AGENDA

FOR

223rd OCC MEETING

Date: 24.01.2025

Eastern Regional Power Committee

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EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 223rd OCC MEETING TO BE HELD ON 24.01.2025 (FRIDAY) AT 10:30 HRS

1. PART-A: CONFIRMATION OF MINUTES

1.1. Confirmation of Minutes of 222nd OCC Meeting held on 23rd December 2024 physically at Kolkata

The minutes of 222nd Operation Coordination Sub-Committee meeting held on 23.12.2024 was circulated vide letter dated 07.01.2025.

Members may confirm the minutes of 222nd OCC meeting.

2. PART-B: ITEMS FOR DISCUSSION

2.1 Disturbance at 400 kV NTPC Barh on 4th Jan 2025 at 19:23 Hrs: ERPC

On 4th Jan 2025 at 19:23 Hrs, complete outage of power at 400 kV NTPC Barh occurred which led to generation loss of around 1800 MW. Subsequently a meeting was held on 8th Jan 2025 among ERPC, ERLDC and NTPC for which record notes of meeting is attached at **Annexure B.2.1.1** Further, another meeting was also held on 8th Jan 2025 among ERPC, ERLDC and Powergrid to discuss Tripping of 400 kV Barh-Motihari-1 due to conductor snapping for which record notes of meeting is attached at **Annexure B.2.1.2**

Major points of discussions are as follows-

- NTPC was requested to immediately review the protection setting implemented at all generating stations and disable O/c protection setting if enabled anywhere.
- NTPC was also requested to submit protection setting of all generating stations to ERPC and ERLDC for verification.
- NTPC submitted that they wanted to keep Backup overcurrent protection with pickup above thermal limit with the AND logic of VT supervision to avoid GT failure in case of any eventuality since they experienced similar cases in past.
- Powergrid informed that conductor snapping of 400 kV Barh-Motihari-1 was in mid-span section. It was further stated that these lines were usually lightly loaded, and this was the first time that the line flow had crossed around 1100 MW.
- Powergrid emphasized that they would intensify patrolling and thermo-vision scanning of all the joints in the entire line corridor of fog prone areas and this would be completed by next 15 days.

NTPC and Powergrid may update.Members may discuss.

2.2 Comprehensive Shut Down Plan for 220 KV Dalkhola S/S for replacement of Bus Isolator and Bus Conductor under ADDCAP.Powergrid ER-II

✓ As already detailed in many OCC meetings and S/D meeting, under ADDCAP 2019-24, complete upgradation of Dalkhola SS is undertaken. In coordination with ERLDC/SLDC, POWERGRID/ER-II, able to complete SAS upgradation and Bus Bar integration of

Dalkhola SS after availing many important S/D. Even all line side Isolators are changed for all feeders.

- ✓ Now only, Bus Isolators are balance for replacement along with Main Bus Conductors (From Single Tarantula to Double Moose). Accordingly in many S/D meetings it is discussed that for changing even one bus isolators, atleast 02 nos Bus S/D are required and for Bus-II isolator it is very much difficult as through conductor is also charged in that scenario.
- ✓ To overcome the issue, an alternative arrangement to feed the supply to Dalkhola (W.B) is planned through 220 KV Purnea-D/C. In modified arrangement, the final connectivity will be 220 KV Purnea-Dalkhola(W.B)-D/C bypassing 220 KV Dalkhola(PG).
- ✓ To achieve the connectivity, first 220 KV Purnea-D/C will be taken and ERS will be installed to connect Dalkhola WB at PG SS. Subsequently, after direct connectivity, entire Dalkhola (PG) will be taken S/D for replacement of Bus Isolator. Further to ensure, alternative power supply of Gazole SS, ensured through 220 KV Kishanganj-Dalkhola & 220 KV Dalkhola-Gazole, via new segregated Dalkhola SS (New). In that case, starting from Dalkhola (WB)-D/C to Bus Coupler will be deenergized (Through jumper will be disconnected).

Detail schematic attached for reference.

To achieve the connectivity following S/D's are required (Dates are tentative):-

SL No	Name of Element	From Date	From Time	To Date	To Time	Remarks
01.	220 KV DALKHOLA-PURNEA-I	27.01.2025	08:00	30.01.2025	16:00	Will be returned as 220 KV Purnea-Dalkhola(W.B)-I.
02.	220 KV DALKHOLA-PURNEA-II	27.01.2025	08:00	01.02.2025	16:00	Will be returned as 220 KV Purnea-Dalkhola(W.B)-II.
03.	220 KV DALKHOLA-DALKHOLA-I	29.01.2025		30.01.2025		Will be returned as 220 KV Purnea-Dalkhola(W.B)-I.
04.	220 KV DALKHOLA-DALKHOLA-II	31.01.2025		01.02.2025		Will be returned as 220 KV Purnea-Dalkhola(W.B)-II.

After returning 220 KV Dalkhola(WB)-Purnea-D/C, entire Dalkhola (PG) will be bypassed and taken complete S/D for replacement of Bus Isolators.

SL No	Name of Element	From Date	From Time	To Date	To Time	Remarks
01.	220 KV DALKHOLA-PURNEA-I	27.01.2025	08:00	05.03.25	16:00	

02.	220 KV DALKHOLA-PURNEA-II	27.01.2025	08:00	05.03.25	16:00	For Bus Isolator replacement along with Bus Conductor Replacement.
03.	220 KV DALKHOLA-KISHANGANJ-I	04.02.2025	08:00	05.03.25	16:00	
04.	220 KV DALKHOLA-KISHANGANJ-II	04.02.2025	08:00	05.03.25	16:00	
05.	220 KV DALKHOLA-GAZOL-I	04.02.2025	08:00	05.03.25	16:00	
06.	220 KV DALKHOLA-GAZOL-II	04.02.2025	08:00	05.03.25	16:00	
07.	220 KV BUS COUPLER AT DALKHOLA	04.02.2025	08:00	05.03.25	16:00	
08.	220 KV TRANSFER BUS COUPLER AT DALKHOLA	04.02.2025	08:00	05.03.25	16:00	

Further after completion of all Bus Isolators and bus conductor upto 220 KV Bus Coupler all connectivity will be normalized and remaining section covering Gazole/Kishanganj will be taken.

Subsequently, if required, 01 Ckt of Dalkhola-Gazole & Dalkhola-Kishanganj can be reconfigured as 220 KV Kishanganj-Gazole-S/C using transfer bus of Dalkhola (PG).SLD of Dalkhola S/S attached at **Annex B.2.2**

Powergrid ER-II may explain. Members may discuss

2.3 Update on Rajarhat GIS (POWERGRID) 400/220kV S/S: 2x500MVA: ERLDC

- During the deliberations in the 222nd OCC meeting held on 23.12.24, West Bengal SLDC representative expressed deep concern regarding a potential power crisis at Rajarhat (PG) in 2025-2026, based on the current loading pattern in and around the Kolkata area. It was also emphasized the need to prioritize the installation of a 3rd 400/220KV,500MVA ICT at Rajarhat (PG) with the same urgency as Subhasgram (PG) to prevent a recurrence of similar critical situations in the future.
- It was further highlighted that if the proposed 3rd ICT is not operational by the summer of 2026, severe congestion is likely to affect the ICTs at Rajarhat (PG). Additionally, it was noted that the state assembly elections are expected to take place in 2026, adding to the significance of addressing this issue promptly.
- Powergrid ER-II updated in the meeting that tender for procurement of the 3rd ICT has been annulled twice and currently re-tendering is under progress. Bid opening is scheduled

tentatively in Feb 2025, thereafter, commissioning of the ICT will take 18 months. It is expected to be commissioned by end of 2026 or first half of 2027.

- In view of the above, an alternative arrangement may be thought off to ensure 3rd ICT at Rajarhat before 2026 Summer.

ERLDC may explain. POWERGRID ER-II may update.Members may discuss.

2.4 Update on reconductoring of 220kV Intra-state lines around Kolkata: ERLDC

Loading of the following 220KV lines was not N-1 compliant for more than 50% of the time during last summer. Loading even touched the maximum limit of the lines during the peak demand period. As per demand growth in the Capital city, the situation will be very critical in the upcoming summer 2025 & 2026.

The matter was deliberated in the **210th OCC meeting** to replace existing ACSR Zebra Conductor of few 220kV lines around Kolkata with high capacity HTLS Conductor due to sustained high loading during high demand period.

OCC gave the technical go-ahead to the proposal. The list of lines is as follows:

1. Barasat-Kasba 220 KV D/C Transmission Line (R.L. ≃ 39.1 KM).
2. Subhasgram-Kasba 220 KV D/C Transmission Line (R.L. ≃ 23.0KM).
3. Jeerat-Barasat 220 KV D/C Transmission Line (R.L. ≃ 23.3 KM).

Considering the demand growth in the Capital city of Kolkata & delay in reconductoring of 220kV lines, West Bengal is requested to share the followings for reliable power supply to Kolkata:

1. Detailed action plan on the 220kV lines upgrade project, including timelines.
2. Tentative network re-arrangement near Kolkata to ensure reliable power supply during high demand period.

ERLDC may explain. WBSETCL/CESC may update. Members may discuss.

2.5 Update on Patna Islanding scheme: ERPC

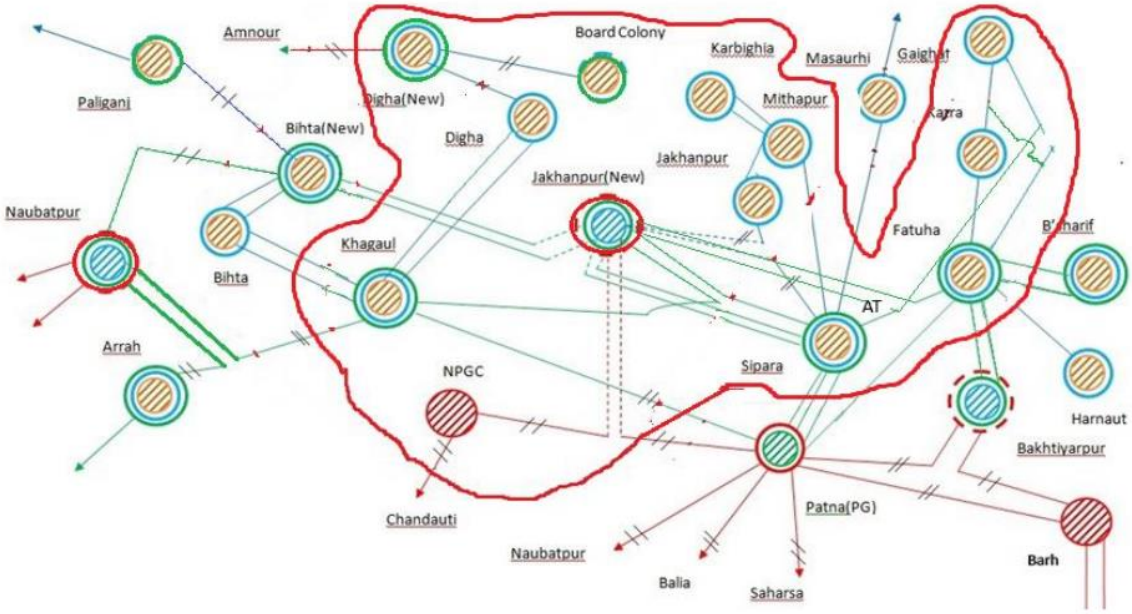
The Patna islanding scheme would be formed with Units of NPGCL along with loads of Patna city.

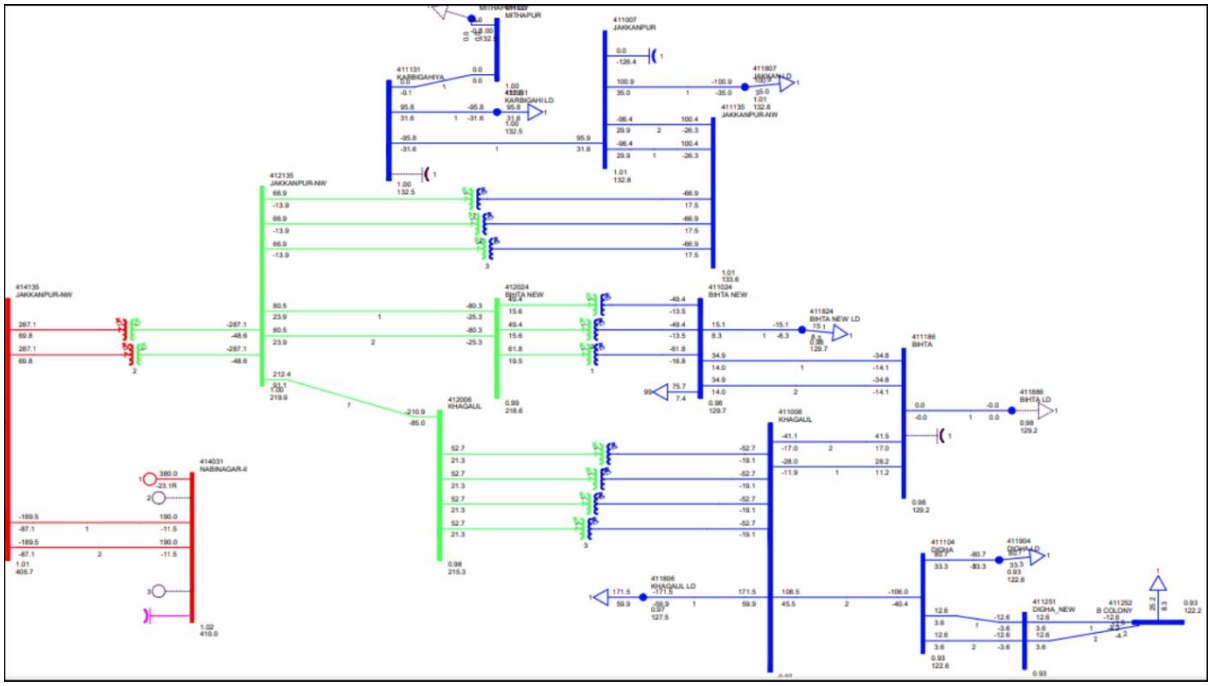
NTPC was entrusted for carrying out study of NPGC units and M/S Solvinia had submitted report on study of islanding scheme dated 08th May 2024. Thereafter based on comments received from ERLDC, replies were submitted by M/S Solvinia. NTPC had communicated the report to all concerned including SLDC Bihar.

Some further tests needed could not be carried out due to non-receipt of relevant data from Bihar.

- The proposed Patna islanding scheme aims to isolate one running unit of NPGC (660 MW) with pre-identified load of Patna city and nearby areas. After isolation of selected loads and NPGC through the identified network, run the island in islanded mode to cater the city load and to extend start-up supply to generating stations in adjoining area to facilitate early restoration.

- Patna city and nearby loads will be islanded with one of the running units of NPGC (660 MW). NPGC is connected to the grid through 400 kV NPGC-Jakkanpur D/c and 400 kV NPGC Gaya D/c lines. For the islanding 400 kV NPGC-Jakkanpur D/c and at Jakkanpur through 400/220 kV ICTs, pre-deintifed 220 kV feeders will be selected which will be isolated to confirm the islanding of the Patna loads from the rest of the grid with one unit of NPGC.





As per deliberation in **222nd OCC**
NTPC ER-I informed:

- ✓ As per Solvina report and observation of OEM M/s GE, turbine speed of NPGC units remains within permissible levels in all scenarios except for one. One limitation as pointed out by M/s GE is that the maximum time limit for which the turbine can be exposed to 103% overspend limit is 20 minutes for the complete lifecycle of turbine.
- ✓ The said condition is appearing for 5 seconds in one of the scenarios when generation is maximum and Patna load is minimum.
- ✓ Formal consent is given from NTPC for implementation of Patna islanding with NPGC units subject to the mentioned limitation as per study by M/s Solvina .

222nd OCC Decision

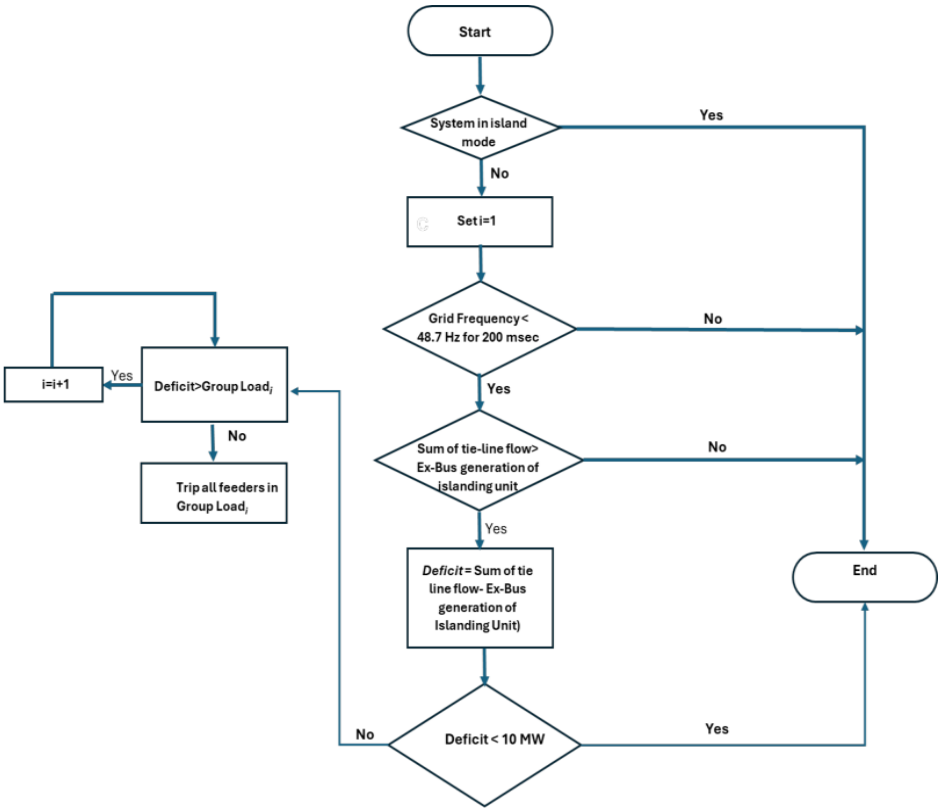
- ERLDC was advised to finalize Patna islanding logic considering overspeed limitation of NPGC units. Bihar SLDC was advised to identify loads to be included in the islanding scheme.
- Bihar SLDC was directed to finalize and submit the approved DPR of Patna islanding before next OCC. ERLDC was requested to assist Bihar SLDC in preparation of DPR.
- After finalization of DPR, cost implications along with funding options for Patna islanding scheme to be deliberated in next OCC.

Islanding Logic(proposed by ERLDC):

As demand of identified feeders may increase/decrease with time, to maximize chance of survival, it is necessary to have a central logic system which will monitor load and generation balance and will trip feeders prior to islanding if frequency reaches below a certain point.

- **Pre-islanding (Centralized Island Monitoring Unit):**
  - There will be a Centralized Island monitoring and control unit needs to be incorporated at SLDC Bihar for continuous monitoring of load generation balance in the island. It is necessary to maintain the load generation balance within the island for island stability.
  - The control scheme will continuously monitor load generation imbalance and will trip identified feeders' priority wise if load generation imbalance goes beyond a certain limit and frequency reaches 48.7 Hz for 200 msec.
- **Islanding (2 stages):**
  - When Frequency reaches 48.4 Hz, then with a delay of 500 msec, identified system will be islanded. For islanding, a number of tie lines need to be tripped to isolate the system from the grid. The command to trip the feeders will go from the Central master controller. As a back-up UFR relays may be installed in the identified feeders set at 48.4 Hz and 500 msec time delay.
  - After islanding, another stage of feeder disconnection is also to be done if island frequency decreases. Three sub-stages are set after islanding and UFR relays will be installed on the identified feeders to get the desired load relief.
    - Stage 2A: 80 MW at 48.2 Hz
    - Stage 2B: 40 MW at 48.0 Hz
    - Stage 2C: 50 MW at 47.8 Hz

The list of feeders identified for tripping to maintain load generation balance are attached in **Annex B.2.5.** Feeders selected for pre-islanding disconnection will be identified as per below logic:



ERLDC may update.SLDC Bihar may update the present status along with future action plan. Members may discuss.

2.6 Philosophy for FRO distribution among the DVC Generating Stations: DVC

In line with the Clause No. 4.4 (b) of the CERC Approved NLDC procedure for computation of Average Monthly Frequency Response Performance, Beta 'β', SLDCs have been directed to assess the FRO (Frequency Response obligation) in respect of the Generating Stations, whose tariff is determined by CERC & falling under jurisdiction of the SLDC. Accordingly, SLDC, DVC has proposed the following methodology for distribution of FRO among all the DVC Generating Stations since these generators are under Section 62 of the Electricity Act - 2003.

FRO as allotted to the DVC State is = 517 MW/Hz for Solar Hrs & 333 MW/Hz for Non-Solar Hrs.

1. Step-I: The Total MU demand-met data of DVC Control area has been computed from the SCADA for last FY and accordingly average MW demand data has been assessed. The Avg. MW demand has been for both Solar & Non-Solar Hours.
2. Step- II: It has been assumed that ~ 4% of the Average demand contributes to the DVC C/A frequency response during any Frequency excursion event - Demand Response.
3. Step -III : The remaining FRO to the Generating Stations: = (FRO allotted to DVC C/A – Demand Response of 4%)
4. Step- IV: Total MU Generation and the Avg. MW Generation for each Station has been computed based on the SCADA record of last FY. The remaining FRO has been allocated among the Plants in pro-rata of Avg. MW Generation for each station.

