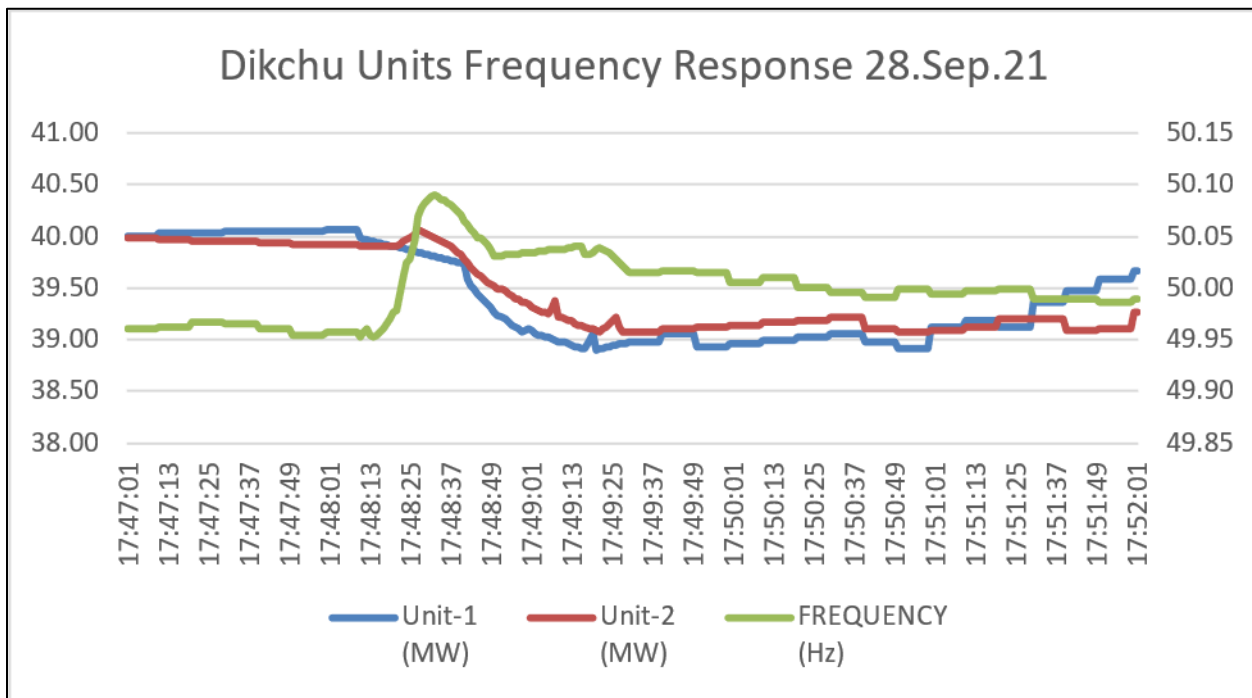


### Teesta III HPS



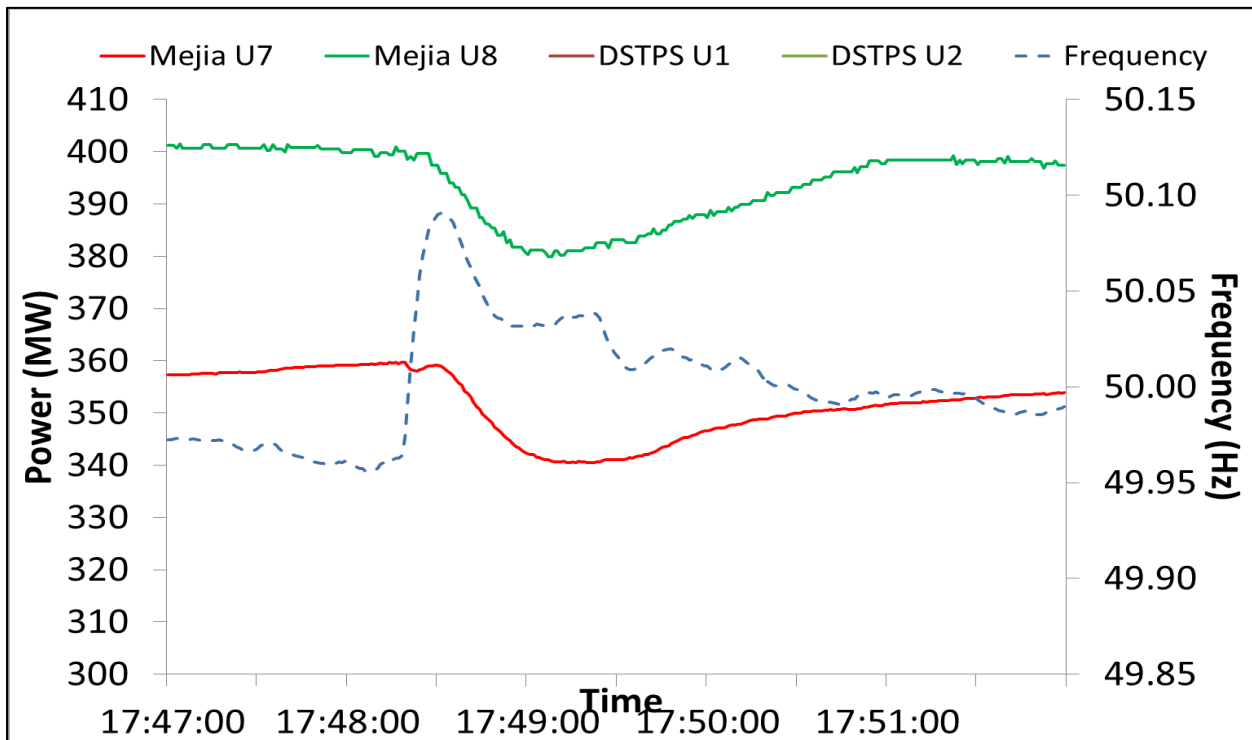