The detail computation & station-wise FRO figures has been depicted in the below table:

The SCADA data of Generating Stations for **Last FY (2023-24):**

AG(MWh)	**SCADA**									
	BTPS	DSTPS	KTPS	RTPS	CTPS	MTPS-7&8	MTPS-5&6	MTPS-1-3	MTPS-4	Total Thermal
Apr-23	322302	642268	651608	618250	174873	601860	290776	232296	121547	3655780
May-23	323673	629137	583199	575950	310226	638330	276195	272646	9038	3618394
Jun-23	258144	614440	621920	567160	322485	589760	271767	295482	0	3541158
Jul-23	116471	585644	616240	612100	321512	558280	294043	318795	14992	3438076
Aug-23	335480	627740	501045	562690	315799	535300	290583	238876	116517	3524030
Sep-23	278663	559135	644487	559691	301784	473936	226098	237869	113567	3395231
Oct-23	267372	530297	516884	482760	274073	396640	280779	308074	119140	3176019
Nov-23	289317	568971	312047	519160	291957	562730	272922	295527	121245	3233876
Dec-23	305030	512464	492216	556940	290330	610440	260881	340261	123228	3491790
Jan-24	327589	443753	642040	632425	309932	631101	234502	307949	126059	3655350
Feb-24	308420	417951	594514	560941	270487	573806	270073	306464	115922	3418577
Mar-24	280761	618502	634288	347394	268286	589355	293841	327507	96719	3456652
Total MWh	3413222	6750302	6810488	6595462	3451743	6761538	3262459	3481747	1077972	**41604932**
Avg. MW	**389**	**768**	**775**	**751**	**393**	**770**	**371**	**396**	**123**	**4736**

FRO (MW/Hz)	**Solar Hrs**	**Non-Solar hrs**
DVC State	**517**	**333**

DVC Avg. Demand (MW)	**3200**	**3200**
DVC Avg. generation (MW)	**4736**	**4736**
Demand Response (MW/Hz) (4% of Avg. Demand)	**128**	**128**

Required Generator Response (MW/Hz) (State FRO - Demand Response)	**389**	**205**

BTPS	**32**	**17**
DSTPS	**63**	**33**
KTPS	**64**	**34**
RTPS	**62**	**32**
CTPS	**32**	**17**
MTPS-7&8	**63**	**33**
MTPS-5&6	**31**	**16**
MTPS-1-3	**33**	**17**
MTPS-4	**10**	**5**
	389	**205**

Total DVC Demand of 2023-24 is 27456MU >> Avg. 3134MW. Extrapolated as 3200MW in 24-25

The same has also been suggested as a feasible method (Method-III) as per the deliberations of the 48th FOLD Meeting.

Method-III of 48th FOLD Minutes

FRO = (Average Generation of individual generating station/ (Sum of Avg. generation of all considered generating stations)) X (FRO allotted to state control area - Demand Response (=4% of Avg. Demand per Hz))

The demand response to be considered equal to the maximum 4% of Average Demand per Hz.

Further details along with MOM of FOLD meeeting enclosed at **Annex-B.2.6**

DVC may explain. Members may discuss.

2.7 Bus split operationalization at NTPC Kahalgaon: ERPC

As decided in 219th OCC Meeting, a committee comprising of members from ERPC and ERLDC visited NTPC Kahalgaon on 17-10-2024 to assess the status of Bus splitting at 400 kV level and way forward for operationalization of 400 KV Bus sectionalizer.

Following works need to be done to complete the installation of ICT 3 & 4:

1. Determination of underground cable conduit path for 400/132 kV ICT-3, 4 and 5 allocated for stage 2 supply.
2. Excavating the existing cable and relaying from Stage-1 132kV to New Stage-2 132 kV switchyard, where ICT 3 & 4 will be connected.
3. Laying of additional 22.8 ckt. km control cable for STs.
4. Jumpering of ICTs in 132kV & 400kV level.
5. Bay equipment testing.

- NTPC apprised that determination of underground power cables is one of the major challenges to proceed further with laying of cables between two 132kV switchyards. The tentative time to complete the ICT commissioning is **25th May 2025**.
- Meanwhile in view of increased fault level of NTPC Kahalgaon and to facilitate interim arrangement of standby ISTS connectivity to Godda Thermal Power project of M/s Adani

Power (Jharkhand) Ltd. (APJL) with Indian grid, Bus splitting at 400KV Kahalgaon needs to be done on priority.

222nd OCC Decision

In view of continued operation of 400 kV bus in synchronised mode at NTPC Kahalgaon at high fault level, OCC expressed serious concern over the lack of desired progress in 132 kV power cable laying and thereby suggested participation of representative from concerned site i.e NTPC Kahalgaon in next OCC meeting for clarity i.r.o progress in bus splitting activities at the site.

NTPC may confirm timeline and feasibility of Bus splitting with current configuration. Member may discuss.

2.8 Replacement of SEM in ER, from Non-DLMS to DLMS platform and compliances to latest standards: Powergrid ER-II

- Considering the initial phase of metering (year 2012), all the Energy Meters procured were non DLMS type which are specially manufactured only to cater some specific requirements. The initial meters were procured from L&T OEM. Then gradually from 2016 onwards DLMS protocol Meters are introduced, and different OEM make Meters are procured.
- These Meters are capable of handling **15 min Load Survey** Block data. However, when the upcoming requirements and regulations are taken into consideration, some Meters do not have the technical functionality to cater the requirements. A brief analysis of Meter types connected with AMR system, is given below.

Time interval	L&T (Qty: 411)	Genus-01seris (Qty: 763)	Genus-02 series (Qty: 325)	Secure (Qty: 18)
15 min Data Block	✓	✓	✓	✓
05 min Data Block	✗	✗	✓	✓
01 min instant	✗	✓	✓	✓

- ✓ The L&T make Meters are nearing 14 years of service on field and becoming susceptible to errors, frequent hang issues, and breakdowns. We have already received multiple complaints from different utilities regarding the same. It is imperative that all the L&T make meters (411 Qty) needs to be replaced with newly procured meters (GENUS/SECURE) to prevent any unwanted errors in settlement. In addition to that, a certain quantity of 01 series Genus make Meters are also needs to be replaced to ensure the technical capability of upcoming requirements.
- ✓ The approx. count of new Meters requirement will be 1021. At present newly supplied Secure make SEM are available in ER (ER-II- 250+ ER-I-210), i.e, 460 Nos.
- ✓ Going by phased manner replacement, immediately L&T make SEM's may be replaced, subsequently, procurement of new SEM by 600 quantity (Approx) also needs to be considered. However, phased manner can be considered for the same.
- ✓ This replacement management will be a comprehensive one and will cater the needs in upcoming future.

Powergrid ER-II may explain. Members may discuss.

2.9 Replacement of Old Data Concentrator Unit (DCU) for AMR, in compliance with regulations.: Powergrid ER-II

- The Data Concentrator Unit (DCU) are the most essential items in the AMR solution. In Eastern Region, when the initial phase of AMR implementation started (Nov-2012), the DCUs were manufactured to be in synch with the type of Meters and the end user requirements (only to cater 15 min block data parameters). Also, the DCUs are being procured from an overseas vendor (VIOLA OEM).
- Gradually, from 2016 onwards, new SEM types are being introduced with DLMS protocol compliance along with multiple type of data parameters. To cater this requirement, the firmware of the DCUs is upgraded. Gradually, new DCUs are put in the AMR system (indigenous Make) to have multi-vendor scenario in the system and to reduce single OEM dependency. At present, a customized DCU firmware is being developed throughout the period and put in operation to handle multiple type of requirements like different Protocol Meters, different OEM make Meters, Handling Kiosk type location in AMR, and ensuring system security (like VPN based communication, Secure data transfer protocol, Data Encryption). This is running successfully throughout the period.
- As POWERGRID already highlighted in many previous meetings, multiple Proof of Concepts (POC) have been carried out in the existing AMR with the newly procured DCUs, to test the feasibility of upcoming regulations of 05 min block data, instantaneous data etc. The successful POC results are being shared with members. (Reference 217th OCC).
- In the present AMR scenario, we have some of the DCU quantity present which are of VIOLA OEM make, those were procured in the initial phase. These DCU are specially designed for L&T make Meters and the initial Series of Genus Make Meters. Also, considering the CEA/CERC regulations of IT/OT hardware life, the DCU are reaching to end-of-life cycle.
- Total DCU quantity to be replaced is: 106 no's. The new DCU which will be procured, will comply to the existing as well as upcoming technical requirements for high end activities. In Eastern Region, as we have already a steady system running and also have tested and developed the prototype environment of new AMR requirements as part of AMR Phase5 project, it is recommended that the new DCU may be procured in synch with the last approved LOA of AMR Phase5.
- Project timeline will be 09 months for procurement and installation of DCUs at stations, with 03 years warranty support. Total additional cost for DCU procurement will be 98,73,900 INR and additional DCU implementation Service charges will be 24,68,475 INR. Total service & Supply cost will be Rs. 1,23,42,375/- (Rs. One crore twenty three lacs forty two thousand three hundred seventy five only) excluding taxes. However after due approval & negotiation final price could be arrived and will be intimated duly.
- Procurement of DCU and replacement work will be a one-time roll-out job. Once the DCUs are replaced at stations, AMR system will be ready for catering the existing Meters as well as the new Meters (as and when those will be installed at stations). No additional changes will be needed in AMR, during replacement of Meters.
- The DCUs which will be procured for existing AMR, there are multiple level of firmware customization needs to be done. As stated above, in the AMR system of ER, there are multiple types and OEM make Meters present. For that different version of DCU firmware

is developed. The current DCU firmware is capable to catering both DLMS & Non DLMS meters in a single DCU. Also, in a single DCU, both Genus make and Secure make DLMS Meters are connected in the same port and successful data retrieval is happening. Special DCU firmware is designed to handle the Kiosk type locations. In addition to the existing requirements, the DCU firmware has been upgraded as well (to build prototype) for catering both 05 min & 15 min Load Survey Meters. So, it is imperative that just procurement of the DCU will not suffice the requirements, plenty of effort to be put for developing the customized firmware as well which will be a huge time taking process. As M/S TCS has already completed these development part and handling the system, it is recommended to place the LOA to them and execute the job.

- Members may discuss and provide approval to place the LOA to M/S TCS on single tender (Nomination) basis.

Powergrid ER-II may explain. Members may discuss.

2.10 Review of AUFLS in Eastern region: ERPC

- A Task Force was constituted by NPC vide letter dated 25.08.2023 on Implementation of AUFLS and df/dt scheme under the chairmanship of Member Secretary, SRPC and comprising members from NPC, RPCs and Grid-India.
- The Task force after convening meeting on 11.09.2023 submitted its report to NPC in 14th NPC meeting on 05.02.2024, wherein certain recommendations were made.
- Accordingly, as per decision of 214th OCC meeting, a special meeting was convened on **10.07.2024** to deliberate on successful implementation of Automatic Under Frequency Load Shedding (AUFLS) in Eastern region wherein following course of action was delineated to all constituent ER states.
- **Action points:**

- All SLDCs were instructed to shift the load quantum from Stages –III & IV to stage-I & II respectively as an interim measure till new feeders for additional load relief gets identified by individual state DISCOMs.
  This must be implemented at the earliest with necessary changes in frequency settings of the existing UFRs and the same shall be reviewed in upcoming OCC meeting.
- All SLDCs were advised to share the identified feeders list for revised load relief quantum within a month. The status shall be reviewed in monthly OCC meetings.
- Curtailment of critical loads should be avoided. However , in stage-III and stage-IV, as it operates only in severe threat to grid stability, industrial loads may also be considered. Accordingly DVC and IPCL (having dominant industrial consumers) were urged to identify industrial feeders for load relief in stage-III and stage-IV.
- All SLDCs were urged to expedite and ensure SCADA visibility of existing as well as newly identified feeders under AUFLS for effective supervision of load relief quantum.

- Based on submission by DVC, revised load relief quantum as follows:

(Figs in MW)

Constituent	Stage-1	Stage-2	Stage-3	Stage-4	Total
Bihar	315	379	442	442	**1577**
Jharkhand	87	105	122	122	**437**

DVC	172	207	241	241	**861**
Odisha	306	367	428	428	**1530**
West Bengal	497	597	696	696	**2486**
Sikkim	5	6	7	7	**25**
Total	**1383**	**1660**	**1937**	**1937**	**6916**

Constituent wise	Annual Consumption	Consumption factor	Demand met	Peak demand factor	Demand contribution
Bihar	40952	0.220	7578	0.236	0.228
Jharkhand	12391	0.067	1923	0.060	0.063
DVC	26214	0.141	3476	0.108	0.125
Odisha	41142	0.221	7104	0.221	0.221
West Bengal	65009	0.349	11868	0.370	0.359
Sikkim	526	0.003	137	0.004	0.004
Total Consumption	**186234**	1.000	**32086**	1.000	1.000

UFR Feeders real time monitoring has been discussed in NPC as well as various forums of ERPC. Further, with new IEGC 2023 the same has been mandated as quoted below:

IEGC 2023, Clause 13.d*: "SLDC shall ensure that telemetered data of feeders (MW power flow in real time and circuit breaker status) on which UFR and df/dt relays are installed is available at its control centre. SLDC shall monitor the combined load in MW of these feeders at all times. SLDC shall share the above data with the respective RLDC in real time and submit a monthly exception report to the respective RPC. RLDC shall inform SLDCs as well as the concerned RPC on a quarterly basis, durations during the quarter when the combined load in MW of these feeders was below the level considered while designing the UFR scheme by the RPC. SLDC shall take corrective measures within a reasonable period and inform the respective RLDC and RPC, failing which suitable action may be initiated by the respective RPC."*

In view of the same, ERLDC in coordination with SLDCs has been able to achieve good data availability and continuously following up with SLDC for 100% Integration. Further, based on 14th ***NPC meeting on 05.02.2024, Special meeting of ERPC for UFLS held on 10th July 2024, ER TCC meeting held on 5th Sept 2024 and subsequent OCC meeting decision***, constituents were advised to implement enhanced required quantum in each stage of UFLS due to increase in demand and energy consumption.

Further it is emphasized that RLDC on a quarterly basis is required to be analysed the duration during which the combined load in MW of UFR feeders is below the level considered while designing the UFR scheme by the RPC. This is to ensure that sufficient loads are there during all times to ensure this adequate relief from this defence scheme for maintaining grid security.

Present Status of shifting AUFLS stage 3 & 4 feeders to AUFLS Stage 1 and 2 and identification of additional feeders for all stages of AUFLS is as follows (as per information received by ERLDC SCADA):

Utility	Stage 3 & 4 feeder shifting to Stage 1 and 2	Updated in ERLDC UFLS Monitoring Display	New feeder Addition for Stage 1-4 for meeting new ULFS Quantum requirement
Bihar	**Stage 1,2,3 old feeder either discarded or shifted in stage 4.**	Updated as per list provided	New feeders list communicated to ERLDC
Jharkhand	Completed as informed by SLDC	Updated as per list provided	**New feeders list yet to be shared**
DVC	Completed as informed by SLDC	Updated as per list provided	New feeders list communicated to ERLDC
Odisha	Completed as informed by SLDC	Updated as per list provided	New feeders list communicated to ERLDC
West Bengal-WBSEDCL	Completed as informed by SLDC	Updated as per list provided	**New feeders list yet to be shared**
West Bengal-CESC	**Not Shifted, New feeders identified and UFR implemented**	Updated as per list provided	New feeders list communicated to ERLDC

Deliberation as per 222nd OCC

✓ Bihar SLDC apprised:

By end of Feb 2025, all four stages of AUFLS will be having adequate load relief quantum.

✓ DVC informed:
- ➢ All UFRs have been tested and successfully implemented in stages –I & II as per requirement.
- ➢ New feeders have been identified in stages –III & IV where UFR testing shall be completed in one month.

✓ WBSEDCL updated:

New feeders for load shed in stages-III & IV have been identified and installation of UFRs will be completed by March 2025.

✓ SLDC Odisha informed:

All pending installation of UFRs across four stages of AUFLS will be completed by December 2024.

222nd OCC Decision

OCC advised all SLDCs/STUs and concerned DISCOMs:
- To ensure availability of sufficient load relief (MW) in each of the four stages as follows:

Constituent	Stage-1	Stage-2	Stage-3	Stage-4	Total
Bihar	315	379	442	442	**1577**
Jharkhand	87	105	122	122	**437**
DVC	172	207	241	241	**861**
Odisha	306	367	428	428	**1530**
West Bengal	497	597	696	696	**2486**
Sikkim	5	6	7	7	**25**
Total	**1383**	**1660**	**1937**	**1937**	**6916**

Stages-I &II, being first line of defence in AUFLS ,should be given first priority in maintaining required load relief quantum.

- All pending installation and testing of UFRs in Stages-I & II must be completed by Jan 2025.
- To identify new feeders for implementing AUFLS in stage III & IV who have successfully implemented AUFLS in stage I & II by shifting load quantum from stage III & IV.List of new identified feeders in stage III & stage IV of AUFLS must be share with ERPC by all SLDCs.
- To ensure SCADA data mapping for all newly identified UFR feeders at ERLDC level & in case of non-availability of SCADA data, anticipated timelines for making availability of SCADA data must be communicated for all applicable UFR feeders.
- To ensure periodic testing of UFRs for ascertaining their healthiness in coordination with ERLDC and submit report to ERPC/ERLDC.

Annexure B.2.10.1 provides the UFLS Status in Eastern Region with details of New UFR Quantum wise feeder identification and Requirement of additional feeders to be identified. In addition, it also provides new Quantum based identified feeders with UFR relays and their SCADA data availability at ERLDC.

The detailed status of UFLS implementation as per enhanced quantum utility as well stage wise, newly identified feeder, UFR relay implementation status, Available MW quantum with UFR relays, SCADA data integration and data availability of feeders is provided in **Annexure B.2.10.2**

All SLDCs/STUs and individual state DISCOMs may update action taken/future plan w.r.t AUFLS. Members may discuss.

SLDCs may update. Members may discuss

2.11 UFR operation of Purulia Pumped Storage Plant: ERLDC

- In 214th OCC, dated23.04.24, ERLDC highlighted the necessity of disconnecting pumped storage plants operating in pumping mode from the grid just before Stage-I of AUFLS i.e at 49.5 Hz, as mandated in IEGC 2023 as well as recommended in report of Task force on AUFLS. WB SLDC requested to implement automatic tripping mechanism after end of the

General Election 2024 and WBSEDCL underlined need of consultation with concerned OEM.

- **OCC advised West Bengal SLDC to share the action plan for implementing this automatic tripping mechanism as soon as consultation with the concerned OEM is completed by WBSEDCL.**
- In view of upcoming high-demand period, the implementation of automatic tripping of PPSP is very crucial for safe and secure operation of grid. WB SLDC is requested to share the action plan for automatic tripping of PPSP implementation.

ERLDC may explain. WB SLDC and WBSEDCL may update. Members may discuss.

2.12 Generation target for FY 2025-26: ERPC

THERMAL

- Annual assessment and finalization of the Generation Programme and Planned Maintenance Schedules of generating units is undertaken by CEA every year. This process involves fixing up the Overall Generation Target for the country (involving Fuel-wise fixation of Generation Target also) based on last year generation, anticipated demand, likely economic growth etc.
- Following this, Fuel Wise target will be allocated to the various generating stations based on their past performances, planned maintenance schedule and the future planning as submitted by the respective generating station.

☐ In this regard, all power generating stations are requested to furnish the below mentioned details as per enclosed formats

a) Unit-wise monthly generation proposed during **2025-26** taking into account likely fuel availability, the anticipated loss of generation on account of various factors such as grid constraint, low schedule/ Reserve shut down due to high cost, coal/lignite quality etc., if any

b) The Unit-wise schedule of planned Maintenance for the year 2025-26.

On approval of planned maintenance schedule by by the respective RPCs (Regional Power Committees) , same shall be taken up by CEA(GM Division) to facilitate planning at All India level.

220th OCC Decision

- OCC advised all thermal generating units of ER to submit the details of unit-wise planned maintenance and anticipated generation(MU) for FY 2025-26 at the earliest.

All thermal GENCOs of ER who have not yet furnished the generation target are earnestly request to update the details.

2.13 Scheduling related issues: NTPC ER-1

- The scheduling software is not configured to comply with regulatory provisions i.e. restricting the scheduling of a generating station below its technical minimum after 14:30 hrs on D-1.
- In case SCUC support is not provided , the downward revision of schedule by beneficiaries after 1500 Hr. i.e. after issuance of the SCUC entitlement list, the station is forced to incur significant losses to maintain its technical minimum and make it available to cater peak demand of the beneficiaries.
- **It is requested that such provisions be incorporated in the scheduling software and the DISCOMs may refrain from downward scheduling after 1430 hrs on D-1 to comply with the regulations. This is required to ensure the operational efficiencies of the stations, grid-stability, and avoiding commercial loss to the generator.**
- Also the cases where previously such incidences have happened the same may be rectified and schedule may be revised as per IEGC 2023 provisions.

NTPC ER-1 may explain. Members may discuss.

2.14 Overhauling of Barauni Unit-9 : NTPC ER-I

In FY 25-26, OH of 250 MW Unit-9 is planned from 01.12.25 to 30.12.25 for 30 days.
However in view of increased number of boiler tube leakge in this financial year it is proposed to prepone the overhauling from **23-Feb-2025** to **24-March-2025** so as to increase reliability and **availability of unit during peak months**.
Members may discuss. OCC may approve.

2.15 Shutdown request by Dikchu HEP

It is hereby informed that the shutdown of the Dikchu plant has been rescheduled from 20th January to 28th February 2025. This shutdown is due to the dismantling of the existing 132KV GIS and the installation of a new 132KV GIS. During this period, power generation will not take place at the Dikchu plant.

Members may discuss.