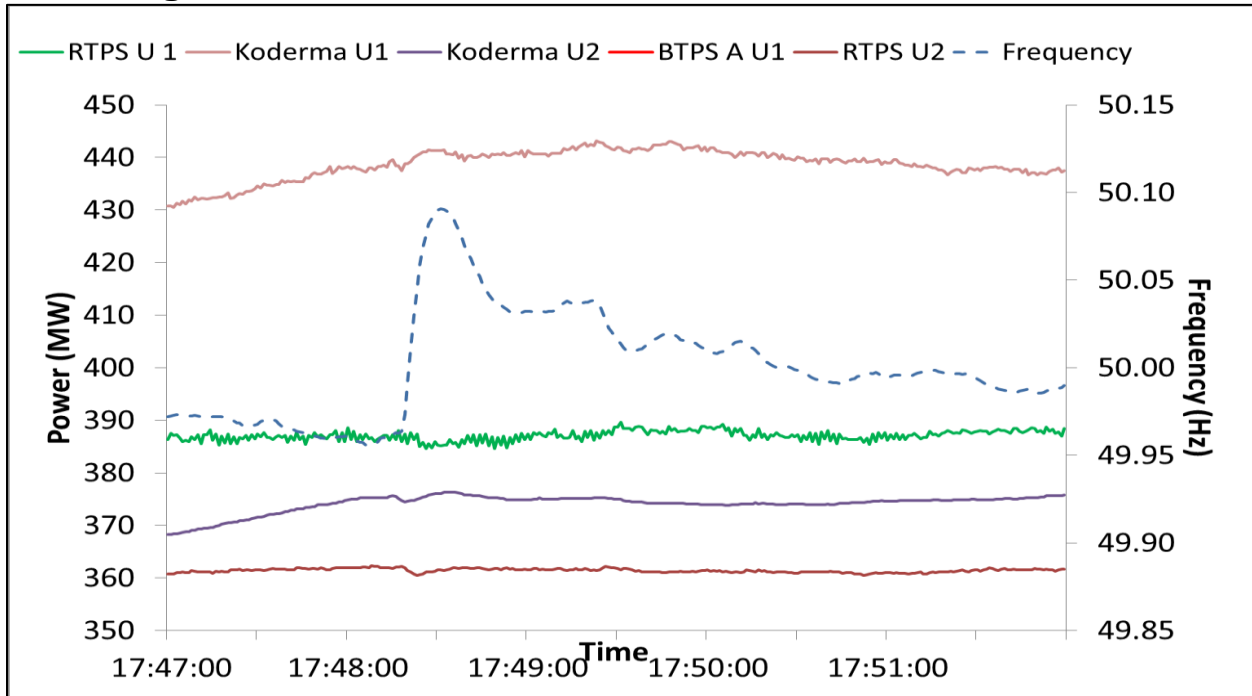
Response observed <5 MW. Ideal response >8 MW

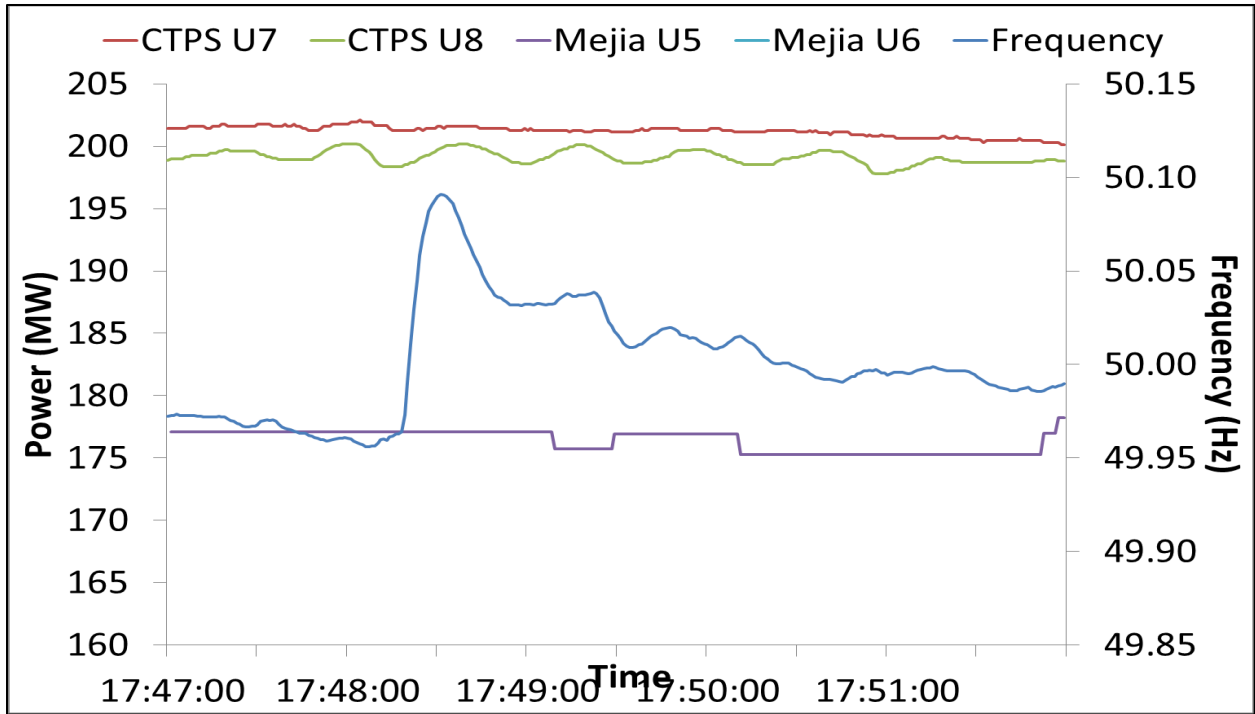
### Dikchu HPS



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

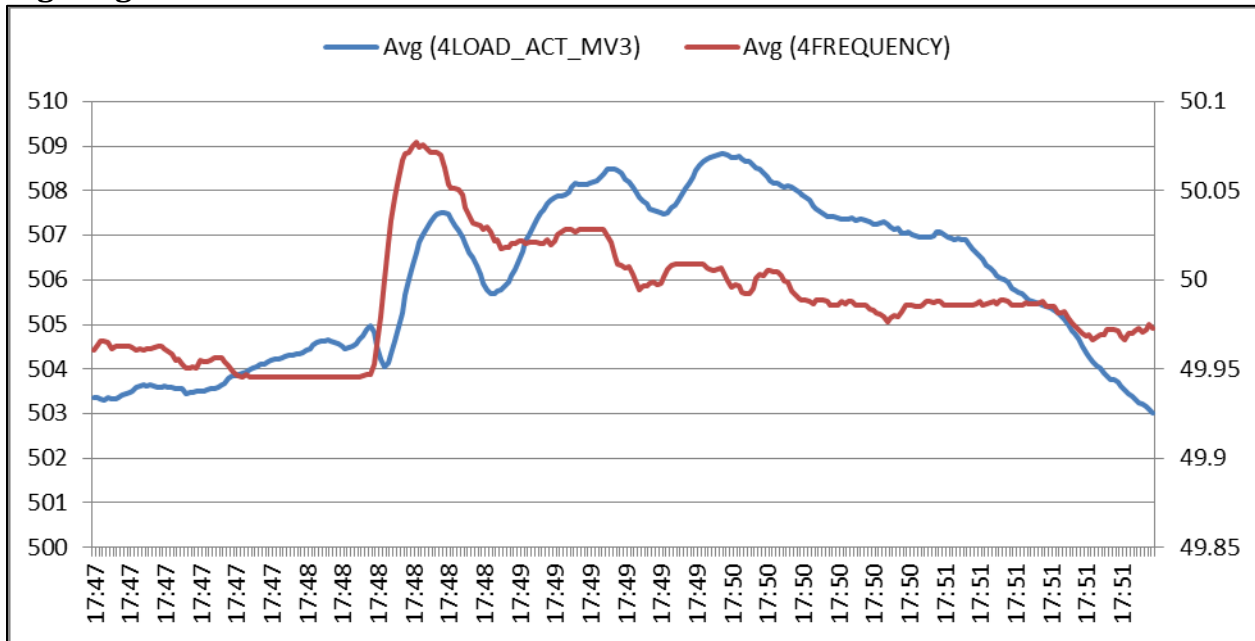
### Generating units in DVC control area