2.16 Reviewing data for preparation of ER Restoration procedure: ERLDC

As per IEGC regulation 34.2, Each RLDC, in consultation with the NLDC, CTU, and the concerned STUs, SLDCs, users and RPC, shall prepare detailed procedures for restoration of the regional grid under partial and total blackouts which shall be reviewed and updated annually by the concerned RLDC. IEGC Regulation 34.3 states that detailed procedures or restoration post partial and total blackout of each user system within a region shall be prepared by the concerned user in coordination with the concerned SLDC, RLDC or NLDC, as the case may be.
ERLDC has already via mail dated 24.12.24 circulated the relevant portion of latest *Restoration procedure of Eastern region* with all the constituents including ISGS, IPP, transmission licensee, transnational entity, railway divisions, which they have been asked to review and update by 13th January 2025. However, responses were received from following utilities:

- North Karanpura thermal

- Tashiding Hydro
- Indigrid transmission licensee
- North eastern frontier railway
- Eastern railway

All other constituents were given a reminder mail on 17.01.25 to send relevant information by 22.01.25. Based on the responses as on 22.01.25, the document shall be finalised. Any updates if received after this date shall be incorporated in subsequent versions. The above-mentioned constituents (SLDC, ISGS/IPP) are requested to send detailed restoration procedure (prepared by themselves) specific to their system as mandated in IEGC at the earliest to ERLDC.

ERLDC may explain. Members may discuss.

2.17 Connection Agreement for STU Lines: ERLDC

Clause 9 (3) of the **CERC Indian Electricity Grid Code, 2023**, states the following:

"In case of intra-State transmission system getting connected to inter-State transmission system, Connectivity Agreement shall be signed between intra-State transmission licensee, CTU, and inter-State transmission licensee after the award of the project and before physical connection to ISTS."

- Additionally, CERC, via its order in Petition No. 216/MP/2023 dated 03-10-2024, has directed CTU to sign a tripartite agreement among the STU, CTU, and the concerned ISTS licensee. Similar directions have also been issued by CERC to CTU through its letter dated 22-10-2024.
- In line with the provisions of IEGC 2023 and the above order(s)/direction(s) of CERC, all STUs in the Eastern Region are requested to sign the Connectivity Agreement with CTU for intra-State elements. To initiate the process of signing the Connectivity Agreement, STUs must submit their applications to CTU via the NSWS portal. Detailed guidelines regarding the Connectivity Agreement are available on the CTUIL website.
- CTU connection agreement for following lines are yet to be submitted by States:

Sl. No.	Name of the element	Charging date	Concerned SLDC
1	220 kV Rajarhat-Newtown A2 ckt-1	16-Jan-24	West Bengal
2	220 kV Rajarhat-Newtown A2 ckt-2	16-Jan-24	West Bengal
3	132 kV Malda-Manikchak 1	19-Nov-24	West Bengal
4	132 kV Malda-Manikchak 2	19-Nov-24	West Bengal
5	400 kV Chandwa-Latehar 1	14-Dec-24	Jharkhand
6	400 kV Chandwa-Latehar 2	14-Dec-24	Jharkhand

<u>It is essential to note the following:</u>

- Any upcoming intra-State project in the Eastern Region that will connect to a CTU point must ensure that the Connectivity Agreement with CTU is signed prior to FTC. All STUs are requested to initiate the process of signing connectivity agreements for projects that have already been approved and are currently under execution.

- Any FTC request for intra-State entities connected to CTU points must be forwarded to ERLDC-FTC along with the signed Connectivity Agreement.

Member may note.

2.18 Requirement of PTCC Clearance as per CEA Regulations, 2023: ERLDC

- The Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2023, specify in Section 80:
- "Protection against electromagnetic interference – The owner of every electric supply line of voltage level 11 kV or above shall obtain the clearance of Power Telecommunication Co-ordination Committee to ensure the safety of the personnel and telecommunication line as per the requirement of section 160 of the Act."
- In several instances, it has been observed that STU lines fail to provide PTCC Clearance during FTC. In some cases, only the copy of PTCC Clearance Application is submitted, while in others, PTCC approval is submitted very late that too after repeated follow-up. Furthermore, modifications to the line or deviations from the originally approved scheme often lack the requisite PTCC Clearance.
- **It is important to note that Grid-India has received multiple communications from the CEA PCD, emphasizing the mandatory compliance with the above regulation. It is essential to obtain the PTCC Certificate prior to charging any intra-State line for the first time**.
- Latest communication from CEA dated 17.10.24 is attached as **Annexure B.2.18**.
- Henceforth, any FTC request for the first-time charging of intra-State lines must be submitted to ERLDC-FTC along with the PTCC Clearance.

ERLDC may explain.Members may note.

2.19 Periodic Testing of power system elements: ERPC

As mandated in **IEGC 2023**, **40.1** & **40.2,** periodic tests shall be carried out on power system elements to ascertain the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

Relevant portion of clause is as below:

Quote:

"

40. PERIODIC TESTING

……..

40.2 (a) *The owner of the power system element shall be responsible for carrying out tests as specified in these regulations and for submitting reports to NLDC, RLDCs, CEA and CTU for all elements and to STUs and SLDCs for intra-State elements*."

40.2 (b) "*All equipment owners shall submit a testing plan for the next year to the concerned RPC by 31st October to ensure proper coordination during testing as per the schedule. In case of any change in the schedule, the owners shall inform the concerned RPC in advance*.

……"

Unquote

In 217th OCC Meeting held on 24.07.2024, the matter was discussed in detail and OCC advised all the generators & owners of HVDC/FACTS devices to strictly adhere to the IEGC 2023 guidelines & submit the required testing data & plan to ERPC at the earliest (as per clause 40.2.(b).

None of the generators or owners of HVDC/FACTS devices have submitted the testing plan yet. All are requested to submit the testing schedule at the earliest.

Power System Elements	***Tests***	***Applicability***
Synchronous Generator	*(1) Real and Reactive Power Capability assessment.* *(2) Assessment of Reactive Power Control Capability as per CEA Technical Standards forConnectivity* *(3) Model Validation and verification test for the complete Generator and Excitation System model including PSS.* *(4) Model Validation and verification of Turbine/Governor and Load Control or Active Power/ Frequency Control Functions.* *(5) Testing of Governor performance and Automatic Generation Control.*	*Individual Unit of rating 100MW and above for Coal/lignite, 50MW and above gas turbine and 25 MW and above for Hydro.*
HVDC/FACTS Devices	*(1) Reactive Power Controller (RPC) Capability for HVDC/FACTS* *(2) Filter bank adequacy assessment based on present grid condition, in consultation with NLDC.* *(3) Validation of response by FACTS devices as per settings.*	*To all ISTS HVDC as well as Intra-State HVDC/FACTS, as applicable*

222nd OCC Decision

All GENCOs of ER who have not yet submitted details were advised to furnish the testing plan i.r.o individual synchronous generators in the shared google sheet within a week positively in compliance to IEGC 2023.
https://docs.google.com/spreadsheets/d/1m6KCkONdObMhre9-1me1kvHTEBYUdXUOISYdn5FR4fM/edit?gid=0#gid=0

- ERLDC was requested to maintain a consolidated database on testing schedule of all generating utilities of ER.

NTPC, CESC, MPL, Bihar & DVC submitted the tentative schedule for testing. **All other Gencos are requested to submit schedule in the Google sheet.**

All GENCOs and HVDC/FACTS owners may update.

2.20 Periodic Mock Drill Exercises in areas of generation, transmission and distribution of the power sector: ERPC

In compliance to **Disaster Management Plan for Power Sector (2022**) as drafted by **CEA**(as per Disaster Management Act 2005) and approved by Ministry of Power (Govt. of India) as well as in order to be prepared for any eventuality, periodic mock drill exercises are to be undertaken in various areas of generation, transmission and distribution of the power sector by considering various crisis and disaster situations like an earthquake, floods etc. Depending on the vulnerability of the installations/plant, mock drills to handle such situations need to be undertaken. The utilities are also required to ensure that at least one mock drill exercise for every crisis/disaster situation to which the installation/plant is vulnerable is undertaken in each quarter. The adverse observations made on each event of Mock drill should be taken into account and it should be ensured to prevent occurrence of such undesirable events in the future.

In this regard, Secretary (Security) , Cabinet Secretariat, Govt of India has stressed on undertaking the following measures:

- ✓ Availability of details pertaining to local district authorities, revenue authorities, law enforcement, fire management authorities, etc., across the townships
- ✓ Adequate vetting of personnel/organisation responsible for township security by local law enforcement agencies.
- ✓ Regular conduct of mock drills in the townships, especially evacuation drills with
- ✓ ambulance and drills for handling major fire accidents.

Till now quarterly mock drill reports have been received from NHPC and WBPDCL. Mock drill reports regularly received from WBPDCL. NTPC has shared mock drill reports for ER thermal generating units for Q2 of FY 2024-25

☐ **Action points:**

As per deliberation of **1st MEETING ON REGIONAL DISASTER MANAGEMENT** (EASTERN REGION) dated **09.07.2024(**MOM at **Annex-B.2.20** :

- At least one mock drill exercise for every crisis/disaster situation to which the installation/plant is vulnerable must be undertaken in each quarter and quarterly report by the utilities to be shared with CEA for review and onward submission to Ministry of Power (Govt of India) . (Action: All thermal GENCOs (Central,IPP), all hydro generating stations, all ISTS licensees . SLDCs to coordinate with respective GENCOs,STUs and DISCOMs within their jurisdiction)
- Utilities are requested to share the experience on the mock drill exercises and scope for improvements.

222nd OCC Decision:

- ✓ OCC advised all the utilities to:
- Conduct periodic Mock Drills i.e. at least one mock drill exercise in each quarter to which the installation/plant is vulnerable in order to be prepared for any unforeseen eventuality.

- Share Quarterly mock drill reports with ERPC which will then be sent to CEA for review & finally report will be submitted to Ministry of Power (Govt of India).This is in compliance to Disaster Management Plan in Power sector and Disaster management Act 2005.

✓ Besides all generating utilities, all transmission licensees (ISTS licensee and STUs) were advised to furnish detailed mock drill reports on quarterly basis. SLDCs were requested to coordinate with respective GENCOs,STUs and DISCOMs within their jurisdiction in this regard.

3. PART-C: ITEMS FOR UPDATE/FOLLOW-UP/INFORMATION

3.1. ER Grid performance during December 2024.

The average and maximum consumption of Eastern Region and Max/Min Demand (MW), Energy Export for the month December-2024 were as follows:

AVERAGE CONSUMPTION (MU)	MAXIMUM CONSUMPTION(MU)/ DATE	MAXIMUM DEMAND (MW)	MINIMUM DEMAND (MW)	SCHEDULE EXPORT	ACTUAL EXPORT
		DATE / TIME	DATE / TIME	(MU)	(MU)
428.8 MU	450.4 MU, 30.12.2024	23057 MW, 31.12.2024 at 18:26 Hrs.	14561 MW, 14.12.2024 at 03:26 Hrs.	5731	5684

ERLDC/ERPC may highlight the performance of the ER grid.

3.2. Update on Reconductoring of ISTS lines under Eastern Region Expansion Scheme-44: ERPC

- Several 220 kV transmission lines and substations were implemented in Indian grid along with cross border lines for importing power from Chukha Hydro Electric Plant in Bhutan. The generating station was commissioned in years 1986-88 and the transmission system is now more than 35 years old. Considering the age of conductors and increase in conductor snapping incidences, reconductoring of these transmission lines has become necessary.
- The matter was deliberated in various OCC forums as well as in 52nd TCC meeting of ERPC.
- In a meeting was convened by CEA under the chairpersonship of Member (Power System) on 27-08-2024, it was decided that matter of reconductoring of cross border lines will be separately taken up with Bhutan.
- However, reconductoring of ISTS portion of 220 kV corridor viz. Alipurduar (POWERGRID) – Falakata (WBSETCL) – Birpara (POWERGRID) – Binaguri (POWERGRID) – Siliguri (POWERGRID) – Kishanganj (POWERGRID) – Dalkhola (POWERGRID) – Gazole (WBSETCL) – Malda (POWERGRID), may be taken up under ISTS. Further, reconductoring of intra-state LILO portion of Birpara (POWERGRID) – Alipurduar (POWERGRID) 220 kV D/c line at Falakata (WBSETCL) and Dalkhola – Malda 220 kV D/c line at Gazol (WBSETCL) shall be carried out by WBSETCL matching with HTLS conductor of the main ISTS line in the matching timframe.

Name of the scheme	Implementation timeframe	Implementation mode	Implementing agency	Estimated Cost (Rs. in Cr)

ERES-44	18 months (15 months on best effort basis) from the date of allocation	RTM	Powergrid	385.77

WBSETCL works associated with reconductoring of ISTS lines

- In the NCT(National Committee on Transmission) meeting dated 23.10.2024 , the following were decided:
- WBSETCL shall reconductor their following lines sections under intra-state scheme matching with completion of ISTS scheme namely ERES-44:
- About 4 km intra-state portion of Alipurduar (POWERGRID) Falakata (WBSETCL) 220 kV D/C line at Falakata end with HTLS conductor of ampacity 1250 A along with necessary upgradation of associated 220 kV bay equipment at Falakata (WBSETCL) end commensurate with rating of HTLS (1250 A).
- About 4 km intra-state portion of Birpara (POWERGRID) - Falakata (WBSETCL) 220 kV D/C line at Falakata end with HTLS conductor of ampacity 1250 A along with necessary upgradation of associated 220 kV bay equipment at Falakata (WBSETCL) end commensurate with rating of HTLS (1250 A).
- About 2 km intra-state portion of Dalkhola (POWERGRID) - Gazole (WBSETCL) 220 kV D/C line at Gazole end with HTLS conductor of ampacity 1250 A along with necessary upgradation of associated 220 kV bay equipment at Gazole (WBSETCL) end commensurate with rating of HTLS (1250 A).
- About 2km intra-state portion of Gazole (WBSETCL) - Malda (POWERGRID) 220 kV D/C line at Gazole end with HTLS conductor of ampacity 1250 A along with necessary upgradation of associated 220 kV bay equipment at Gazole (WBSETCL) end commensurate with rating of HTLS (1250 A).
- WBSETCL will LILO the Dhalkola - Gazole 220 kV D/C line with 1250 A HTLS under their intra-state scheme for establishment of 220 kV level at their existing 132/33kV Raiganj (WBSETCL) S/S.
- ISTS licensee and WBSETCL shall coordinate for reconductoring of their respective portion of the lines matching with completion schedule of this scheme.
- It is kindly requested that WBSETCL may note the scope of works (as provided in the minutes of NCT) and coordinate with POWERGRID for matching implementation of their works.
- The **progress report** may be shared on **monthly** basis to **CEA**, **ERPC** and **CTU**.

As per **221st OCC** Deliberation:

- OCC was apprised of the decision in the NCT meeting (23.10.2024) on reconductoring of 220 kV network of Chukha Transmission system (CTS).
- Powergrid ER-II intimated:
  - Tendering process of reconductoring works shall commence soon and NIT will be floated within a month.Award of contract shall take around 7-8 months

- BOQ for reconductoring works is currently under progress wherein provision of TLA is included in view of increased incidents of autoreclosure and tripping in the thunder prone area of North Bengal.
- Most of the end-equipment connected to Chukha Transmission system have been upgraded.
- Shutdown requirement of the critical in-service 220 kV lines was highlighted.
- In absence of WBSETCL representative, the modalities of reconductoring works to carried out on part of WBSETCL matching with the timeframe of ISTS lines, could not be finalized.

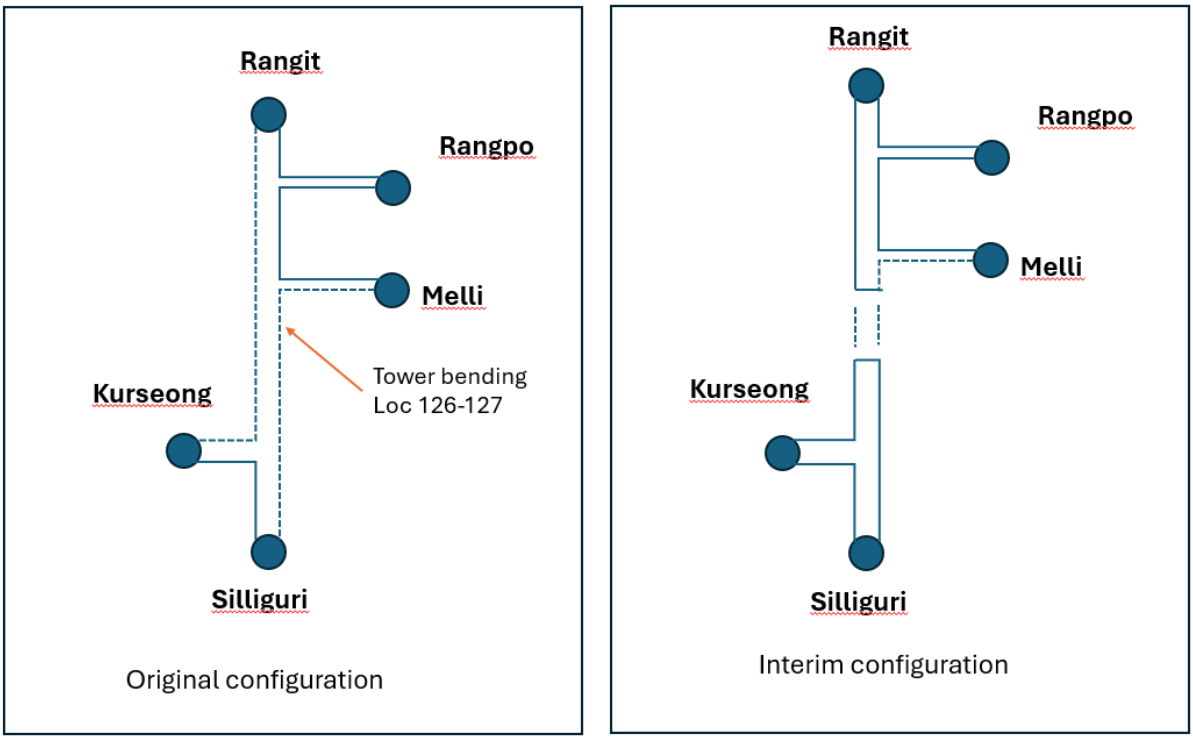
221st OCC Decision:

- OCC advised Powergrid ER-II to expedite the reconductoring works of CTS as per timeline approved in 24th NCT meeting and share monthly progress report of the same with CEA, CTU and ERPC.
- Powergrid was also advised to conduct a bilateral meeting with Bhutan authorities to streamline the reconductoring plan in portions of 220 kV lines within the territory of Bhutan. This has to be done prior to proceeding with the tendering process of reconductoring works.
- OCC opined that shutdown requests pertaining to reconductoring of CTS shall be treated on priority and to be approved to the best feasible extent so that reconductoring of CTS gets completed as per timeline approved in 24th NCT meeting.
- WBSETCL was advised to coordinate with Powergrid ER-II for carrying out reconductoring works on intra-state portions of 220 kV lines under CTS matching with the timeframe of ISTS lines. This is in compliance to decisions of 24th NCT meeting.

WBSETCL and Powergrid may respond. Members may discuss.

3.3. Update on Restoration of 132kV Rangit-Kurseong & 132kV Siliguri-Melli-Rangpo lines: ERLDC

- Due to incessant rain and several landslides, towers at loc. 125-128 of **132 kV Rangit-Kurseong** and **132 kV Siliguri-Melli** got badly affected. Out of which tower at loc. 126,127 got severely damaged. Both the lines were switched on 5th October 2024 on request of PowerGrid.
- Consequently, **Kurseong** and **Melli** (Kalimpong source) are fed through single source of **Siliguri** and **Rangpo** respectively. To ensure reliable power supply at Melli & Kurseong, ERLDC conducted one meeting on **08.10.2024** (online mode) with participants from ERPC, ERLDC, West Bengal SLDC, Sikkim, Powergrid and NHPC Rangit.
- Considering the difficulties & time requirements due to hilly terrain for restoration of the said portion, temporary reconfiguration of these lines was explored to extend additional sources to Melli & Kurseong. It was decided that part of the healthy line of **132 kV Siliguri-Melli** will be reconfigured as **132 kV Siliguri-Kurseong ckt2** as a second source of Kurseong and another healthy portion of **132 kV Siliguri-Melli** will be reconfigured as **132 kV Rangit-Melli** for a second source of Melli.
- After necessary reconfiguration, **132 KV Siliguri-Kurseong-II (interim)** arrangement charged on **9th October** and **132kV-Rangit-Melli (interim)** has been charged tentatively on **22nd October**. POWERGRID intimated that it would take 15-20 Days to restore the original configuration after rectifying damaged towers.



220th OCC Decision

- OCC expressed serious concern on total generation loss of Chuzachen HEP due to multiple trippings of 132 kV Chuzachen-Rangpo D/C line.
- OCC advised Sikkim to expedite in implementation of Committee recommendations i.r.o increasing ground clearance by construction of new tower(between loc. 28-29) and hill cutting (around tower no. 27). Update on the same needs to submitted to ERPC/ERLDC every week.

As per **221st OCC** deliberation:

- Powergrid ER-II updated that there were persistent ROW issues in tea garden adjoining the damaged tower location. Also Hill shanking observed around the affected area.
- Excessive tension of the conductor in vicinity of damaged tower no-127 due to power line crossing the span. Dismantling of Tower No-127 is under progress and would be completed by 07.12.2024.
- Soil testing and piling works are presently being carried out. Based on soil testing results, new foundation works as well as rectification of Tower No-126 shall be taken up.
- Erection works shall commence from 1st week of January 2025.Tower No-127 to be erected by 06.01.2025 while rectification of Tower No-126 to be completed by 16.01.2025.
- Re-stringing in spans :127-128 and 126-127 to be completed by 25.01.2025 and 29.01.2025 respectively.
- Modification of jumpering to make original ckt of 132 KV Siliguri-Melli Ckt and may be tentatively taken into service by 30.01.2025.

- Modification of jumpering to make original ckt of 132 KV Siliguri-Kursioung Ckt and may be tentatively taken into service by 31.01.2025.

221st OCC Decision:

- OCC requested Powergrid ER-II to expedite restoration activity of original configuration of 132 KV D/C Siliguri-Melli & Rangit-Kurseong Lines to the best feasible extent.
- OCC urged Govt. of Sikkim to extend all possible assistance to Powergrid ER-II in resolving the ROW issues and restoring damaged towers at the earliest.

WBSETCL and Powergrid may update. Members may discuss.

3.4. Update on actions taken to prevent repeated tripping of 132 kV Chuzachen-Rangpo D/C: ERPC

- **132 kV Chuzachen-Rangpo D/C** tripped more than **10 times** since **May'24** causing total generation loss occurred at Chuzachen HEP (110 MW) due to sequential tripping of both lines in three instances.
- In most of the trippings, **phase to phase** fault was reported with a distance of around **12 km** from **Rangpo**.
- A joint committee with members from Powergrid, Chuzachen HEP and Sikkim transmission wing, Dept. of Power (Sikkim) was constituted for joint site inspection. The committee submitted its report after visiting the site on 01.10.2024.
- Committee observations during the visit were as below:

✓ Critical tree infringement and bamboo trees between loc. 27-29 along the corridor.
✓ Severe infringement along with several flashover marks on the conductor and burnt trees along the corridor.
✓ Less ground clearance b/w loc. 28-29 for Ckt-1 (4.1 meter instead of minimum requirement of 6.1 meter).

- **The Committee recommended two new towers to be constructed between loc. 28-29 and 35-36 (one each) and hill cutting along the periphery of tower no. 27 to improve ground clearance.**
- Considering the severity of less ground clearance and potential of damage to human life, the recommended measures need to be implemented on an immediate basis.

- As per **221st OCC** Deliberation:
  In absence of Sikkim representative, the latest status could not be updated

The same matter was discussed in the **220th OCC** Meeting wherein **OCC advised Sikkim to expedite in implementation of Committee recommendations i.r.o increasing ground clearance by construction of a new tower(between loc. 28-29) and hill cutting (around tower no. 27). OCC also advised to update the same to ERPC/ERLDC every week**. However, the update has yet not been received.

Sikkim may update. Members may discuss.

3.5. Update on Restriction of Talcher-Kolar HVDC Bi-pole: ERPC

- HVDC Talcher-Kolar Pole-2 was operated at reduced capacity from March 24, 2024, due to problem with the R-phase converter transformer at the Talcher end. There was no spare converter transformer at Talcher and subsequently, it was decided to shift the spare converter transformer from HVDC Kolar to Talcher (PG)
- Since April'24, either pole of HVDC blocked 5 times out of which, in 4 times the other pole went to ground return mode instead of metallic return mode resulting in overloading of 400kV Talcher-Meeramundali D/C and generation backdown was done either manually or through operation of SPS.
- Meanwhile, power order of Talcher-Kolar poles was reduced to 1500MW from 2000MW due to which other critical lines of the region were getting overloaded. **Accordingly, Talcher generation was curtailed in the range of 800-900MW during peak hours for approximately 50 days in the summer, impacting both Eastern Region (ER) and Southern Region (SR) beneficiaries.** Later on, with decrease in ambient temperature HVDC Talcher-Kolar power order was restored and generation back down was withdrawn.
- **To mitigate the risk of similar power supply challenges experienced during summer 2024, Odisha (PG) may share the replacement plan of existing Converter Transformer.**

As per **221st OCC** Deliberation.:
Powergrid Odisha apprised:

- The Converter transformer has arrived at Talcher(PG) in the first week of October 2024 and presently oil filtration is under process.The same shall be ready for charging by end of November 2024.
- If this converter transformer is put into service, no spare will be available at HVDC Talcher or HVDC Kolar stations to deal with any contingency. So it is proposed to keep this converter transformer as hot spare (ready for service) that may be replaced within 5-6 days as per grid requirement.

ERLDC submitted:
If the converter transformer is kept as hot spare as propsed bt Powergrid Odisha, it shall lead to backing down of generation at NTPC Talcher for at least one week.Consequently NTPC Talcher as well as ER beneficiaries will be adversely affected.

221st OCC Decision
OCC recommended Powergrid Odisha to keep the existing converter transformer as spare and put the new one into service at HVDC Talcher station. Powergrid Odisha agreed to propose the same to Powergrid Corporate for obtaining necessary clearance at the earliest.

Powergrid Odisha may update.Members may discuss.

3.6. Regarding Non-Submission of Forecasting Data from States: ERLDC

The **Clause 2** of **Regulation 31** of **IEGC 2023** has mandated all the SLDCs to timely submit the demand estimate data to the respective RLDC and RPC.
The demand estimation data provided by SLDCs will be required in resource adequacy planning and regional load forecasts conducted by the RLDC.

Currently, the day ahead data is regularly received from all the states except Sikkim.

221ST OCC decision:

- OCC advised all SLDCs for strictly adhering to the schedule of demand estimation as mandated in IEGC 2023, timely sharing with ERLDC as well as uploading of forecasting error on their respective websites.
- OCC advised all SLDCs for strictly adhering to the schedule of demand estimation as mandated in IEGC 2023, timely sharing with ERLDC in specified format as well as uploading of forecasting error on their respective websites.
- SLDCs who are submitting day ahead forecast were advised to also share the forecasting data for their respective control areas on weekly as well as monthly basis with ERLDC.
- All SLDCs were also urged to regularly furnish resource adequacy data besides demand forecast.
- SLDC Odisha was advised to expedite implementation of the demand forecasting software and positively update the status in next OCC.

Latest Forecast receipt status is shown below:

DATA RECEIPT STATUS Y FOR THE MONTH OF	**FEB 25 RA**
Bihar	NO
DVC	NO
Jharkhand	YES
Odisha	NO
Sikkim	NO
West Bengal	NO

Weekly Resource Adequacy:

DATA RECEIPT STATUS FOR THE WEEK OF	02.12.2024 to 08.12.2024 _RA	09.12.2024 to 15.12.2024 _RA	16.12.2024 to 22.12.2024 _RA	23.12.2024 to 29.12.2024 _RA
Bihar	NO	NO	NO	NO
DVC	NO	NO	NO	NO
Jharkhand	YES	YES	YES	YES
Odisha	NO	NO	NO	NO

Sikkim	YES	YES	YES	YES
West Bengal	NO	NO	NO	NO

Weekly Forecast:

DATA RECEIPT STATUS BY 1ST WORKING DAY FOR THE WEEK OF	25.11.24 TO 01.12.2024_FC	02.12.2024 TO 08.12.2024_FC	09.12.24 TO 15.12.24_FC	16.12.2024 TO 22.12.2024_FC	23.12.2024 TO 29.12.2024_FC
Bihar	NO	NO	NO	YES	YES
DVC	YES	YES	YES	YES	YES
Jharkhand	NO	YES	NO	YES	YES
Odisha	NO	NO	NO	NO	NO
Sikkim	YES	YES	YES	YES	YES
West Bengal	NO	NO	NO	NO	NO

Resource adequacy Data Receipt Status

DATA RECEIPT STATUS FOR THE WEEK OF	**02.12.2024 to 08.12.2024_FORECAST**	**09.12.2024 to 15.12.2024 _FORECAST**	**16.12.2024 to 22.12.2024 _FORECAST**	**23.12.2024 to 29.12.2024 _FORECAST**
Bihar	YES	NO	YES	NO
DVC	YES	YES	YES	YES
Jharkhand	YES	YES	YES	YES
Odisha	YES	YES	YES	YES
Sikkim	YES	YES	YES	YES
West Bengal	NO	NO	NO	NO

Daily Resource Adequacy:

DATE	Bihar	DVC	Jharkhand	Odisha	Sikkim	West Bengal
	RA	RA	RA	RA	RA	RA
01-12-2024	NO	NO	YES	NO	YES	NO

02-12-2024	NO	NO	YES	NO	YES	NO
03-12-2024	NO	NO	YES	NO	YES	NO
04-12-2024	NO	NO	YES	NO	YES	NO
05-12-2024	NO	NO	YES	NO	YES	NO
06-12-2024	NO	NO	YES	NO	YES	NO
07-12-2024	NO	NO	YES	NO	YES	NO
08-12-2024	NO	NO	YES	NO	YES	NO
09-12-2024	NO	NO	YES	NO	YES	NO
10-12-2024	NO	NO	YES	NO	YES	NO
11-12-2024	NO	NO	YES	NO	YES	NO
12-12-2024	NO	NO	YES	NO	YES	NO
13-12-2024	NO	NO	YES	NO	YES	NO
14-12-2024	NO	NO	YES	NO	YES	NO
15-12-2024	NO	NO	YES	NO	YES	NO
16-12-2024	NO	NO	YES	NO	NO	NO
17-12-2024	NO	NO	YES	NO	NO	NO

18-12-2024	NO	NO	YES	NO	YES	NO
19-12-2024	NO	NO	YES	NO	YES	NO
20-12-2024	NO	NO	YES	NO	YES	NO
21-12-2024	NO	NO	YES	NO	YES	NO
22-12-2024	NO	NO	YES	NO	YES	NO
23-12-2024	NO	NO	YES	NO	YES	NO
24-12-2024	NO	NO	YES	NO	YES	NO
25-12-2024	NO	NO	YES	NO	YES	NO
26-12-2024	NO	NO	YES	NO	YES	NO
27-12-2024	NO	NO	YES	NO	YES	NO
28-12-2024	NO	NO	YES	NO	YES	NO
29-12-2024	NO	NO	YES	NO	YES	NO
30-12-2024	NO	NO	YES	NO	YES	NO
31-12-2024	NO	NO	YES	NO	YES	NO

Daily Forecast:

DATE	Bihar Forecast	DVC FC	Jharkhand FC	Odisha FC	Sikkim FC	West Bengal FC

01-12-2024	NO	YES	YES	YES	YES	YES
02-12-2024	NO	YES	YES	YES	YES	YES
03-12-2024	NO	YES	YES	YES	YES	YES
04-12-2024	YES	YES	YES	YES	YES	YES
05-12-2024	YES	YES	YES	YES	YES	YES
06-12-2024	NO	YES	YES	YES	YES	YES
07-12-2024	YES	YES	YES	YES	YES	YES
08-12-2024	YES	YES	YES	YES	YES	YES
09-12-2024	NO	YES	YES	YES	YES	YES
10-12-2024	NO	YES	YES	YES	YES	YES
11-12-2024	YES	YES	YES	YES	YES	YES
12-12-2024	YES	YES	YES	YES	YES	YES
13-12-2024	YES	YES	YES	YES	YES	YES
14-12-2024	YES	YES	YES	YES	YES	YES
15-12-2024	YES	YES	YES	YES	YES	YES
16-12-2024	YES	YES	YES	YES	YES	YES
17-12-2024	YES	YES	YES	YES	YES	YES
18-12-2024	YES	YES	YES	YES	YES	YES
19-12-2024	YES	YES	YES	YES	YES	YES
20-12-2024	YES	NO	YES	NO	YES	YES
21-12-2024	NO	YES	YES	YES	YES	YES
22-12-2024	YES	YES	YES	YES	YES	YES
23-12-2024	YES	YES	YES	YES	YES	YES
24-12-2024	NO	YES	YES	YES	YES	YES
25-12-2024	NO	NO	YES	YES	YES	YES
26-12-2024	NO	NO	YES	YES	YES	YES
27-12-2024	NO	YES	YES	YES	YES	YES
28-12-2024	YES	YES	YES	NO	YES	YES
29-12-2024	YES	YES	YES	YES	YES	YES
30-12-2024	YES	YES	YES	YES	YES	YES

Hence it is again requested to all the concerned for timely submission of demand estimation data to ERLDC. This collaboration is essential for effective planning and preparedness to meet the region's electricity demands efficiently and reliably.

ERLDC may explain and all SLDCs may update. Members may discuss.

3.7. Non-Submission of FRC data in stipulated timeframe: ERLDC

Adhering to IEGC clauses **30.8** and **30.10.(a)** to **30.10.(q),** generating stations within the Eastern region are required to submit essential data to ERLDC within two days of receiving a notification regarding a reportable frequency event. Additionally, according to clause 30.10.(n), all control areas within the eastern region must assess their frequency response

characteristics and share the evaluation, along with high-resolution data, with the ERLDC. Therefore, timely submission of primary response data is crucial for compliance with the IEGC.

222nd OCC decision:
All generators were advised to regularly share high resolution data against each reportable frequency event with ERLDC on time to facilitate accurate assessment of FRP for respective control areas.

The latest data receipt status is given below: (as on **11.01.2025)**

STATIONS	04.01.2025 19:23
FSTPP #STG 1 & 2	**Received**
FSTPP # STG 3	**Received**
KhSTPP #STG 1	Pending
KhSTPP #STG 2	**Received**
TSTPP #STG 1	**Received**
Barh stage-1	Pending
Barh stage-2	Pending
BRBCL	**Received**
Darlipalli	**Received**
North Karanpura	**Received**
NPGC	**Received**
TEESTA V	PLANT OUT
GMR	**Received**
MPL	**Received**
ADHUNIK	Pending
JITPL	Pending
INDBHARAT	Pending
TASHIDING	Pending
TEESTA III	PLANT OUT
DIKCHU	**Received**
Bihar	Pending
Jharkhand	Pending
DVC	Pending
OPTCL	Pending
WB	Pending
Updated as on	10.01.2025

Hence all are again requested to follow the stipulated timeline and submit the data to ERLDC and also fill the google sheet below to include the email address where notifications of reportable events should be sent.

https://docs.google.com/spreadsheets/d/1slvAOmQIEQVlMn0LnB78eKMa2sz2QYICZ-sPEpeV_jk/edit?usp=sharing

ERLDC may explain. Members may discuss.

3.8. Mock Black Start: ERLDC

- As per IEGC Reg. 34.3: A mock trial run of the procedure for different sub-systems including black-start of generating units along with grid forming capability of inverter-based generating station and VSC-based HVDC black-start support at least once a year under intimation to the concerned SLDC and RLDC.
- Also, diesel generator sets and other standalone auxiliary supply source to be used for black start shall be tested on a weekly basis and the test reports are to be shared to the concerned SLDC, RLDC and NLDC on a quarterly basis.
- As per IEGC Reg. 34.4: Simulation studies are to be carried out by each user in coordination with RLDC for preparing, reviewing and updating the restoration procedures considering the following:

(a) Black start capability of the generator;
(b) Ability of black start generator to build cranking path and sustain island;
(c) Impact of block load switching in or out;
(d) Line/transformer charging;
(e) Reduced fault levels;
(f) Protection settings under restoration condition

As per intimation received in Winter Preparedness 2024 dated 12.11.2024 hosted by ERLDC, a tentative date was received from each user regarding the mock drill of black start of generating units under their jurisdiction. The same is listed below:

Sl. No.	Name of Hydro Station	Schedule of Mock Black Start	Tentative date as on 12.11.2024	2024 Actual Date of Test
1	U. Kolab	Jun-24	Jan-24	
2	Balimela	Jul-24	Nov-24	
3	Rengali	Jun-24	Nov-24	
4	Burla	Jul-24	Jan-24	
5	U. Indravati	May-24	N/A	Sep-24
6	Maithon	Dec-24	2nd week of Dec-24	
7	TLDP-III	Oct-24	Nov-24 – Dec-24	
8	TLDP-IV	Oct-24	Nov-24 – Dec-24	
9	Subarnarekha	Sep-2024 4th week	1st week of Dec-24	3rd December 2024
10	Teesta-V	N/A	N/A	N/A
11	Chuzachen	Oct-24	Yet to be informed	
12	Teesta-III	N/A	N/A	N/A
13	Jorethang	Dec-2024 3rd week	Yet to be informed	

14	Tashiding	2nd week of Dec 2024	Yet to be informed	
15	Dikchu	N/A	Yet to be informed	N/A
16	Rongnichu	Mar-24	Test already conducted	18th March and 20th March 2024
17	Mangdechu		Yet to be informed	

All the users are requested to confirm dates for mock drill of black start of each generating unit. Also, the users are requested to share the data required simulation studies before the scheduled date of mock drill.

4. PART-D: OPERATIONAL PLANNING

4.1. Anticipated power supply position during February-2025

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of February 2025 is prepared by ERPC Secretariat (**Annexure D.1**) on the basis of LGBR for 2024-25 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc.

Members may update.

4.2. Major Thermal Generating Units/Transmission Element outages/shutdown in ER Grid (as on as on 16-01-2025)

a) Thermal Generating Stations outage report:

SL No	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	BARAUNI TPS	BIHAR	NTPC	7	110	Poor condenser vacuum	19-Jul-2023
2	BARAUNI TPS	BIHAR	NTPC	6	110	Low vacuum	22-Jul-2023
3	MEJIA TPS	DVC	DVC	3	210	Tube leakage in economiser	14-Dec-2024
4	IB.TPS	ODISHA	OPGC	2	210	Boiler Tube Leakage	14-Dec-2024
5	Sterlite	ODISHA	SEL	4	600	Ash evacuation problem	14-Dec-2024
6	MEJIA TPS	DVC	DVC	6	250	Boiler Tube Leakage	15-Dec-2024
7	Sterlite	ODISHA	SEL	2	600	APH problem	15-Dec-2024
8	FSTPP	WEST BENGAL	NTPC	4	500	Boiler tube leakage	14-Dec-2024
9	SANTALDIH TPS	WEST BENGAL	WBPDCL	6	250	Annual Overhauling	23-Nov-2024
10	HALDIA ENERGY LTD	WEST BENGAL	HEL,CESC	1	300	Yearly maintenance activities	15-Dec-2024
11	CHANDRAPURA TPS	DVC	DVC	8	250	Annual overhauling	15-Dec-2024
12	KHSTPP	BIHAR	NTPC	5	500	Annual overhauling	14-Nov-2024

13	KBUNL	BIHAR	NTPC	2	195	Capital overhauling	15-Nov-2024
14	MPL	JHARKHAND	MPL	2	525	Annual Overhauling	22-Nov-2024
15	FSTPP	WEST BENGAL	NTPC	1	200	Capital Overhauling	01-Dec-2024
16	NABINAGAR(NPGC)	BIHAR	NTPC	3	660	Annual Overhauling	06-Dec-2024

All Generating stations are requested to update expected restoration time and reason outage to ERLDC/ERPC on weekly basis in case of any change at their end.

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

SL No	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	SOUTHERN	WEST BENGAL	CESC	1	67.5	Low system demand	14-Dec-2024
2	SOUTHERN	WEST BENGAL	CESC	2	67.5	Low system demand	11-Dec -2024

c) Hydro Unit Outage Report:

S. NO	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	TEESTA STG III Hep	SIKKIM	TUL	1	200	Sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in Teesta River and damage of Teesta III Dam & downstream Powerhouses	04-Oct-2023
2	TEESTA STG III Hep	SIKKIM	TUL	2	200		
3	TEESTA STG III Hep	SIKKIM	TUL	3	200		
4	TEESTA STG III Hep	SIKKIM	TUL	4	200		
5	TEESTA STG III Hep	SIKKIM	TUL	5	200		
6	TEESTA STG III Hep	SIKKIM	TUL	6	200		
7	DIKCHU Hep	SIKKIM	SKPPL	2	48	Sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in Teesta River and damage of Teesta III Dam & downstream Powerhouses	04-Oct-2023
8	TEESTA HPS	SIKKIM	NHPC	1	170	Sudden cloudburst at glacier fed LOHNAK Lake followed by huge	04-Oct-2023

9	TEESTA HPS	SIKKIM	NHPC	2	170	inrush of water in Teesta River and damage of Teesta III Dam & downstream Powerhouses	
10	TEESTA HPS	SIKKIM	NHPC	3	170		
11	TASHIDING	SIKKIM	DANS	1	48.5	Shaft Seal Replacement work	01-Dec-2024
12	RANGIT HPS	SIKKIM	NHPC	3	20	Initially unit was taken out for replacement of Main Inlet Valve (MIV) Seal, later unit was taken under Capital Overhauling from 00:00 hrs of 27.12.2024.	25-Dec-2024
13	TASHIDING	SIKKIM	DANS	2	48.5	Wicket gate shear pin failure alarm appeared. After inspection shear pin NO-13 found broken.	16-Jan-2025
14	CHIPLIMA HPS / HIRAKUD II	ODISHA	OHPC	1	24	Capital Overhauling	15-Dec-2023
15	BURLA HPS/HIRAKUD I	ODISHA	OHPC	2	49.5	Capital Maintenance	26-Nov-2024
16	INDRAVATI	ODISHA	OHPC	3	150	For replacement of Main Inlet Valve (MIV)	17-Dec-2024
17	BALIMELA HPS	ODISHA	OHPC	3	60	Rectification of vibration of generator	26-Dec-2024
18	RENGALI HPS	ODISHA	OHPC	3	50	Annual Overhauling	01-Jan-2025
19	INDRAVATI	ODISHA	OHPC	1	150	Fault in governor	06-Jan-2025
20	BALIMELA HPS	ODISHA	OHPC	6	60	Initially unit was out due to Severe water leakage from turbine, later unit was taken under Repair and maintenance work from 00:00 hrs of 16.01.25	06-Jan-2025
21	U. KOLAB	ODISHA	OHPC	1	80	Capital Overhauling	07-Jan-2025
22	BALIMELA HPS	ODISHA	OHPC	5	60	Repair and maintenance work	16-Jan-2025

d)Long outage report of transmission lines (As on 16.01.2025):

Transmission Element / ICT	Outage From	Reasons for Outage
220/132KV 100 MVA ICT II AT LALMATIA	22.01.2019	220/132KV, 100MVA Transformer (NTPC side) is charged on 07.02.2024 from HV side on no load. Now, it is in idle charged condition
220KV-FSTPP-LALMATIA-I	21.04.2021	Two nos. of tower collapsed on 29.05.2024 near to Lalmatia GSS in the Loc. No. 246 & 247. Presently 220 kV Farakka-Lalmatia line is charged (from loc no 241 to loc 84) at 132 kV voltage level for anti-theft purpose by tapping at loc. No. 100-101.
220KV-WARIA-BIDHANNAGAR-1 & 2	08.06.2022	To control overloading of 220 kV Waria-DSTPS (Andal) D/C line

132KV-BARHI-RAJGIR-1	25.03.2023	Dismantling of tower no. 227, 228, and 229 crossing the premises of Mahabodhi Cultural centre along with Destringing of conductor of both circuits and Earth wire between tension tower no. 218-237 in same line.
132KV-NALANDA-BARHI(DVC)-1	25.03.2023	
400KV-RANGPO-TEESTA-V-1 & 2	04.10.2023	Tower near gantry of Teesta V powerhouse collapsed due to sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in TEESTA river and damage of Teesta III Dam & downstream Powerhouses
400KV-TEESTA-III-RANGPO-1	04.10.2023	Hand tripped from Teesta-III end due to sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in TEESTA river and damage of Teesta III Dam & downstream Powerhouses
400KV-TEESTA-III-DIKCHU-1	04.10.2023	
400KV-JHARSUGUDA-ROURKELA-4	01.04.2024	Reconductoring work
132KV-RANGPO-SAMARDONG-1	22-05-2024	Rangpo: Y-N fault with fault distance 0.157 kM 14.562kA Samardong: NA
220KV-RAJARHAT-NEW TOWN(AA-II)-2	10-07-2024	Initially line out due to rectification of gas leakage problem from B-Ph breaker pole. Line declared under breakdown after charging attempt after return of shutdown. After that fault found in b-phase cable.
132KV-RANGPO-SAMARDONG-2	02-08-2024	132/66/11kV Samardong ss have become inaccessible due to continuous raining and landslides. It is very difficult for round the clock deployment of shift manpower due to road non-accessibility
400KV/220KV 315 MVA ICT 2 AT INDRAVATI.	09-09-2024	Tripped due to Over Flux protection operated
400KV/220KV 315 MVA ICT 1 AT NORTH KARANPURA	12-09-2024	Tripped on Differential protection
132KV-MADHEPURA (BH)-SAHARSA(PMTL)-1	23.09.2024	To control loading on 132kV Madhepura-Saharsa line
132KV-MELLI-SILIGURI-1	05-10-2024	S/d for inspection of tower of Loc.127 found twisted due to heavy landslide & heavy continuous rainfall in Soom Tea Garden under Darjeeling section. Line charged as 132 KV Siliguri-Melli II (Interim arrangement) at 19:20 hrs on 09-10-2024. This interim arrangement is obtained by horizontal jumpering at Loc-129 after disconnecting main jumper for both Rangit & Melli side.
132KV-RANGIT-KURSEONG-1	05-10-2024	S/d for inspection of tower of Loc.127 found twisted due to heavy landslide & heavy continuous rainfall in Soom Tea Garden under Darjeeling section. Line charged as 132 KV Siliguri-Melli II (Interim arrangement) at 19:20 hrs on 09-10-2024. This interim arrangement is obtained by horizontal jumpering at Loc-129 after disconnecting main jumper for both Rangit & Melli side.