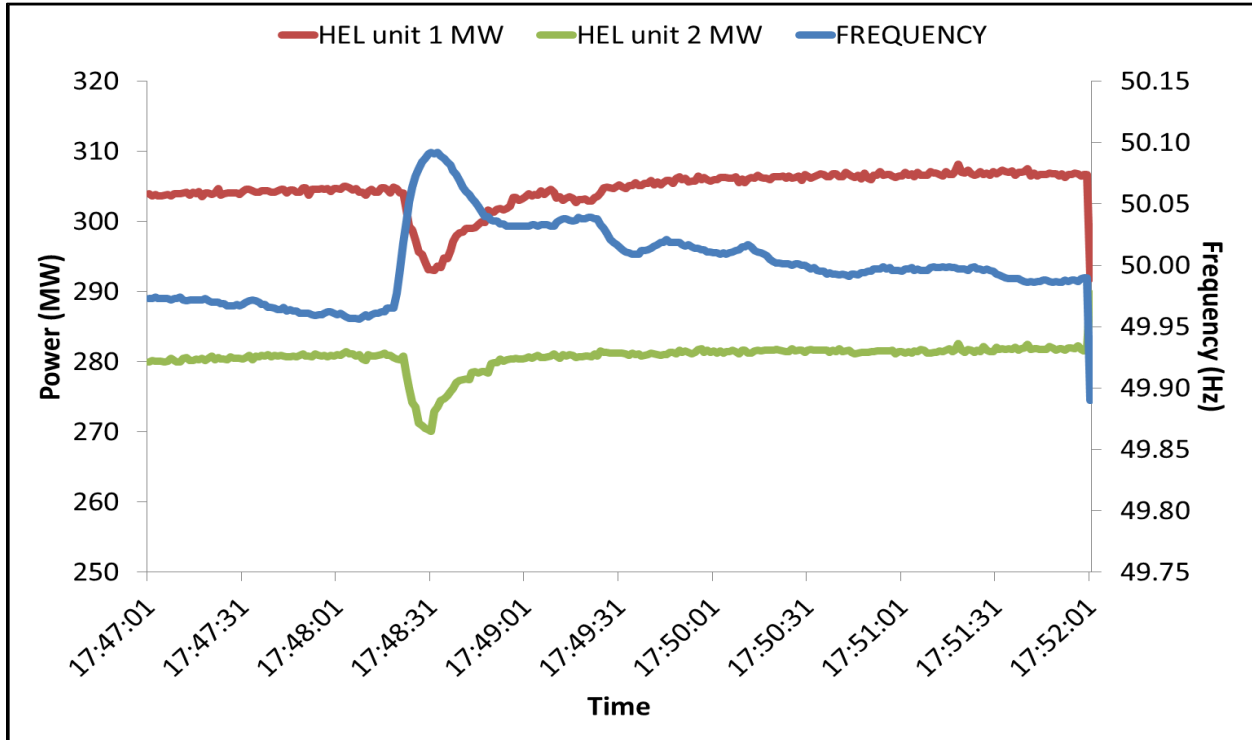


### Generating units in WBPDC control area

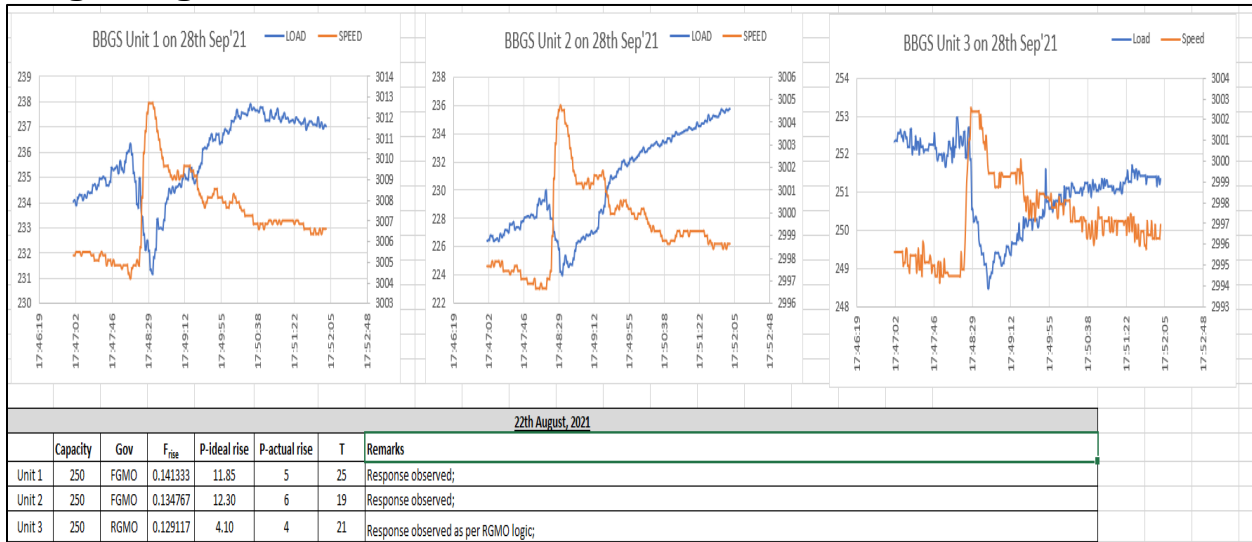
#### Sagardighi TPS



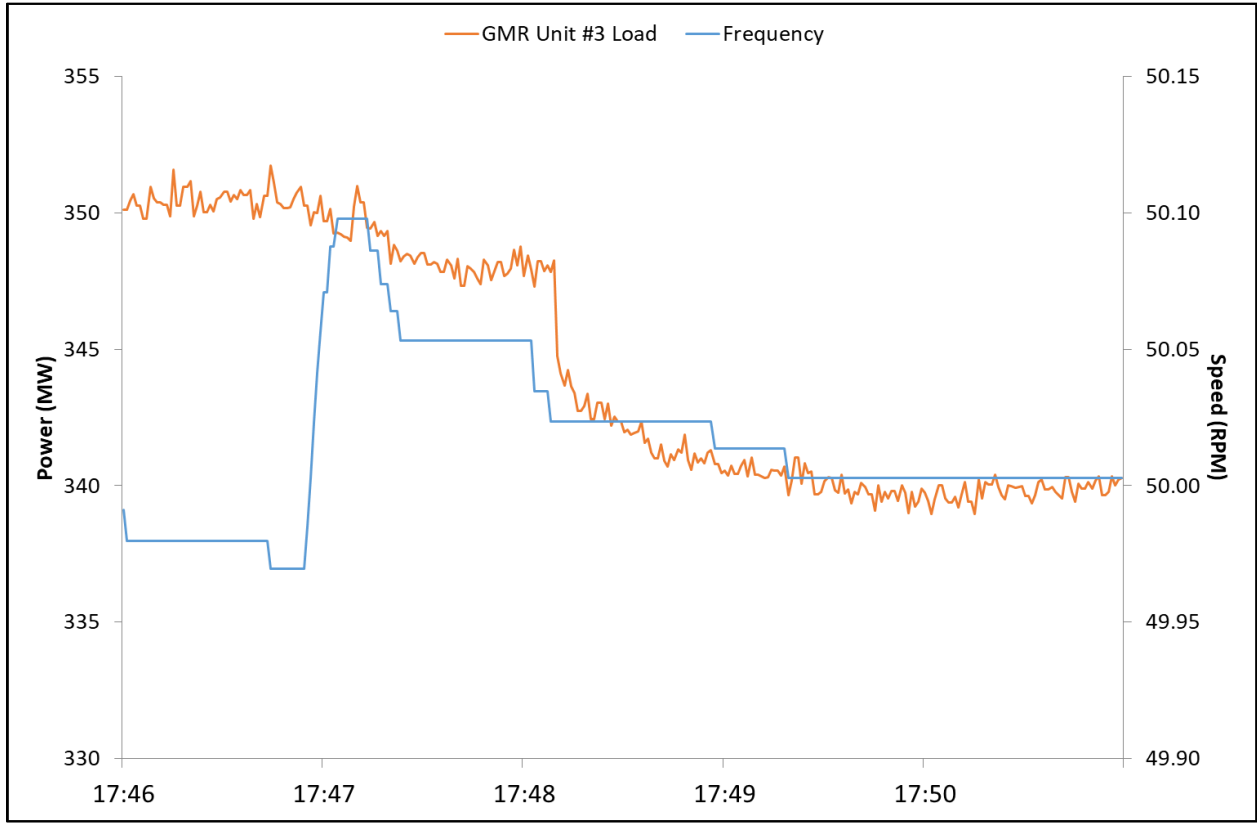
# HEL TPS



# Budge Budge TPS



### 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	Particulars	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	Particulars	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 $\{(9/14) \times 100\}$	%	862.1%

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	
			<b>Total</b>	<b>83.10</b>					<b>73.03</b>		<b>90.745</b>	
5	Jharkhand	JUSNL	Renovation & Upgradation 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					
			<b>Total</b>	<b>160.49</b>					<b>114.68</b>		<b>145.674</b>	
7	Odisha	OPTCL	Renovation and Upgradation of protection system of substations. (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.
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		8.166	30% grant availed
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 (Balasure, Bidanasi, Budhipadar, Katapali, Narendrapur, New-Bolangir & Paradeep). (209)	36.63	24-May-19	13-Feb-20	18	13-Aug-21	8.87		8.87	30% grant availed
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.
			<b>Total</b>	<b>277.25</b>					<b>101.35</b>		<b>153.106</b>	
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 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	WBPDCL	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.	
			<b>Total</b>	<b>295.15</b>					<b>194.26</b>		<b>256.661</b>	