400KV/220KV 315 MVA ICT 1 AT TSTPP	01-11-2024	Tripped on PRD protection
400KV-JHARSUGUDA-ROURKELA-2	04-11-2024	Reconductoring Works
132KV-RAXAUL(NEW)-PARWANIPUR-1 & 2	14-11-2024	The loop in loop out work at Nepal side
132KV-PATRATU-PATRATU-1 & 2	16-11-2024	Diversion/Heightening of line due to inadequate clearance from under construction railway Line by PVUNL
132KV-CHUZACHEN-RANGPO-1	29-11-2024	Rangpo : B-N ,Z-1, 7.8 KA, 5.61 KM
400KV-ALIPURDUAR (PG)-PUNASANGCHUN-JIGMELING-2	02-12-2024	SD Availed by Bhutan for rectify/Replace the LA for 400kV Jigmeling _Puna_ALI-1.
400KV-KHSTPP-BARH-2	07-12-2024	Uprating of bay & line equipment's
400KV-BINAGURI-TALA-1	09-12-2024	AMP Work
400KV-ALIPURDUAR (PG)-PUNASANGCHUN-JIGMELING-1	10-12-2024	Jumper connection and interconnection removal at Kamichu
400KV-PATNA-BARH-1 & 2	15-12-2024	Jumpering work in LILO portion at GSS Bakhtiyarpur
400KV/220KV 315 MVA ICT 4 AT JEERAT	21-12-2024	ABNORMAL SOUND OBSERVED.
400KV-DURGAPUR-KHSTPP-1	03-01-2025	Shifting of line bay equipment under installation of 63 MVAR line reactor at NTPC Kahalgaon
400KV-MALDA(PG)-NEW PURNEA-1	04-01-2025	Shifting of tower
400KV-MALDA(PG)-NEW PURNEA-2	06-01-2025	Shifting of tower
220KV-DALKHOLA (PG)-GAZOLE-1	06-01-2025	To control loading of 220kV Malda-Gazole D/C
220KV-DALKHOLA (PG)-GAZOLE-2	07-01-2025	To control loading of 220kV Malda-Gazole D/C
400KV/220KV 315 MVA ICT 1 AT TSL KALINGANAGAR	08-01-2025	Annual maintenance work

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)

4.3. Commissioning of new units and transmission elements in Eastern Grid in the month of December -2024.

The details of new units/transmission elements commissioned in the month of December 2024 based on the inputs received from beneficiaries:

NEW ELEMENTS COMMISSIONED DURING December, 2024

GENERATING UNITS

क्र. Sl. No.	स्थान Location	मालिक/यूनिट का नाम OWNER/UNIT NAME	यूनिट संख्या/स्रोत Unit No/Source	संकलित क्षमता (मेगावाट) Capacity added (MW)	कुल/स्थापित क्षमता (मेगावाट) Total/Installed Capacity (MW)	दिनांक DATE	टिप्पणी Remarks
NIL							

आई.सी.टी/जी.टी/ ICTs/ GTs / STs

क्र. Sl. No.	एजेंसी/मालिक Agency/Owner	उप-केन्द्र SUB-STATION	आईसीटी संख्या ICT NO	वोल्टेज (केवी) Voltage Level (kV)	क्षमता (एमवीए) CAPACITY (MVA)	दिनांक DATE	टिप्पणी Remarks
1	MPL	MAITHON POWER LIMITED	ST-3	400/11	80	26-12-2024	
2	OCPL	DARLIPALI	ICT-1	132/33	31.5	27-12-2024	Dedicated for Manoharpur mines (OCPL)
3	OCPL	DARLIPALI	ICT-2	132/33	31.5	28-12-2024	Dedicated for Manoharpur mines (OCPL)

TRANSMISSION LINES

क्र. Sl. No.	एजेंसी/मालिक Agency/Owner	लाइन का नाम LINE NAME	लंबाई (किमी) Length (KM)	कंडक्टर प्रकार Conductor Type	दिनांक DATE	टिप्पणी Remarks
1	JUSNL	400KV-CHANDWA-LATEHAR(JUSNL)-2	41.216	ACSR Moose	14-12-2024	
2	JUSNL	400KV-CHANDWA-LATEHAR(JUSNL)-1	41.216	ACSR Moose	14-12-2024	
3	BSPTCL	220KV-GAYA(PG)-BODHGAYA-3	31.0	ACSR Zebra	16-12-2024	
4	OCPL	33KV-DARLIPALLI (NTPC)-MANOHARPUR-1	12.20 (11.7 km OH line +0.5 km U/G XLPE Cable)	AAAC	31-12-2024	Dedicated for Manoharpur mines (OCPL)

लिलो / प्रेषण लाइन की पुनर्व्यवस्था / LILO/RE-ARRANGEMENT OF TRANSMISSION LINES

क्र. Sl. No.	एजेंसी/मालिक Agency/Owner	लाइन का नाम / लिलो पर Line Name/LILO at	लंबाई (किमी) Length (KM)	कंडक्टर प्रकार Conductor Type	दिनांक DATE	टिप्पणी Remarks
1	Power Dept, Govt. of Sikkim	220KV-Legship-NEW MELLI-1	10.25	TWIN MOOSE ACSR	31-12-2024	LILO of 220 kV Tashiding HEP to New Melli -I at 220/132 kV Legship Pooling station

बस/लाइन रिएक्टर / BUS/LINE REACTOR

क्र. Sl. No.	एजेंसी/मालिक Agency/Owner	एलेमेंट का नाम Element Name	उप-केन्द्र SUB-STATION	वोल्टेज (केवी) Voltage Level (kV)	दिनांक DATE	टिप्पणी Remarks
NIL						

बस / BUS

क्र. Sl. No.	एजेंसी/मालिक Agency/Owner	एलेमेंट का नाम Element Name	उप-केन्द्र SUB-STATION	वोल्टेज (केवी) Voltage Level (kV)	दिनांक DATE	टिप्पणी Remarks
NIL						

एच.वी.डी.सी/ए.सी फिल्टर बैंक/फैक्ट्स डिवाइस संबद्ध प्रणाली / HVDC /AC Filter bank / FACTS DEVICE associated System

क्र. Sl. No.	एजेंसी/मालिक Agency/Owner	एलेमेंट का नाम Element Name	उप-केन्द्र SUB-STATION	वोल्टेज (केवी) Voltage Level (kV)	दिनांक DATE	टिप्पणी Remarks
NIL						
बे / BAYS						
क्र. Sl. No.	**एजेंसी/मालिक Agency/Owner**	**एलेमेंट का नाम Element Name**	**उप-केन्द्र SUB-STATION**	**वोल्टेज (केवी) Voltage Level (kV)**	**दिनांक DATE**	**टिप्पणी Remarks**
1	BSPTCL	132KV MAIN BAY OF BANMANKHI AT SAHARSA(New)	SAHARSA(New)	132	07-12-2024	
2	BSPTCL	132KV MAIN BAY OF SAHARSA (BSPTCL)-1B AT SAHARSA(New)	SAHARSA(New)	132	07-12-2024	
3	BSPTCL	132KV MAIN BAY OF SAHARSA-2U AT SAHARSA(New)	SAHARSA(New)	132	07-12-2024	
4	BSPTCL	132KV MAIN BAY OF UDAKISHANGANJ AT SAHARSA(New)	SAHARSA(New)	132	07-12-2024	
5	PVUNL	400KV TIE BAY OF ST 1 AND LINE 2 AT PVUNL	PVUNL	400	16-12-2024	
6	PVUNL	400KV MAIN BAY OF LINE-2 AT PVUNL	PVUNL	400	16-12-2024	
7	PVUNL	400KV MAIN BAY OF ST-1 AT PVUNL	PVUNL	400	16-12-2024	
8	PVUNL	400KV TIE BAY OF ST 3 AND LINE 5 AT PVUNL	PVUNL	400	21-12-2024	
9	PVUNL	400KV MAIN BAY OF LINE 5 AT PVUNL	PVUNL	400	21-12-2024	
10	JUSNL	400KV MAIN BAY OF PATRATU -2 at LATEHAR(JUSNL)	LATEHAR	400	24-12-2024	
11	PVUNL	400KV MAIN BAY OF ST-2 AT PVUNL	PVUNL	400	24-12-2024	
12	PVUNL	400KV TIE BAY OF LINE-4 AND ST-2 AT PVUNL	PVUNL	400	24-12-2024	
13	Power deptt., Govt. of Sikkim	220KV MAIN BAY OF NEW MELLI-1 AT 220/132 KV LEGSHIP POOLING SUBSTATION	Legship	220	31-12-2024	
14	OCPL	132KV MAIN BAY OF 31.5 MVA ICT-1 AT DARLIPALI	DARLIPALI	132	27-12-2024	
15	OCPL	132KV MAIN BAY OF 31.5 MVA ICT-2 AT DARLIPALI	DARLIPALI	132	28-12-2024	
16	BSPTCL	220KV MAIN BAY OF GAYA(PG) -3 AT BODHGAYA	Bodhgaya	220	16-12-2024	

Members may note.

4.4. UFR operation during the month of December 2024

Frequency profile for the month as follows:

MONTH	MAX (DATE/TIME)	MIN (DATE/TIME)	% LESS IEGC BAND	% WITHIN IEGC BAND	% MORE IEGC BAND
December, 2024	50.42 Hz on 15-12-2024 at 06:03 hrs	49.49 Hz on 22-12-2024 at 09:07 hrs	5.6	76.4	18.0

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

Members may note.

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Annex B.2.1.1

Record Notes of the online Meeting to discuss Complete outage of 400 kV Barh (NTPC) Plant

A meeting was held on 08.01.2025 with representatives from ERPC, ERLDC, NTPC through online mode (MS Teams) to discuss the occurrence of complete outage of 400 kV Barh plant which led to generation loss of around 1800 MW on 04.01.2025. List of participants is attached at Annexure-1. Following points were discussed:

- ERLDC explained the sequence of events leading to complete outage of Barh plant. It was brought out that after availing emergency shutdown of 400 kV Barh-Motihari -2, system was N-1 compliant and each of the remaining three lines being Quad Moose were capable to carry upto its thermal limit (i.e. 1750 MW). However, since Backup Overcurrent protection was enabled in 400 kV Barh-Patna-3 at Barh end with setting well below the thermal limit of line (Setting at 2040 A~1340 MW), it resulted in tripping of the line when flow crossed the set value of 2040 A. The O/c protection of the lines at Barh end was known only after the event.
- After tripping of 400 kV Barh-Patna-3, flow in 400 kV Barh-Motihari-1 reached around 1200 MW and after six minutes, 400 kV Barh-Motihari-1 tripped on Y-Earth fault as conductor snapped at location-393. During this period of six minutes, Barh started backing down as per the standing instruction from ERLDC and generation was backed down by 150 MW.
- After this, 400 kV Barh-Kahalgaon-1 was the only remaining line in service for evacuating entire generation of Barh of around 1650 MW. This line also tripped on backup overcurrent protection at Barh end (setting was kept at 1650 Amps ~1100 MW).
- ERLDC stated that enabling Backup Overcurrent protection in 400 kV lines was violation of CEA Construction Standards,2022 and ERPC Protection philosophy. It was also mentioned that same was deliberated in 129th PCC on 08.09.2023 meeting of Eastern Region. Since the overcurrent pickup setting at Barh was well below the thermal capacity of the line, it resulted in complete outage of Barh power plant.
- NTPC acknowledged that the backup Overcurrent setting was well below the thermal limit since commissioning of these lines and these settings were not revised thereafter.
- NTPC sought to know whether considering the antecedent condition of four (4) lines out of eight (8) lines not available, the emergency shutdown of 400 kV Barh-Motihari-2 could have been avoided in evening peak hours. ERLDC mentioned that with the remaining three lines, the system was N-1 compliant. Even with single circuit of 400 kV Barh-Kahalgaon-1, entire generation could have been evacuated. Further Barh power plant was having full generation schedule throughout the day.

- NTPC stated that conductor of 400KV barh-Motihari-1 snapped while carrying around 1200MW, much below its thermal capacity and during winter season frequent de-capping of lines was also observed. ERLDC stated that the same would be taken up with Transmission licensees.
- NTPC also submitted that they wanted to keep Backup overcurrent protection with pickup above thermal limit with the AND logic of VT supervision to avoid GT failure in case of any eventuality since they experienced similar cases in past. NTPC requested to consider suitable amendment in CEA standards w.r.t. protection of transmission lines between generating stations.
- ERPC advised NTPC to place the above proposal at RPC forum to deliberate the issue and any changes if required can be done thereafter. **NTPC agreed to put up an agenda in the upcoming OCC/PCC forum.**
- ERLDC requested NTPC to immediately review the protection setting implemented at all generating stations and disable O/c protection setting if enabled anywhere. **NTPC stated that they would review the protection settings and confirm for all generating stations.**
- NTPC was also requested to submit protection setting of all generating stations to ERPC and ERLDC for verification. **NTPC agreed to the same.**
- ERPC advised utilization of PDMS database so that there is prior information of protection settings and can be verified whether it is in compliance with the CEA standards and ERPC protection philosophy.

The meeting ended with a vote of thanks.

List of Participants:

ERPC

1. **Sh. Shyam Kejriwal, SE, ERPC**
2. **Sh. I K Mehra, SE, ERPC**
3. **Sh. Pratham Kumar, EE, ERPC**
4. **Sh. Kumar Satyam, AEE, ERPC**
5. **Sh. Shubhayu Das, AE, ERPC**

ERLDC

1. **Sh. R Sutradhar, ED, ERLDC**
2. **Sh. Sajan George, CGM, ERLDC**
3. **Sh. Bilash Achari, DGM, ERLDC**
4. **Sh. Manas Das, DGM, ERLDC**
5. **Sh. Rakesh Kumar Pradhan, CM, ERLDC**
6. **Sh. Alok Pratap Singh, CM, ERLDC**

NTPC

1. **Sh. Maranani Sreekanth, AGM (OS), CC NTPC**
2. **Sh. Manish Jain, AGM (Comercial) NTPC Patna RHQ**
3. **Sh. A P Tiwari, AGM (EMD) NTPC Barh**
4. **Sh. Anadi Kumar Mishra, AGM, Darlipalli**
5. **Sh. Deepak Kumar Mohanty, AGM, EMD, Darlipalli**
6. **Sh. Subash Chandra Singh, AGM (EMD), BRBCL**
7. **Sh. Suresh Babu Kummara, AGM (EEMG), Darlipalli**
8. **Sh. Rajiv Kumar Sinha, GM (O&M), North Karanpura**
9. **Sh. Dhanajay Kumar, DGM (OS), CC NTPC**
10. **Sh. Rahul Anand, DGM (OS) NTPC Patna RHQ**
11. **Sh. Tejinder Pal Singh, DGM, (Commercial), NTPC Patna RHQ**
12. **Sh. Manash Kumar Mitra, DGM (EMD), North Karanpura**
13. **Sh. Sushil Kumar, DGM, NTPC Barh**
14. **Sh. Boni Dhananjay, Sr. Manager (EMD), Darlipalli STPP**
15. **Sh. Premkishan Singh K, Sr. Manager (EMD), North Karanpura**
16. **Sh. Harinder Kumar, Sr. Engineer (EMD) NTPC Farakka**
17. **Sh. Kiran Kumar Konderapu, Sr. Manager (EMD), Darlipalli**
18. **Sh. Bipin Kumar, Sr. Manager (EMD), NPGCL**
19. **Sh. Amit Kumar Singh, Sr. Manager (EMD), NTPC Barh**
20. **Sh. Sanjib Sarkar, Sr. Engineer (EMD), North Karanpura**

Annex B.2.1.2.

Record Notes of the online Meeting to discuss complete outage of NTPC Barh generating S/s and Tripping of 400 kV Barh-Motihari-1 due to conductor snapping

A meeting was held on 08.01.2025 with representatives from ERPC, ERLDC, Powergrid through online mode (MS Teams) to discuss complete outage of NTPC Barh generating station on 04.01.2025. List of participants is attached at Annexure-1.

Following points were discussed:

- ERLDC presented a brief overview of the antecedent network conditions and sequence of events. Conductor snapping of 400 kV Barh-Motihari-1 at around 65% of the thermal capacity and de-Capping of insulator string of 400 kV Barh-Patna-4 in the morning hours of 04.01.2025 was conveyed.
- Powergrid stated that both incidents were due to hardware failure.
- Powergrid informed that conductor snapping of 400 kV Barh-Motihari-1 was in mid-span section. It was further stated that these lines were usually lightly loaded, and this was the first time that the line flow had crossed around 1100 MW.
- Powergrid emphasised that they would intensify patrolling and thermo-vision scanning of all the joints in the entire line corridor of fog prone areas and this would be completed by next 15 days.
- Powergrid also stated that regular patrolling and maintenance activities were being done following best practices.

The meeting ended with a vote of thanks.

Annexure-1

List of Participants:

ERPC

1. **Sh. Pratham Kumar, EE, ERPC**
2. **Sh. Kumar Satyam, AEE, ERPC**

ERLDC

1. **Sh. R Sutradhar, ED, ERLDC**
2. **Sh. Sajan George, CGM, ERLDC**
3. **Sh. Bilash Achari, DGM, ERLDC**
4. **Sh. Manas Das, DGM, ERLDC**
5. **Sh. Rakesh Kumar Pradhan, CM, ERLDC**
6. **Sh. Alok Pratap Singh, CM, ERLDC**
7. **Sh. Akash Kumar Modi, Manager, ERLDC**

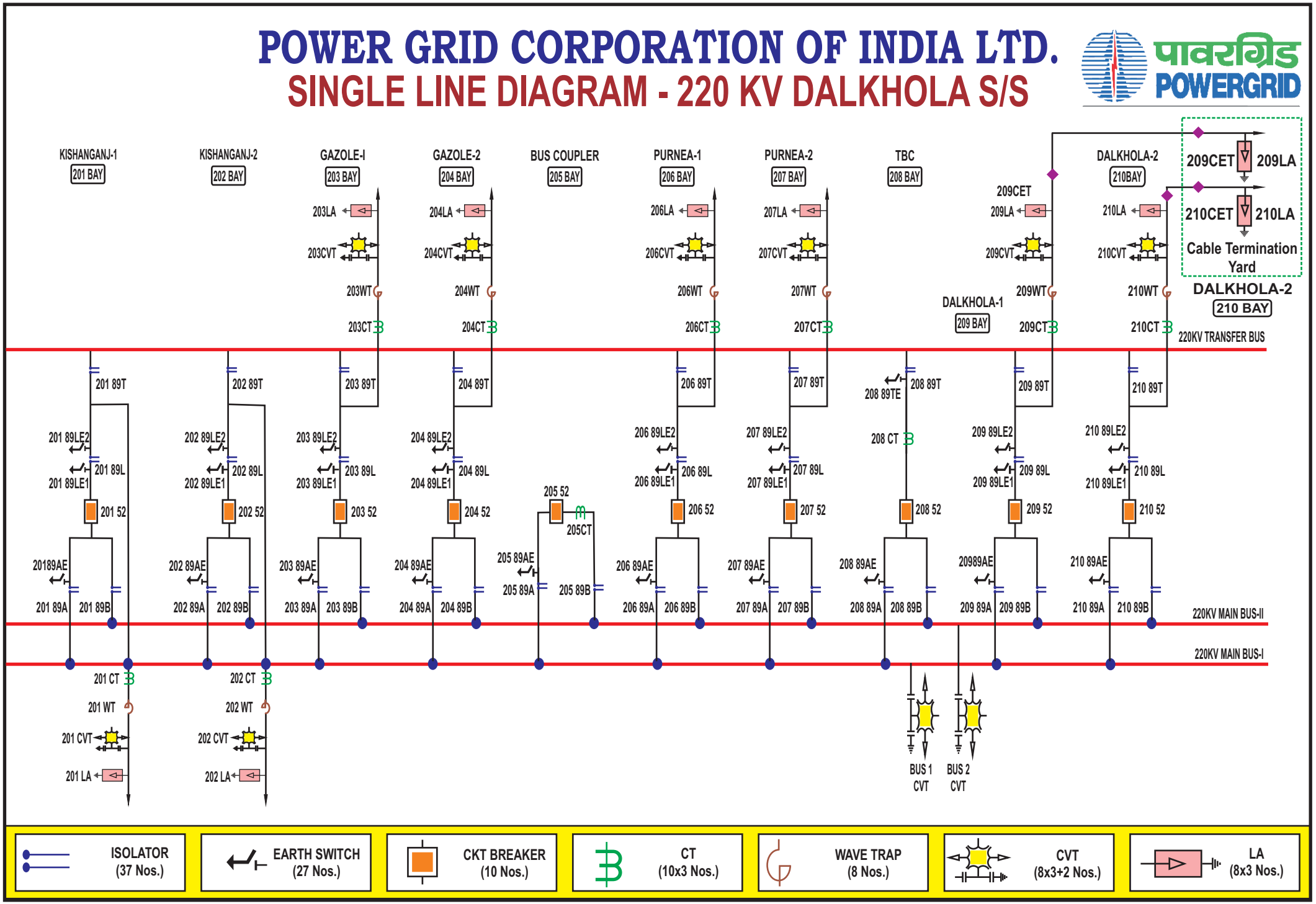
Powergrid

1. **Sh. A Sen Sarma, ED, Powergrid ERTS-1**
2. **Sh, Arvind Kumar Pandey, CGM (AM), Powergrid ERTS-1**
3. **Sh. Achyutananda Parhi, Sr. DGM (AM), Powergrid ERTS-1**
4. **Sh. Sudeep Kumar, Chief Manager (AM), Powergrid ERTS-1**
5. **Sh. Rohit Kumar, Engineer (AM), Powergrid ERTS-1**

Annex B.2.2

POWER GRID CORPORATION OF INDIA LTD.

SINGLE LINE DIAGRAM - 220 KV DALKHOLA S/S



Annex B.2.5

The list of feeders identified for tripping to maintain load generation balance are as follows:

S.No	At S/s	Feeder	Peak Load (MW)	Priority
1	GAIGHAT GSS	33 KV BAHADURPUR (GAIGHAT)	19.4	Low Priority_1
2	JAKKANPUR GSS	33 KV URJA BHAWAN	18.0	Low Priority_2
3	JAKKANPUR GSS	33 KV PESU 8	14.8	Low Priority_3
4	KARBIGAHIYA GSS	33 KV RAILWAY	6.9	Low Priority_4
5	MITHAPUR GIS GSS	33 KV BAHADURPUR (MITHAPIUR GIS GSS)	18.0	Low Priority_5
6	KARBIGAHIYA GSS	33 KV PESU-4	17.0	Low Priority_6
7	KARBIGAHIYA GSS	33 KV PAHARI-2 & 33 KV PRESS CLUB	21.9	Low Priority_7
8	GAIGHAT GSS	33 KV MEENABAZAR	15.5	Low Priority_8
9	GAIGHAT GSS	33 KV MACHHUATOLLI	20.9	Low Priority_9
10	DIGHA GSS	33 KV Rajapur	21.1	Low Priority_10
11	MITHAPUR GIS GSS	33 KV IOCL	1.1	Low Priority_11
12	KHAGAUL GSS	33 KV KHAGAUL-5	19.0	Low Priority_12
13	KARBIGAHIYA GSS	33 KV PESU-5	12.3	Low Priority_13
14	MITHAPUR GIS GSS	33 KV MITHAPUR-3	6.0	Low Priority_14
15	KHAGAUL GSS	33 KV DANAPUR-2	20.0	Low Priority_15
16	DIGHA GSS	33 KV Excise -1	21.2	Low Priority_16
17	GAIGHAT GSS	33 KV SAIDPUR	19.3	Low Priority_17
18	KARBIGAHIYA GSS	33 KV PESU-2	21.1	Low Priority_18
19	JAKKANPUR GSS	33 KV URJASTADIUM	19.3	Low Priority_19
20	JAKKANPUR GSS	33 KV SACHIWALAY	8.6	Low Priority_20
21	JAKKANPUR GSS	33 KV PESU 9	21.0	Low Priority_21
22	DIGHA GSS	33 KV Patliputra	19.1	Low Priority_22
23	DIGHA GSS	33 KV NEW BOARD COLONY (DIGHA GSS)	23.0	Low Priority_23
24	BOARD COLONY GSS	33 KV NEW BOARD COLONY (BOARD COLONY GSS)	11.7	Low Priority_24

25	BOARD COLONY GSS	33 KV IGIMS-I	13.9	Low Priority_25
26	BOARD COLONY GSS	33 KV BOARD COLONY (BOARD COLONY GSS)	7.3	Low Priority_26
27	JAKKANPUR GSS	33 KV PESU 3	20.1	Low Priority_27
28	JAKKANPUR GSS	33 KV S K PURI	19.2	Low Priority_28
29	GAIGHAT GSS	33 KV GAIGHAT GIS	10.0	Low Priority_29
30	BOARD COLONY GSS	33 KV VETERINARY (BOARD COLONY GSS)	4.7	Low Priority_30
31	KARBIGAHIYA GSS	33 KV BAHADURPUR (KARBIGAHIYA)	10.4	Low Priority_31
32	GAIGHAT GSS	33 KV GAIGHAT	13.0	Low Priority_32
33	JAKKANPUR GSS	33 KV BSEB	18.1	Low Priority_33
34	BOARD COLONY GSS	33 KV IGIMS-II	11.7	Low Priority_34
35	BHUSAULA GSS	33 KV AIIMS	4.9	Low Priority_35
36	MITHAPUR GIS GSS	33 KV TELECOM	14.0	Low Priority_36
37	KARBIGAHIYA GSS	33 KV S K MEMORIAL	16.1	Low Priority_37
38	JAKKANPUR GSS	33 KV SINCHAI BHAWAN	8.0	Low Priority_38
Total			**567.7 MW**	

Forum of Load Despatchers (FOLD)
Secretariat: C/o National Load Despatch Centre, New Delhi
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Minutes of the 48th Meeting of Forum of Load Despatchers (FOLD)

held on 21st August 2024 through Online

The 48th Meeting of the Forum of Load Despatchers was held online via Webex on 21st August 2024. Over 170 participants including senior officials from CERC, GRID-INDIA and State Load Despatcher attended the meeting.

A) Opening Remarks by CMD, Grid-India

CMD, Grid-India, expressed appreciation for the enthusiastic participation from all attendees and welcomed the Secretary, Central Electricity Regulatory Commission (CERC) & Forum of Regulators (FOR).

He highlighted the recent achievements since the last FOLD meeting on 3rd June 2024, including the record-breaking peak demands met by various states.

CMD mentioned key incidents such as the overflow of reservoirs in the Southern and Western regions due to good monsoon rains and the adverse impact on power plants in Himachal Pradesh.

CMD, Grid-India, highlighted a significant incident that occurred on 17th June 2024, where all four poles of the HVDC Champa-Kurukshetra tripped, resulting in a severe low voltage scenario and a brief loss of 16.5 GW of consumer load in the Northern **Region**. A committee headed by CEA has investigated the incident and submitted a report, which will be shared soon for further review and action.

CMD congratulated RLDCs, SLDCs, and NTPC for the successful reconfiguration of the network on 14th August, which enabled the transfer of NTPC Rihand Stage-3 generating station from the Western to the Northern region.

He also informed that Grid-India implemented a new Web-Based Energy Scheduling (WBES) system on 4th August, covering all five RLDCs and NLDC, and acknowledged the excellent coordination among SLDCs, RLDCs, and NLDC in rolling out the system.

The agenda for the meeting was outlined, focusing on load forecasting, resource adequacy, reserves estimation, real-time generation monitoring, technical minimum requirement, frequency response obligation, and intra-state SCED implementation.

B) Address by Secretary, CERC & FOR

Secretary (CERC & FOR) thanked CMD, Grid-India, and emphasized the critical role load dispatchers play in achieving reliability, affordability, and sustainability of power supply in India.

He acknowledged the successful management of renewable energy-induced variations by the load dispatchers and encouraged them to continue tackling future challenges, especially during the upcoming monsoon break.

Secretary (CERC & FOR) highlighted the importance of operational planning and resource adequacy, advising SLDCs to comply with IEGC regulations by submitting demand and generation forecasts to RLDCs.

He stressed the significance of addressing downward flexing issues, especially when all ISGS stations have already been performing to the technical minimum of 55% and below. He encouraged SLDCs to ensure similar reductions at the intra-state generating stations to optimize power supply costs.

He also noted the agenda on assessing captive power generation capacity and its potential to avoid additional investments, urging SLDCs to submit relevant data for resource adequacy analysis.

He urged all participants to deliberate on the issues and provide valuable recommendations for CERC to consider in future regulatory interventions.

C) Deliberations during the meeting:

The approved agenda items were discussed as per below during the meeting.

Agenda-1: Load Forecasting Practices / Methodology.

Agenda-2: Operational Planning & Resource Adequacy Assessment

Agenda-3: Real-Time Monitoring of the available margin in all the plants

Agenda-4: Technical Minimum of intra-state coal-based generating stations

Agenda-5: Dropped.

Agenda-6: Assessment of quantum of Secondary & Tertiary Reserve Capacity & Information on Exchange

Agenda-7: Methodology for calculation of FRO of intra-state entities

Agenda-8: Implementation of SCED at the State level

D) Agenda 1: Load Forecasting Practices / Methodology.

Grid-India deliberated on carrying out the demand estimation at DISCOMs/SLDCs as mandated by the IEGC under clauses 5.2 and 31.2 across different timelines (yearly, monthly, weekly, and daily basis) and submitting it to respective RLDCs, which would then be aggregated at NLDC for the accurate national-level demand estimation.

Current Status: It was noted that, currently, NLDC is independently carrying out demand estimations using SCADA data and other sources, rather than receiving the necessary inputs from SLDCs via RLDCs. This practice is not in alignment with IEGC mandates. The importance of integrated operations and adherence to the regulations was emphasized, particularly considering recent CERC directives requiring strict compliance with IEGC guidelines.

Survey and Compliance: A survey form was circulated to all SLDCs to gather information about their forecasting practices, including timelines (yearly, monthly, weekly, daily), methodologies etc. While many responses have been received, some are still pending. Participants were urged to submit their completed questionnaires by the 23rd of August to facilitate the preparation of a compliance report for submission to CERC.

Some SLDCs confirmed receipt and submission of the survey, while others were advised to submit their responses promptly.

Action Points:

- SLDCs must aggregate the demand estimation at each DISCOM level and submit the estimated demand data to respective RLDCs as per the timelines set in IEGC.
- All SLDCs that have not yet responded were asked to do so by the 23rd of August 2024.
- A compliance report will be prepared based on the survey responses and submitted to CERC.

E) Agenda 2: Operational Planning with Resource Adequacy

Grid-India highlighted the importance of the operational planning exercise as outlined in IEGC 2023, which must be carried out by each SLDC and includes demand estimation and generation planning to ensure resource adequacy. This information is to be submitted to the respective RLDCs (and then NLDC) according to the timelines specified in the Grid code for regional and national level planning.
The present status (at all-India level) of the day-ahead demand estimation being submitted to respective RLDCs:

	Daily	Weekly	Monthly	Yearly
No. of states/utilities* submitting day-ahead demand forecast	31	20	10	20

As per information available with RLDCs *out of 38 states/utility (ISTS connected bulk consumers like Railways etc.)

It was noted that while many states are complying with day-ahead data sharing, most are not using the prescribed format finalized during the deliberations before implementing the new IEGC 2023. The meeting emphasized the importance of submitting data in the correct format to ensure accurate resource adequacy and generation planning.

Grid-India stressed the need for a bottom-up approach in resource adequacy analysis, urging SLDCs to provide detailed and accurate data to RLDCs for regional and national aggregation.

Resource Adequacy Analysis at NLDC: A detailed explanation of the Resource Adequacy Analysis was provided using the Probabilistic Resource Adequacy Suite (PRAS) and production cost modelling with the Grid-Path software. The analysis revealed potential shortages, especially during non-solar hours, and emphasized the importance of contributions from SLDCs and RLDCs for accurate national-level resource adequacy planning.

Action Points:

- SLDCs are to perform the operational planning exercise with the estimated demand and generation to ensure the resource adequacy across all the timelines.
- Must adhere to the submission timelines: daily data by 10:00 hours D-1, weekly data by the first working day of the week, monthly data by the 5th day of the previous month, and yearly data by the 30th of September of the previous year in the prescribed format as available in the NLDC Operating Procedure (uploaded at NLDC website) as well.
- The forecasting errors are to be analysed at the SLDC level and published on their respective websites as per IEGC.

CMD, Grid-India, acknowledged the participation of Member Secretaries from RPCs and invited questions and suggestions from attendees.

Member, ERPC:

Highlighted the issue of many states lagging in providing load forecasts and preparedness plans for the upcoming years. It was noted that while DVC has made progress in capacity addition, other states and central generating stations in the Eastern region lack concrete plans for new capacity.

Currently, only a few projects are underway, such as Talcher Extension (2x660 MW), North Karanpura U#3 (600 MW), SJVN Buxar (2x660 MW), and Patratu (3x800 MW) over the next 3-4 years. However, this additional capacity is not exclusively intended for the Eastern region.

Suggested prioritizing the allocation of unallocated power (15%) by the Ministry of Power to the Eastern region's needy states.

Noted challenges with overloaded transmission lines due to the inflow of renewable energy (RE) from the Northern Grid, highlighting the need to address transmission and distribution capacities in addition to ensuring generation adequacy.

Mentioned that captive generation data and industrial load projections are not systematically shared at the RPC level, complicating planning. Recommended that SLDCs regularly provide captive generation data to improve planning.

CMD, GRID-INDIA acknowledged the importance of transmission issues and stated they are regularly raised with CTU and CEA. Emphasized the need for data flow and exercises on resource adequacy to start, with further discussions in subsequent meetings.

Telangana:

Shared efforts in Telangana to integrate real-time data from all captive power plants and rooftop solar generators. Mentioned the integration of real-time data from rooftop solar to SLDC and plans to cover 280 MW out of 400 MW total rooftop solar in the state.

Emphasized the importance of accounting for captive consumption in the load-generation balance and the role of real-time data in Open Access transactions.

Director (SO), GRID – INDIA suggested that SRLDC and SLDC Telangana discuss about the inclusion of captive generation in the load generation balance and explore adopting this model in other states as well.

UP SLDC:

Suggested making data on forecast versus actual demand publicly available on SLDC websites and involving academic institutions in analysing forecast errors. Highlighted that the approach could lead to localized solutions and better grid management.

CMD, GRID-INDIA agreed that load and RE forecast errors should be regularly worked out by SLDCs, RLDCs, and NLDCs, incorporating weather parameters into forecasting models.

Supported the idea of fostering local innovations in forecasting rather than adopting a centralized approach, encouraging the development of effective tools and methods at the DISCOM, state and regional level.

F) Agenda 3: Real-Time Monitoring of the available margin in all the plants

The necessity of monitoring reserves in real-time was emphasized to maintain a balance between load and generation, particularly during peak demand periods. Instantaneous data on Declared Capacity (DC) and scheduling from interstate thermal plants are integrated into RLDCs from SLDCs to optimize margin utilization besides the ISGS data.

Grid-India reported that, in compliance with the Ministry of Power's (MoP) directions, a real-time generation monitoring portal has been implemented at RLDCs and NLDC. This portal provides data on generation from both interstate and intra-state thermal plants, aiming to offer comprehensive visibility into actual generation and available margins. However, issues with data quality and availability from Intra-state plants have been observed, which affect the accuracy of margin assessments.

A recent directive from the Ministry of Power, discussed in a meeting on July 25th, 2024, mandates that all grid-connected generator data be accessible on a common portal. This measure is intended to enhance transparency and ensure data availability to all stakeholders, with appropriate access controls.

CMD, Grid-India, deliberated on the strategic measures taken during April and May this year in response to high demand forecasts. These measures included deferring plant maintenance and maximizing thermal capacity utilization and critical need for closely monitoring reserve margins level to ensure optimal generation capacity and grid stability.

The emphasis was placed on the importance of real-time reserve monitoring to effectively balance load and generation. Integrating instantaneous data on Declared Capacity (DC) and schedules from interstate thermal plants into RLDCs is crucial for optimizing margin utilization.

The discussion also highlighted the impact of increasing renewable energy penetration on conventional generation. During periods of high wind and solar generation, demand on coal-fired units dropped significantly. NTPC has been notably impacted, bearing more than 50% of the required reductions. While the 55% technical

minimum mandate for ISGS is being implemented, many intra-state plants continue to operate above this threshold, indicating further potential for reducing thermal generation.

Action Points:

SLDCs: Improve the quality and availability of plant-wise data for real-time monitoring and ensure timely updates to RLDCs regarding any changes.

RLDCs/NLDC: Enhance the real-time generation monitoring portal to ensure comprehensive and accurate data.

All Stakeholders: Focus on increasing the flexibility of coal-fired plants and addressing transmission congestion to support better integration of renewable energy and enhance overall grid reliability.

G) Agenda-4: Technical Minimum of intra-state coal-based generating stations

In the Indian Power system, thermal ISGS provide the bulk of the flexibility required in view of increasing renewable penetration. Many ISGS are being scheduled below their technical minimum on daily basis while they are receiving full requisition during non-solar peak hours. In order to maintain spinning reserves, some ISGS are being provided support up to technical minimum under Security Constrained Unit Commitment (SCUC) mechanism. However, there are increasing number of instances where available down reserves to balance the SCUC support quantum are insufficient. Down reserves are being fully exhausted and even pit head stations are being backed down till technical minimum. This is resulting in high frequency operation during solar hours.

It is being observed that the burden of flexing is much higher on inter-state thermal stations relative to their share in generation. On a sample day, thermal ISGS having 34% share in All India Thermal generation provided more than half of the total thermal flexing.

55% Technical minimum provisions at inter-state level were introduced in 2016 with IEGC 4th Amendment. Since then, 55% technical minimum provisions have been incorporated in the state grid codes of only some states. Inflexibility in intra-state thermal fleet is also contributing towards congestion on inter-regional corridors.

Grid-India has advocated for the need to have a regulatory mechanism to promote flexibility at various forums, including the Forum of Regulators (FoR).

Action Points:

SLDCs may take up advocacy with state regulatory commissions for amendment in state grid codes to mandate technical minimum provisions for intra-state thermal plants.

H) Agenda-5: Details of the captive power genera□on embedded in the states

This agenda was dropped as it was decided to discuss the same with more details in subsequent meetings.

I) Agenda-6: Assessment of quantum of Secondary & Tertiary Reserve Capacity & Information on Exchange.

Grid-India mentioned about the provisions for ancillary services as per IEGC 2023 and CERC approved procedure for the assessment and procurement of reserves, aligning with both the IEGC and ancillary services regulations. The reserve requirements at the central sector and state levels have been outlined and mandate for the upload of the same at Grid India website has also been emphasised.

The challenges posed by insufficient reserves in ISGS were highlighted, emphasizing the need for a bottom-up approach. State-level reserve contributions are crucial, especially with increasing RE penetration, where both upward and downward reserves are essential for grid stability. The submission of requisite data by the states in RAS-1 and RAS-2 formats, as outlined in the detailed procedure, was also stressed for accurate year-ahead reserve estimation and day-ahead reserve procurement at the national level.

Current Status: In absence of requisite data from the states, NLDC and RLDCs are currently computing the ACE data for states with the available SCADA data at NLDC/RLDCs.

Challenges in Maintaining Reserves: Despite efforts, the actual reserves available for secondary control are currently insufficient, often falling short of the required levels. This issue is particularly concerning given the increased uncertainty and contingency risks associated with higher RE integration, especially during non-solar hours.

Action Points:

Data Submission by States: For the estimation of year-ahead reserves, each state is required to submit time series data of tie-line flows, frequency response characteristics, and other relevant information as per the prescribed format (RAS-1) to RLDCs/NLDC.

Reserve Maintenance at State Level: States must actively work towards evaluating and maintaining reserves at the state level, ensuring that sufficient reserves are available for dispatch during load-generation imbalances or forecast deviations.

Reserve information in D-2: States must provide reserve information on a D-2 basis to be included in national reserve calculations, ensuring effective reserve management across all levels.

Collaboration with RLDCs and NLDC: States should enhance coordination with RLDCs and NLDC to address the challenges of reserve maintenance, particularly in the context of high RE penetration. The reserve levels and data quality provided by the states will be monitored continuously, and improvements will be made to ensure grid stability and security.

J) **Agenda-7: Methodology for calculation of FRO of intra-state entities.**

Grid-India highlighted the introduction of Frequency Response Obligation (FRO) for each control area under the CERC (IEGC) Regulations, 2023. Accordingly, NLDC has assessed the FRO for each control area under the jurisdiction of RLDCs, including both state control areas and regional entity generating stations.