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			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	DVC	DVC	Renovation and Modernization of control and protection system and replcement of equipment at Parulia, Durgapur, Kalyanewari, Giridhi Jamsedpur, Barjora, Burmpur, Dhanbad and Bundwan substation. (106)	140.50	16-May-17	14-Dec-17	24	14-Dec-19	102.43	0.98	127.684	
			<b>Total</b>	<b>166.46</b>					<b>125.38</b>		<b>156.287</b>	
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
			<b>Total</b>	<b>10.00</b>					<b>3.00</b>		<b>20.00</b>	
26			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.
			<b>Total</b>	<b>26.07</b>					<b>19.98</b>		<b>22.45888</b>	
			<b>GrandTotal</b>	<b>1,018.53</b>					<b>631.68</b>		<b>844.93</b>	

## 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 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 for Unit#1 & Unit#2
28		2		
29		3		
30	JITPL	1	August 21	Scheduled
31		2		
32		3		
33	NPGCL	1	August'21	Testing completed
34	BRBCL	2& 3	1 <sup>st</sup> Week of August'21	Testing completed
35	APNRL	1 & 2	July-August'21	Testing completed

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
<b>West Bengal</b>							
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	To be updated by WBSEDCL
PPSP	2	No	Yes	2009	No	Yes	To be updated by WBSEDCL
PPSP	3	No	Yes	2009	No	Yes	To be updated by WBSEDCL
PPSP	4	No	Yes	2009	No	Yes	To be updated by WBSEDCL
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
<b>CESC</b>							
Budge Budge-CESC	1	Yes	Yes	2015	No	Yes	2021-22
Budge Budge-CESC	2	Yes	Yes	2015	No	Yes	2021-22
<b>DVC</b>							
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	Completed
Waria	4	Yes	Yes	2008	No	Yes	Unit Is out of Service
<b>ISGS</b>							
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	Completed
Talcher Stage 2	4	Yes	Yes	No Details	No Details	Yes	Completed
Talcher Stage 2	5	Yes	Yes	No Details	No Details	Yes	Completed
Talcher Stage 2	6	Yes	Yes	2016	Yes	Yes	Completed
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	Jun-21
Teesta V	2	Yes	Yes	2008	No	Yes	Jun-21
Teesta V	3	Yes	Yes	2008	No	Yes	Jun-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
<b>IPP</b>							
Jorethang	1	Yes	Yes	2015	No	Yes	Apr-21
Jorethang	2	Yes	Yes	2015	No	Yes	Apr-21
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	May-21
GMR	2	Yes	Yes	2013	No	Yes	May-21
GMR	3	Yes	Yes	2013	No	Yes	May-21
<b>Orissa</b>							
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	To be updated by OHPC
Rengali	2	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	3	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	4	Yes	Yes	Not tuned	No	Yes	To be updated by OHPC
Rengali	5	No	Yes	Not tuned	No	Yes	To be updated by OHPC
Sterlite	4 X 600			No detail		Yes	To be updated by SLDC Orissa
<b>Jharkhand</b>							
Tenughat	1	Yes	Yes	2017	Yes	Yes	No report has been submitted. So tuning to be planned
Tenughat	2	Yes	Yes	2017	Yes	Yes	No report has been submitted. So tuning to be planned
Subarnrekha	2 X 65					Yes	To be updated
<b>Bihar</b>							
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
<b>Bhutan</b>							
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	To be updated by BPC
Mangdechu	2	No	Yes			Yes	To be updated by BPC
Mangdechu	3	No	Yes			Yes	To be updated by BPC
Mangdechu	4	No	Yes			Yes	To be updated by BPC