Director (SO), Grid-India explained the concept of FRO introduced in the IEGC, 2023, highlighting it as the minimum requirement for primary response from control areas in the event of any grid contingency. It was mentioned that All India minimum target FRC was calculated for reference contingency in the grid and

based on this FRC value, FROs have been allocated to each control area, as per the formula given in IEGC, 2023. Some of the SLDCs have approached RLDCs and NLDC about the distribution of the FRO assigned to the state control area among their internal generating stations.

It was presented that there could be four potential methodologies for distributing the FRO allotted to a state control area among its intra-state entities, including generating stations and loads, without requiring amendments to the IEGC, 2023. Additionally, one methodology would involve amending the IEGC, 2023.

Method-I

FRO = (Average Generation of individual generating station/ (Sum of Avg. generation of all considered generating stations)) X FRO allotted to state control area.

Method-I simply distributes FRO allotted to a state control area among its intra-state generating stations. These generating stations can be identified in accordance with Table-4 of IEGC, 2023.

Method-II

FRO= (Average Generation of individual generating station/ (Sum of Avg. generation of all considered generating stations + Average Demand of State Control Area)) X FRO allotted to state control area

Method-III

FRO= (Average Generation of individual generating station/ (Sum of Avg. generation of all considered generating stations)) X (FRO allotted to state control area-Demand Response (=4% of Avg. Demand per Hz))

Method-II & Method-III accommodates demand response while distributing FRO allotted to a state control area among its internal generating stations and load entities.

Method-IV

FRO= (Average Generation of individual generating station/ (Sum of Avg. generation and Avg. Demand of all control areas)) X Minimum All India Target FRC

Method-IV utilizes the formula provided in the IEGC, 2023. In this approach, the FRO for intra-state generating stations is allocated from the All-India minimum target FRC, based on the proportion of their average generation relative to the total average generation and average demand across India.

Method-V

FRO= (Average Generation of individual generating station/ (Sum of Avg. generation of all considered generating stations (ISGS + Intra SGS))) X Minimum All India Target FRC

Method-V entails amendment in current provisions of IEGC, 2023 related to assessment of FRO. All India minimum target FRC would be expected to be achieved by generating stations only.

Summation of FROs allotted to Intra-state generating stations within a state control area shall constitute FRO of that state control area

SLDCs shall be responsible for assessment and monitoring of FRO of Intra-state generating stations and thereby FRO of state control area

Director (SO), Grid-India clarified that the purpose of this agenda was to inform all FOLD members about the different methods for distributing the Frequency Response Obligation (FRO) assigned to a state control area among its entities. SLDCs are free to implement any of these methods within their states. Any challenges encountered during implementation, as well as feedback and suggestions, can be communicated to the FOLD Secretariat.

Director, UPSLDC and Director (SO), Grid-India discussed about the identification of control area in accordance with IEGC, 2023. It was deliberated that load entities like bulk consumers can also be apportioned FRO allotted to state control area.

FRO targets of each control area under RLDC jurisdiction for FY 2024-25, have been assessed by NLDC in accordance with IEGC, 2023 based on the average generation and average demand of control areas for CY 2023. The FRO targets are available in public domain at Grid-India website. The web-link for accessing the same was shared with the members during the discussion.

K) **Agenda-7: "My-SCED" project for implementation of SCED at the State level.**

The background of SCED was discussed, highlighting the successful pilot projects at the national level that began in April 2019 and continued through various extensions. SCED has now become a formalized part of the Indian Electricity Grid Code (IEGC) 2023, ensuring optimal dispatch of generation resources and minimization of generation costs while maintaining grid security. Since April 2019, ₹40 billion in savings were achieved, with significant reductions in average variable cost and schedule changes.

SCED was identified as a superior mechanism to merit order dispatch (MOD), offering better management of state-level resources and handling constraints like ramp rates, energy charges, load generation balance, and transfer capability. It was emphasized that SCED improves congestion management, provides detailed marginal cost information, and optimizes resource dispatch more efficiently than manual processes. The expected potential savings from intra-state SCED were estimated at ₹4000 crores annually.

"My-SCED" project was proposed, encouraging states to develop SCED solutions in-house and create dedicated teams to handle scheduling, market operations, IT infrastructure, and procurement. States will receive technical support through workshops and access to shared resources like sample code directories and publications. Handbook under development shall be shared for comments.

Maharashtra and Gujarat informed that they have started preparing for the pilot projects in coordination with IIT Bombay and IIT Gandhinagar respectively. Uttar Pradesh informed that they are working towards intra-state SCED.

Action Points:

States were advised to immediately nominate officers from different backgrounds (scheduling, market operations, IT infrastructure, and procurement) to work on intra-state SCED (My-SCED) and kick-start the intra-state SCED initiative, aiming for completion by 2025.

The meeting ended with the vote of thanks.

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48th Meeting of Forum of Load Despatchers
Date: - 21 - August - 2024
Time: 02:30 PM onwards
Agenda

1. **Opening remarks by CMD, GRID-INDIA and Special Remarks by Secy. CERC/FOR FOR**

2. **Agenda-1 : Load Forecasting Practices / Methodology**

To ensure supply adequacy in the states and thereby in regions and at the national level, it is important to forecast electricity demand. This demand forecast is required for Operational Planning (Demand estimation, Error Analysis, Generation Estimation, Resource Adequacy). The demand forecast is to be shared with concerned RLDCs as per below given timelines.

Yearly demand estimation	30th September of the previous year
Monthly demand estimation	Fifth day of the previous month
Weekly demand estimation	First working day of previous week
Daily demand estimation	10:00 hrs of previous day

SLDCs are requested to share the details of demand estimation practices through the questionnaire .

3. **Agenda-2: Operational Planning & Resource Adequacy Assessment**

As per CERC Regulation-31 of Indian Electricity Grid Code (IEGC) 2023, Operational Planning is to be carried out by NLDC, RLDCs and SLDCs within their respective control area for different time frames. Which includes the following:

I. Daily/Weekly/Monthly/Yearly Demand estimation and submission of the same to respective RLDCs as per timelines mentioned in IEGC as above:
II. Computation of Forecasting errors and publishing at the respective website.
III. Generation forecast including the intra-state Renewable Energy (RE) resources
IV. Resource Adequacy analysis comprising of the source-wise generation with the reserves and flexibility requirements and submission of the same to respective RLDC in day-ahead horizon
V. Data submission as per the format RA-1 to RA-5 for data submission as per "Procedure for Resource Adequacy Assessment" issued in September 2023. Link: https://posoco.in/wp-content/uploads/2023/09/Final-Procedure-%E2%80%93-Resource-Adequacy-and-Operational-Planning-submitted-to-CERC.pdf

The NLDC/RLDC Operating Procedure in this regard is available at their respective websites.

Members are requested to share the status at the respective SLDCs

4. Agenda-3: Real-Time Monitoring of the available margin in all the plants

To ensure load generation balance and meeting unrestricted demand of the country, Ministry of Power has instructed to monitor the available margins in all the thermal plants across the country. For that an SOP has been approved by the Ministry and real-time data of Declared Capacity (DC) and Schedule (in MW) of intra-state thermal plants have been linked from all the SLDCs to RLDCs beside the actual generation. A Real-Time Generation (RTG) monitoring portal has been developed for the continuous monitoring of available margin in the respective plants and directions are being issued to maximize the generation by offering the same in the market. The real-time data availability and correctness is of utmost requirement to compute the available reserve margins at regional and national level.

In the meeting held under the chairmanship of Secretary (Power) on 25.07.2024 to discuss the issues related to Grid Management and Grid Operation, had advised to ensure the availability of the grid-connected data generators data for all grid-connected generators, including unit capacity, declared capacity, scheduled generation, and other relevant parameters, on a common portal accessible to all stakeholders. It is suggested to publish the above mentioned data with an access-controlled manner.

In this regard, SLDCs are requested to ensure availability and accuracy of data reflected at RTG portal for further publishing the same to other entities with an access controlled manner.

5. Agenda-4 : Technical Minimum of intra-state coal-based generating stations

Flexibility of conventional generating stations is required for reliable grid operation with increased penetration of RE. All coal-based Inter-state Generating Stations (ISGS) are already flexing to 55%. Details of technical minimum for thermal generating stations at Intra-state level as specified by SERCs or as per operational practices reported by the states have been tabulated below:

State	Technical Minimum	Regulations/ Data Source	Remarks
Uttar Pradesh	55%	UPERC (Merit Order Despatch and Optimization of Power Purchase) Regulations, 2021[6]	Includes compensation mechanism for part load operation
Haryana	55%	HERC (Terms and Conditions for Determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff Framework) Regulations, 2019[7]	Includes compensation mechanism for part load operation and additional start/stop

Maharashtra	55%	MERC (State Grid Code Regulations), 2020[8]	Includes compensation mechanism for part load operation and additional start/stop
Madhya Prade	55%	MP Electricity Grid Code, 2024[9]	Includes compensation mechanism for part load operation and additional start/stop
Karnataka	55%	KERC (Merit Order Despatch and Optimization of Power Purchase Cost) Regulations, 2024[10]	Includes compensation mechanism for part load operation Two units operating with technical minimum of 40% (intimated in 210th SR OCC meeting)
Andhra Prades	520 MW & above: 55% Upto 500 MW: 71.4%	Minutes of 210th Meeting of Southern Region Operation Coordination Committee (OCC)[11]	
Tamil Nadu	600 MW: 60% 210 MW: 80%	Minutes of 210th Meeting of Southern Region OCC	
Telangana	58-67% for different units	Minutes of 210th Meeting of Southern Region OCC	
West Bengal	63-73% for different units	Minutes of 214th Meeting of Eastern Region Operation Coordination Committee (OCC)[12]	
Odisha	55-60%	Minutes of 214th Meeting of Eastern Region OCC	

On 3rd & 4th August 2024, sustained high frequency operations were observed. Congestion warning and charges had been imposed on several occasions. Going forward such situations may arise frequently, therefore, flexing of intra-state thermal generation is also of utmost important.

In the meeting held under the chairmanship of Secretary (Power) on 25.07.2024 to discuss the issues related to Grid Management and Grid Operation has directed to take appropriate measures by the states for RE curtailment / RSD/ Ramping-up or down wrt the intra-state thermal units for ensuring the grid reliability and security .

Members may like to deliberate in this regard.

6. Agenda-5: Details of the captive power generation embedded in the states

As captive power generation continues to grow with increasing industrialization, particularly in heavy industries such as steel and cement production, accurate accounting of these generation resources becomes crucial. This is especially important during peak demand periods when meeting the country's energy needs becomes critical. Additionally, the tripping of any unit within the captive power fleet poses challenges, as the demand from these industries shifts to the grid. Members may like to share the following details of the captive power plants in their respective states.

- Generation Capacity (MW)
- Captive load (MW)
- PLF (annual avg.)
- Fuel (Domestic/Imported/Blend/other)
- Point of Connection (kV level)
- Visibility in respective SCADA (Yes or No)
- Load and net load (load-generation) curve for all the season (Summer, Monsoon, Winter).

7. Agenda-6: Assessment of quantum of Secondary & Tertiary Reserve Capacity & Information Exchange

In compliance with Regulations 30(11) and 30(12) of the IEGC, NLDC has prepared a "Detailed Procedure for Assessment of Quantum of Secondary & Tertiary Reserve Capacity, along with Information Exchange and Timelines ".

https://posoco.in/wp-content/uploads/2024/02/Detailed-Procedure-for-Assessment-of-quantum-of-Secondary-Tertiary-Res_.pdf

NLDC, in coordination with RLDCs and SLDCs, is responsible for estimating the quantum of reserve requirements on a year-ahead, three-day-ahead, day-ahead, and real-time basis.

SLDCs are required to furnish data in the specified formats (RAS1 and RAS2).

8. Agenda-7: Methodology for calculation of FRO of intra-state entities

In compliance with Reg. 30 Clause (10) (f) of CERC (IEGC) Regulations, 2023, NLDC has notified FRO of regional entity generating stations and state control areas, which is available at following link: https://grid-india.in/en/download/assessment-of-frequency-response-obligation-of-each-control-area-for-fy-2024-25_rev-1_02-04-2024/?wpdmdl=57714.

1. SLDCs have proposed different methodologies to assign FRO to its intra-state entities. These are given below:

Method-I. FRO allotted to a state control area to be distributed **only among the intra-state generating stations** giving due **consideration to generation within the state control area**

and details as given in Table 4 under sub-clause(g) of Reg. 30 Clause (10) of CERC (IEGC) Regulations, 2023. The FRO in MW/Hz shall be calculated as:

$$FRO = \left(\frac{Average\ Generation\ of\ individual\ generating\ station}{Sum\ of\ Avg.generation\ of\ all\ considered\ generating\ stations}\right) X\ FRO\ alloted\ to\ state\ control\ area$$

Method-II. FRO allotted to a state control area to be **distributed among the intra-state generating stations and load**, giving due **consideration to generation and load within the state control area** and details as given in Table 4 under sub-clause(g) of Reg. 30 Clause (10) of CERC (IEGC) Regulations, 2023. The FRO in MW/Hz shall be calculated as:

$$FRO = \left(\frac{Average\ Generation\ of\ individual\ generating\ station}{Sum\ of\ Avg.generation\ of\ all\ considered\ generating\ stations + Average\ Demand\ of\ State\ Control\ Area}\right) X\ FRO\ alloted\ to\ state\ control\ area$$

Method-III. FRO allotted to a state control area to be distributed **among the intra-state generating stations and load** giving due **consideration to generation within the state control area** and details as given in Table 4 under sub-clause(g) of Reg. 30 Clause (10) of CERC (IEGC) Regulations, 2023. The demand response to be considered equal to the maximum 4% of Average Demand per Hz.

$$FRO = \left(\frac{Average\ Generation\ of\ individual\ generating\ station}{Sum\ of\ Avg.generation\ of\ all\ considered\ generating\ stations}\right) X (FRO\ alloted\ to\ state\ control\ area - Demand\ Response\ (= 4\%\ of\ Avg.Demand\ per\ Hz))$$

Method-IV. FRO allotted to a state control area to be distributed **only among the intra-state generating stations** giving due **consideration to generation and load within each control area across the All-India grid** and details as given in Table 4 under sub-clause(g) of Reg. 30 Clause (10) of CERC (IEGC) Regulations, 2023. The FRO in MW/Hz shall be calculated as:

$$FRO = \left(\frac{Average\ Generation\ of\ individual\ generating\ station}{Sum\ of\ Avg.generation\ and\ Avg.Demand\ of\ all\ control\ areas}\right) X\ Minimum\ All\ India\ Target\ FRC$$

Esteemed members may please deliberate to arrive at a common methodology

9. Agenda-8: "My-SCED" project for implementation of SCED at the State level

A pilot project on Security Constrained Economic Despatch Pan-India covering 52 thermal ISGS with 58 GW capacity was operationalized by GRID-INDIA starting 1st April 2019. A robust, integrated SCED software application was developed in-house, which runs every 15 minutes on 24x7 basis to optimize the all-India variable cost of generation, while fulfilling grid security constraints. The pilot has been expanded w.e.f. 1st June 2020, opening participation to all willing generators. Security constraints have been strengthened with incorporation of bidirectional Available Transfer Capability (ATC) and counter dispatch for correcting inter-regional ATC violations. Generator minimum and maximum evacuation limits have been introduced for addressing local security violations. For ensuring that

generators do not see any ramp violation in schedules when they are excluded, soft landing feature has been developed and introduced. For handling of different SCED stop under different scenarios, scheduled and emergency stop functionalities have been developed.

The schedules of beneficiaries are not changed on account of SCED. Buyers or beneficiaries continue to pay the charges for the scheduled energy directly to the generating stations participating in the SCED. Gains from the SCED process shall be accumulated into the "SCED Account" and are being shared with generating stations and their beneficiary states. For any increment in the generation schedule on account of SCED, the participating generator is paid from the 'SCED Account' at the rate of its energy charge or SCED Compensation Charge declared upfront by the generator. For any decrement in the generation schedule on account of SCED, the participating generator pays to the 'SCED Account' at the rate of energy charge or SCED Compensation Charge, as applicable. The net savings shall be shared between the beneficiaries or buyers and the generating stations as per a gain sharing mechanism. Part load compensation for a reduction in the schedule on account of SCED is paid from the savings in the SCED Account.

National Load Despatch Centre (NLDC) has prepared and submitted several detailed feedback reports to CERC covering various aspects of the SCED operation. With the implementation of Indian Electricity Grid Code 2023 from 1st October 2023 onwards, SCED has moved from pilot phase and is now an inherent part of the scheduling and despatch process. In addition to SCED, the IEGC-2023 also contains provisions for Security Constrained Unit Commitment (SCUC), which has been implemented from April 2024 onwards.

As of August 2024, a total of 52 plants with installed capacity of 63420 MW form part of the SCED optimization. Around ₹4000 crores national savings have been done through SCED since April 2019. These savings have been transparently shared between the generating stations and beneficiaries transparently. All the accounts and records are available in public domain.

A rough estimation of the potential of intra-state SCED by Grid-India is valued at around ₹4000 crores per annum at the all-India level, which roughly translates to 0.5%-0.7% of the annual variable production cost. More than the savings, the intangible benefits that are provided by SCED implementation hold vital importance –

a. SCED is an advanced application to merit order despatch (MOD) as it simultaneously factors constraints viz., ramp rates, energy charges, load generation balance, transfer capability margins, and any other limits needed. SCED is also superior to MOD in handling congestion and retrieving the marginal cost information.
b. Optimization algorithm used in SCED justifying and covering any inefficiency in manual load despatch decision.
c. Improved automation for facilitating SCED
d. SCED implementation also gives by products such as the improved reporting infrastructure through customized charts, tables, and duals (shadow prices) of the constraints, which would be helpful for the senior management in taking policy level decisions.

e. Strict gate closures timelines can be implemented, which can open new doors for Ancillary Services, flexibility initiatives, efficient grid management considering high penetration of renewables.

Implementation of Intra-state SCED has huge potential of economic savings and therefore, a new collaborative project titled “My-SCED” is proposed by FOLD. In this project, FOLD welcomes all the interested states to take initiatives for implementing SCED in-house customized at the state level. Each State may kindly create a dedicated group constituting of executives/officers from these preferable backgrounds-

- Scheduling and Despatch – for facilitating scheduling changes
- Market operations and regulatory aspects
- Computer Science, IT, Communication – for facilitating data exchange, and developing portals, cybersecurity.
- Heads, contracts/procurement departments – for facilitating any procurement requirements or changes in the existing scheduling software, although SCED algorithm can be preferably developed in-house

The following activities are proposed to be taken up during the “My-SCED” project –

i. Technical support through online workshops
ii. Interactions with national and international experts
iii. Shared resources, publications folders, and sample code directories would be made available
iv. Short deputations of resource personnel for training/brainstorming
v. Regular progress tracking will be done through FOLD secretariat. The intra-state SCED project may be targeted to be completed in a time bound fashion at all the interested states by 2025

The information regarding the nominated officers may be provided to FOLD Secretariat at the earliest by the interested states through Head of SLDC.

FOLD Secretariat

CENTRAL ELECTRICITY REGULATORY COMMISSION
6th, 7th and 8th Floor, World Trade Centre,
Tower B, Nauroji Nagar,
New Delhi-110029

File No. L-1/268/2022/CERC Date: 23rd October, 2024

To,
The Chairman & Managing Director
Grid Controller of India Limited (GRID-INDIA)
B-9 (1st Floor), Qutab Institutional Area,
Katwaria Sarai, New Delhi -110016

Subject: NLDC Methodology for computation of Average Monthly Frequency Response Performance, Beta 'β'

Sir,

Please refer GRID-INDIA's letter no. NLDC/SO/Beta/2024/97 dated 30.07.2024 submitting therewith a draft methodology on the subject mentioned above prepared by GRID-INDIA in compliance with the provisions of the Regulation 62(5) and 65(4) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 (Tariff Regulations, 2024) for the approval of the Commission.

2. The Commission has considered the draft methodology. Accordingly, the approved methodology for computation of Average Monthly Frequency Response Performance, Beta 'β' under the provisions of the Regulation 62(5) and 65(4) of the Tariff Regulations, 2024 is enclosed herewith for further necessary action.

Sd/-
(Harpreet Singh Pruthi)
Secretary

Encl: As above

Grid Controller of India Limited

(formerly Power System Operation Corporation Limited)

National Load Despatch Centre (NLDC)

Methodology
for Computation of
Average Monthly
Frequency Response Performance,
Beta ‘β’ for Generating Stations

October, 2024

Prepared in compliance with

Regulation 62 Clause 5 and Regulation 65 Clause 4 of

CERC (Terms & Conditions of Tariff) Regulations, 2024

1. **Background:** Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024, as notified on 15th March 2024, came into force on 01st April, 2024. This methodology for computation of Average Monthly Frequency Response Performance, Beta 'β' is in compliance with Regulation 62 Clause 5 and Regulation 65 Clause 4 of CERC (Terms and Conditions of Tariff) Regulations, 2024. The relevant regulations are quoted below:

Quote

CHAPTER – 11 COMPUTATION OF CAPACITY CHARGES AND ENERGY CHARGES

62. Computation and Payment of Capacity Charge for Thermal Generating Stations:

…(5) In addition to the AFC entitlement as computed above, the thermal generating station shall be allowed an incentive of up to 1.00% of AFC approved for a given year, which shall be billed monthly as per the following.

Incentive = (1.00% x ß x CCy)/12

Where,

ß = Average Monthly Frequency Response Performance for that generating station, as certified by RPCs, which shall be computed by considering primary response as per the methodology prescribed by the NLDC with approval of the Commission, and ß shall range between 0 to 1.

Provided that the incentive shall be payable only if the Beta value is higher than 0.30.