<b>Anticipated Peak Demand (in MW) of ER &amp; its constituents for the Month of Nov'21</b>			
<b>1</b>	<b>BIHAR</b>	<b>Demand (MW)</b>	<b>Energy Requirement (MU)</b>
	NET MAX DEMAND	5000	2705
	NET POWER AVAILABILITY- Own Sources	681	185
	Central Sector+Bi-Lateral	5626	3144
	SURPLUS(+)/DEFICIT(-)	1307	624
<b>2</b>	<b>JHARKHAND</b>		
	NET MAXIMUM DEMAND	1775	1030
	NET POWER AVAILABILITY- Own Source	359	190
	Central Sector+Bi-Lateral+IPP	1078	553
	SURPLUS(+)/DEFICIT(-)	-338	-287
<b>3</b>	<b>DVC</b>		
	NET MAXIMUM DEMAND	3040	1934
	NET POWER AVAILABILITY- Own Source	5172	2900
	Central Sector+MPL	343	198
	Bi- lateral export by DVC	2078	1496
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	397	-332
<b>4</b>	<b>ODISHA</b>		
	NET MAXIMUM DEMAND (OWN)	4200	2376
	NET MAXIMUM DEMAND (In Case,600 MW CPP Drawal)	5200	3075
	NET POWER AVAILABILITY- Own Source	3490	2217
	Central Sector	1958	947
	SURPLUS(+)/DEFICIT(-) (OWN)	1248	788
	SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal)	248	89
<b>5</b>	<b>WEST BENGAL</b>		
<b>5.1</b>	<b>WBSEDCL</b>		
	NET MAXIMUM DEMAND	5495	2859
	NET MAXIMUM DEMAND (Incl. B'Desh+Sikkim)	5635	2950
	NET POWER AVAILABILITY- Own Source (Incl. DPL)	4715	2208
	Central Sector+Bi-lateral+IPP&CPP+TLDP	2402	1113
	EXPORT (TO B'DESH & SIKKIM)	10	7
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	1482	371
<b>5.2</b>	<b>IPCL</b>		
	IPCL Demand	130	84
	IPCL Import	130	84
	SURPLUS(+)/DEFICIT(-)	0	0
<b>5.3</b>	<b>CESC</b>		
	NET MAXIMUM DEMAND	1720	755
	NET POWER AVAILABILITY- Own Source	690	410
	FROM OTHER SOURCE (INCL. IPP/CPP-29-30 MU/M)	490	58
	IMPORT FROM HEL	540	287
	TOTAL AVAILABILITY OF CESC	1720	755
	SURPLUS(+)/DEFICIT(-)	0	0
<b>5.4</b>	<b>WEST BENGAL (WBSEDCL+CESC+IPCL)</b>		
	(excluding DVC's supply to WBSEDCL's command area)		
	NET MAXIMUM DEMAND	7345	3698
	NET POWER AVAILABILITY- Own Source	5405	2618
	CS SHARE+BILATERAL+IPP/CPP+TLDP+HEL	3432	1458

	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXPORT	1492	378
	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXPORT	1482	371
<b>6</b>	<b>SIKKIM</b>		
	NET MAXIMUM DEMAND	130	63
	NET POWER AVAILABILITY- Own Source	4	1
	Central Sector	195	89
	SURPLUS(+)/DEFICIT(-)	69	27
<b>7</b>	<b>EASTERN REGION</b>		
	NET MAXIMUM DEMAND	21069	11806
	NET MAXIMUM DEMAND (In Case, 600 MW CPP Drawal of Odisha)	21922	12505
	BILATERAL EXPORT BY DVC	2078	1496
	EXPORT BY WBSEDCL TO SIKKIM & B'desh	10	7
	EXPORT TO B'DESH & NEPAL OTHER THAN DVC	642	197
	NET TOTAL POWER AVAILABILITY OF ER (INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL)	27743	14500
	SURPLUS(+)/DEFICIT(-)	3944	994
	SURPLUS(+)/DEFICIT(-) (In Case, 600 MW CPP Drawal of Odisha)	3091	295