CCy= Capacity Charges for the Year.

65. Computation and Payment of Capacity Charge and Energy Charge for Hydro Generating Stations:

… (4) In addition to the AFC entitlement as computed above, the hydro generating station shall be allowed an incentive of up to 3% of the Capacity Charge approved for a given year which shall be billed monthly as per the following.

Incentive = (3% x ß x CCy)/12

Where,

ß = Average Monthly Frequency Response Performance for that generating station, as certified by RPCs, which shall be computed by considering primary response as per the methodology prescribed by the NLDC with approval of the Commission and beta shall range between 0 to 1.

Provided that incentive shall be payable only if Beta value is higher than 0.30.

CCy= Capacity Charges for the Year.

Unquote

2. **Scope and extent of application:** The scope and extent of application of this methodology shall be as per Regulation 2. (Scope and extent of application) of CERC (Terms and Conditions of Tariff) Regulations, 2024 and amendments thereof.

3. **Definitions and Terms**: The definitions and terms used in this methodology are as per CERC (Indian Electricity Grid Code) Regulations, 2023 and CERC (Terms and Conditions of Tariff) Regulations, 2024 and amendments thereof. For the purposes of this methodology, generating stations refer to those stations whose tariffs are determined by the CERC, irrespective of their control jurisdiction falls under RLDC or SLDC, as specified in Regulation 43 of the CERC (IEGC) Regulations, 2023.

4. Steps for computation of Average Monthly Frequency Response Performance, Beta 'ß':

4.1. NLDC shall notify the **reportable event** in accordance with CERC (IEGC) Regulations, 2023.

a) After every event involving a sudden 1000 MW or more load or generation loss or a step change in frequency by 0.1 Hz, NLDC would get the PMUs frequency data. NLDC would also get the exact quantum of load/generation lost from the RLDC of the affected region. ***{Clause 9(a)(i) of Annexure-2 of IEGC, 2023}***

b) NLDC shall plot the frequency graph and determine the initial frequency, minimum/maximum frequency, settling frequency and time points (points A, C and B). Accordingly, frequency difference points and corresponding time to be used for FRC calculations would be informed to all RLDCs. ***{Clause 9(a)(ii) of Annexure-2 of IEGC, 2023}***

4.2. Generating stations shall extract **high resolution data (1 second or better resolution)** of active power generation and frequency, as recorded at the generating station. The generating station shall furnish the extracted high resolution data (1 second or better resolution) to the concerned Load Despatch Centre (hereinafter LDC) within two (2) days of notification of reportable event by NLDC.

a) The high resolution data to be submitted by the generating stations need to be time-stamped and should have time synchronization with GPS.

b) The concerned LDC shall review the data furnished by generating stations and seek clarifications, if required. Generating stations shall provide the sought clarifications within two working days.

4.3. Frequency Response Characteristic (FRC) of the generating stations for each reportable event shall be calculated by concerned LDC based on the submitted high resolution data from generating stations, as per NLDC "Methodology for Computation of Primary Frequency Response Obligation and Performance", prepared in compliance with CERC (IEGC) Regulations, 2023.

a) In case of non-submission of requisite data by generating station within two working days of notification of reportable event by NLDC, FRC shall be calculated based on the Historical Data Recording (HDR) data available at LDCs.

4.4. Frequency Response Obligation (FRO) to be considered for computation of Beta 'ß':

a) FRO of regional entity generating stations, as assessed by NLDC, as per NLDC "Methodology for Computation of Primary Frequency Response Obligation and Performance", prepared in compliance with CERC (IEGC) Regulations, 2023, shall be considered for computation of Beta by the RLDC.

b) FRO of generating stations, whose tariff is determined by CERC and are falling under the jurisdiction of SLDCs (in accordance with the control area jurisdiction as per Regulation 43 of CERC (IEGC) Regulations, 2023), as assessed by concerned SLDC shall be considered for computation of Beta by the SLDC.

Provided that till the methodology for Computation of Primary Frequency Response Obligation and Performance in respect of intra-State entities is notified by the respective State Commission, the FRO of generating stations, whose tariff is determined by CERC and are falling under the jurisdiction of SLDCs (in accordance with the control area jurisdiction as per Regulation 43 of CERC (IEGC) Regulations, 2023) shall be assessed by concerned SLDC in line with this methodology, for computation of Beta.

4.5. Frequency Response Performance (FRP) of the generating stations for each reportable event shall be calculated by concerned LDC, as per NLDC "Methodology for Computation of Primary Frequency Response Obligation and Performance", prepared in compliance with CERC (IEGC) Regulations, 2023.

a) FRP of generating station for the reportable event = Actual Frequency Response Characteristic (AFRC), as calculated for the reportable event / Frequency Response Obligation (FRO) of the generating station, as applicable on the date of reportable event

$$\textbf{FRP (Event i)} = \frac{AFRC}{FRO}$$

where, $\boldsymbol{i}$ = the reportable event occurred during the billing month and considered for computation of Beta, 'ß'

b) FRP shall be a numeric value truncated up to two decimal places.

c) FRP of generating stations for each reportable event shall be calculated based on the high resolution data, submitted by generating station and examined by concerned LDC. In case of non-submission of requisite data by generating station within two working days of notification of reportable event by NLDC, FRC and FRP shall be calculated based on the Historical Data Recording (HDR) data available at LDCs.

d) FRC and FRP of a generating station would be calculated only when the generating station (with at least one unit on-bar) was generating during the notified reportable event.

e) The concerned LDC shall share the calculated FRC and FRP values with generating stations after each reportable event, within six (6) working days after the notification of reportable event by NLDC.

4.6. Consideration of Frequency Response Performance for each reportable event, FRP (Event i) as calculated above for the purpose of computation of Average Monthly FRP, Beta 'ß':

a) If FRP for an event is less than or equal to 0, FRP (Event i) shall be equal to 0.

b) If FRP for an event lies between 0 to 1, FRP (Event i) shall be equal to the calculated value.

c) If FRP for an event is greater than or equal to 1, FRP (Event i) shall be equal to 1.

4.7. The concerned LDC shall compute **Average Monthly Frequency Response Performance, Beta 'ß' (truncated up to 2 decimal places)**:

$$\textbf{Beta 'ß'} = \frac{\textbf{FRP (Event 1)}+\textbf{FRP (Event 2)}+\textbf{FRP (Event 3)}+\cdots\ldots+\textbf{FRP (Event n)}}{\boldsymbol{Number\ of\ reportable\ events\ considered\ for\ computation\ of\ Beta}}$$

$$\textbf{i.e. Beta 'ß'} = \frac{\sum_{i=1}^{n} \boldsymbol{FRP\ (Event\ i)}}{\boldsymbol{n}}$$

where,

- $\boldsymbol{i}$ = the reportable event occurred during the billing month and considered for computation of Beta, 'ß'
- $\boldsymbol{n}$ = the total number of reportable events occurred during the billing month

and are being considered for computation of Beta,

4.8. In case, there was no reportable event which can be considered for the generating station during the billing month, Average Monthly Frequency Response Performance, Beta 'ß' for that particular billing month shall be Zero (0) for that generating station for the month.

4.9. The concerned LDC would furnish Average Monthly Frequency Response Performance, Beta 'ß' computed for a billing month to respective RPC along with all relevant supporting documents latest by 15th day of the following month. The Beta 'ß', furnished by concerned LDCs will be certified and issued by the RPC through publication on its website to make it a part of commercial accounting.

---XXX---

Annex B.2.10.1

Table : UFLS Status in Eastern Region with details of New UFR Quantum wise feeder identification and Requirement of additional feeders to be identified

State	Stage	Old Quantum	New Quantum	New Feeder Identified	Total number of UFR feeder	Quantum from Total UFR Feeder	Additional feeder to be identified for MW Quantum
Bihar	Stage 1	126	315	Yes	31	315	-
	Stage 2	118	379	Yes	42	380	-
	Stage 3	153	442	Yes	41	444	-
	Stage 4	85	442	Yes	30	436	6
	Total	**482**	**1578**		**144**	**1576**	6
JUSNL	Stage 1	54	87	No	8	89	-
	Stage 2	64	105	No	8	105	-
	Stage 3	35	122	No	2	33	89
	Stage 4	73	122	No	0	0	122
	Total	**226**	**436**		**18**	**227**	211
DVC	Stage 1	122	172	Yes	14	173	-
	Stage 2	145	207	Yes	15	209	-
	Stage 3	147	241	Yes	24	242	-
	Stage 4	138	241	Yes	17	239	2
	Total	**552**	**861**		**70**	**864**	2
Orissa	Stage 1	181	306	Yes	31	375	0
	Stage 2	183	367	Yes	30	378	-
	Stage 3	184	428	Partially	30	379	49
	Stage 4	186	428	Yes	38	452	-
	Total	**734**	**1529**		**129**	**1583**	49
West Bengal (WBSEDCL)	Stage 1	316	377	No	50	491	-
	Stage 2	284	457	No	47	458	-
	Stage 3	265	536	No	13	153	383
	Stage 4	273	536	No	9	111	425
	Total	**1138**	**1906**		**119**	**1213**	808

State	Stage	Old Quantum	New Quantum	New Feeder Identified	Total number of UFR feeder	Quantum from Total UFR Feeder	Additional feeder to be identified for MW Quantum
West Bengal (CESC)	Stage 1	65	120	Yes	10	120	-
	Stage 2	90	140	Yes	7	140	-
	Stage 3	125	160	Yes	10	160	-
	Stage 4	120	160	Yes	6	160	-
	Total	**400**	**580**		**33**	**580**	-

Table : UFLS Status in Eastern Region : New Quantum based identified feeders with UFR relays and their SCADA data availability at ERLDC

State	Stage	New Quantum (MW) for UFLS Scheme	Total Number of feeders Identified for UFLS Scheme	Total number of Identified Feeders with UFR under New Quantum	MW Quantum available with UFR installed Feeder	Integration in ERLDC SCADA (MW)	Integration in ERLDC SCADA (No of Feeders)	Data Availability at ERLDC (MW)	CB Status (No of Feeder)	MW Status (No of Feeder)
Bihar	Stage 1	315	31	10	131	0	0	0	0	0
	Stage 2	379	42	15	152	0	0	0	0	0
	Stage 3	442	41	13	134	0	0	0	0	0
	Stage 4	442	30	24	368	368	24	120	7	8
	Total	**1578**	**144**	**62**	**785**	**368**	**24**	**120**	**7**	**8**
JUSNL	Stage 1	87	8	8	89	89	8	14	1	1
	Stage 2	105	8	8	105	105	8	71	5	5
	Stage 3	122	2	2	33	33	2	33	2	2
	Stage 4	122	0	0	0	0	0	0	0	0
	Total	**436**	**18**	**18**	**227**	**227**	**18**	**119**	**8**	**8**
DVC	Stage 1	172	14	14	173	144	13	144	13	13
	Stage 2	207	15	15	209	89	4	89	4	4
	Stage 3	241	24	0	0	0	0	0	0	0

State	Stage	New Quantum (MW) for UFLS Scheme	Total Number of feeders Identified for UFLS Scheme	Total number of Identified Feeders with UFR under New Quantum	MW Quantum available with UFR installed Feeder	Integration in ERLDC SCADA (MW)	Integration in ERLDC SCADA (No of Feeders)	Data Availability at ERLDC (MW)	CB Status (No of Feeder)	MW Status (No of Feeder)
	Stage 4	241	17	0	0	0	0	0	0	0
	Total	**861**	**70**	**29**	**383**	**232**	**17**	**232**	**17**	**17**
Orissa	**Stage 1**	306	31	17	216	216	17	194	10	15
	Stage 2	367	30	12	135	127	11	115	6	10
	Stage 3	428	30	7	100	100	7	82	4	5
	Stage 4	428	38	11	187	180	10	167	5	9
	Total	**1529**	**129**	**47**	**637**	**622**	**45**	**557**	**25**	**39**
West Bengal (WBSEDCL)	**Stage 1**	377	50	50	491	260	24	204	20	17
	Stage 2	457	47	47	458	106	11	106	11	11
	Stage 3	536	13	13	153	86	5	65	5	4
	Stage 4	536	9	9	111	0	0	0	0	0
	Total	**1906**	**119**	**119**	**1213**	**452**	**40**	**375**	**36**	**32**
West Bengal (CESC)	**Stage 1**	120	10	10	120	120	10	120	10	10
	Stage 2	140	7	7	140	140	7	140	7	7
	Stage 3	160	10	10	160	160	10	160	10	10
	Stage 4	160	6	6	160	160	6	160	6	6
	Total	**580**	**33**	**33**	**580**	**580**	**33**	**580**	**33**	**33**

Annex B.2.10.2

Annexure: UFLS Summary for Eastern region

1. Bihar (New Feeders Have been identified, UFR installation in progress)

A. Stage 1: 49.4 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Triveniganj 132/33 kV	33 kV_JADIYA	4		no	no	no	no
2	Triveniganj 132/33 kV	33 kV_CHHATAPUR	4		no	no	no	no
3	Pupri (Sursand) 132/33 kV	33 kV_JALESHWAR	6		yes	yes	yes	yes
4	SKMCH 132/33 kV	33 kV_CHANDWARA	20		no	no	no	no
5	SKMCH 132/33 kV	33 kV_SIKENDARPUR	10		no	no	no	no
6	Raxaul 132/33 kV	33 kV_BIRGANJ	12		yes	yes	yes	yes
7	Raghopur 132/33 kV	33 kV_CHAMPANAGAR	3.5		no	no	no	no
8	Raghopur 132/33 kV	33 kV_PIPRA	12.5		no	no	no	no
9	Raghopur 132/33 kV	33 kV_RAGHOPUR	11		no	no	no	no
10	Raghopur 132/33 kV	33 kV_LALGANJ	8		no	no	no	no
11	Nirmali 132/33 kV	33 kV_Marauna	5		no	no	no	no
12	Muzaffarpur 132/33 kV	33 kV_MARIPUR	7		no	no	no	no
13	Muzaffarpur 132/33 kV	33 kV_NAYATOLA	15		no	no	no	no
14	Muzaffarpur 132/33 kV	33 kV_BHIKHANPURA	16		no	no	no	no
15	Mushahari 220/132/33 kV	33 kV_CHANDWARA	20		no	no	no	no
16	Laukhi 220/132/33 kV	33 kV_DAGMARA	1.5		no	no	no	no
17	Laukhi 220/132/33 kV	33 kV_MAJHARI	1.5		no	no	no	no
18	Kataiya_132/33 kV	33 kV_Birpur	4		no	no	no	no
19	Barh 132/33 kV	33 kV_BERHNA	7	yes	no	no	no	no
20	Sabour 132/33 kV	33 kV_SABOUR	12	yes	no	no	no	no

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
21	Kahalgaon 132/33 kV	33 kV_PIRPANTI	20	yes	no	no	no	no
22	Kahalgaon 132/33 kV	33 kV_KAHALGAON	16	yes	no	no	no	no
23	Bodhgaya 220/132/33 kV	33 kV_DOBHI	12	yes	no	no	no	no
24	Bodhgaya 220/132/33 kV	33 kV_NEW_SHOBH	24	yes	no	no	no	no
25	Bodhgaya 220/132/33 kV	33 kV_NEW MANPUR	15	yes	no	no	no	no
26	Bodhgaya 220/132/33 kV	33 kV_KHATKA_CHAK	5	yes	no	no	no	no
27	Bodhgaya 220/132/33 kV	33 kV_BHUSANDA_9	5	yes	no	no	no	no
28	Sasaram 132/33 kV	33 kV_TAKIYA	7		no	no	no	no
29	Sasaram 132/33 kV	33 kV_CHENARI	6		no	no	no	no
30	Sasaram 132/33 kV	33 kV_SHIVSAGAR	10		no	no	no	no
31	Nawada 132/33 kV	33 kV_WARSALIGANJ	15	yes	no	no	no	no

B. Stage 1: 49.2 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Kataiya_132/33 kV	33 kV_Raghopur	11		no	no	no	no
2	Kataiya_132/33 kV	33 kV_Jagdishpur	3		no	no	no	no
3	Kataiya_132/33 kV	33 kV_RAJBIRAJ NEPAL	12		yes	yes	yes	yes
4	Hajipur 132/33 kV	33 kV_SONEPUR	16	yes	no	no	no	no
5	Barsoi 132/33 kV	33 kV_SONAILI	15		no	no	no	no
6	Barsoi 132/33 kV	33 kV_BARSOI	15		no	no	no	no
7	Darbhanga 132/33 kV	33 kV_PANDASARAI	10		no	no	no	no
8	Bettiah 132/33 kV	33 kV_BETTIAH	22		no	no	no	no

9	Gangwara 132/33 kV	ICV_PASHUPALAN	1		no	no	no	no
10	Purnea 132/33 kV	33 kV_CIRCUIT HOUSE	10	yes	no	no	no	no
11	Purnea 132/33 kV	33 kV_MADHUBANI	6		yes	yes	no	no
12	Begusarai 220/132/33 kV	33 kV_BEGUSARAI_I	10		no	no	no	no
13	Purnea 132/33 kV	33 kV_LINE BAZAR	3	yes	no	no	no	no
14	Hajipur 132/33 kV	33 kV_KONHARA GHAT	13	yes	no	no	no	no
15	Katihar 132/33 kV	33 kV_BINODPUR	7		no	no	no	no
16	Begusarai 220/132/33 kV	33 kV_DEONA	5		no	no	no	no
17	Balia 132/33 kV	33 kV_BALIA	12		no	no	no	no
18	Gangwara 132/33 kV	33 kV_OLD_DMCH	5		no	no	no	no
19	Muzaffarpur 132/33 kV	33 kV_KHABRA	15		no	no	no	no
20	Nawada 132/33 kV	33 kV_HISUA	16	yes	no	no	no	no
21	Buxar 132/33 kV	33 kV_CHOUSA	9.3		no	no	no	no
22	Buxar 132/33 kV	33 kV_ITARHI	9	yes	no	no	no	no
23	Buxar 132/33 kV	33 kV_PANDEYPATTI	5.6	yes	no	no	no	no
24	Buxar 132/33 kV	33 kV_PURSHOTTAMPUR	12.4	yes	no	no	no	no
25	Jamalpur 132/33 kV	33 kV_BINDWARA	7.68	yes	no	no	no	no
26	Sultanganj 132/33 kV	33 kV_235_Sultanganj	13	yes	no	no	no	no
27	Sultanganj 132/33 kV	33 kV_232_Sahkund	6	yes	no	no	no	no
28	Sultanganj 132/33 kV	33 kV_230_Asharganj	5		no	no	no	no
29	Sultanganj 132/33 kV	33 kV_233_Shambhuganj	7	yes	no	no	no	no
30	Jamui Old 132/33 kV	33 kV_JAMUI-II	12		no	no	no	no
31	Jamui Old 132/33 kV	33 kV_Jhajha	4		no	no	no	no
32	Mohania 132/33 kV	33 kV_BHABHUA	14	yes	no	no	no	no
33	Bhabua (Mundeshwari) 132/33 kV	33 kV_BHAGWANPUR MAR	15	yes	no	no	no	no

34	Bhabua (Mundeshwari) 132/33 kV	33 kV_BHAGWANPUR	4	yes	no	no	no	no
35	Banka Old 132/33 kV	33 kV_NEHRU COLONY	8		no	no	no	no
36	Banka Old 132/33 kV	33 kV_BANKA	5		no	no	no	no
37	Banka Old 132/33 kV	33 kV_GOKALA	2		no	no	no	no
38	Banka New 132/33 kV	33 kV_WARNE SOUTH	2		no	no	no	no
39	Banka New 132/33 kV	33 kV_KATORIYA	11		no	no	no	no
40	BGCL Mokama	Mokama -4	11		no	no	no	no
41	BGCL Khijarsarai	Khijarsarai	6		no	no	no	no
42	BGCL Khijarsarai	Naugarh	4.5		no	no	no	no

C. Stage 1: 49.0 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Manihari 132/33 kV	33 kV_AMDABAD	1.56		no	no	no	no
2	Hajipur 132/33 kV	33 kV_PASWAN CHOWK	15	yes	no	no	no	no
3	Forbisganj 132/33 kV	33 kV_FORBESGANJ_NEW	20		no	no	no	no
4	Kishanganj 132/33 kV	33 kV_POTHIA	4		no	no	no	no
5	Purnea 132/33 kV	33 kV_ZERO MILE	10	yes	no	no	no	no
6	Forbisganj 132/33 kV	33 kV_FORBESGANJ_OLD	20		no	no	no	no
7	Chhapra 132/33 kV	33 kV_TELPA	25	yes	no	no	no	no
8	Saharsa 132/33 kV	33 kV_SAHARSHA NEW	15		no	no	no	no

9	Katihar 132/33 kV	33 kV_KORHA_OLD1	8		no	no	no	no
10	Sitamarhi 132/33 kV	33 kV_SITAMARHI	23		no	no	no	no
11	Darbhanga 132/33 kV	33 kV_DONAR	9		no	no	no	no
12	Gopalganj 220/132/33 kV	33 kV_GOPALGANJ	12	yes	no	no	no	no
13	Saharsa 132/33 kV	33 kV_SAHARSA_OLD	15		no	no	no	no
14	Raxaul 132/33 kV	33 kV_RAXAUL	20		no	no	no	no
15	Manjhaul 132/33 kV	33 kV_CIRCUIT_HOUSE	14		no	no	no	no
16	Madhubani 132/33 kV	33 kV_MADHUBANI	3		no	no	no	no
17	Dumraon 132/33 kV	33 kV_DUMRAON	16		no	no	no	no
18	Ekangarsarai 132/33 kV	33 kV_HILSA	15.1	yes	no	no	no	no
19	Karmnasha 132/33 kV	33 kV_DURGAWATI	5		no	no	no	no
20	Karmnasha 132/33 kV	33 kV_CHAND	6	yes	no	no	no	no
21	Karmnasha 132/33 kV	33 kV_KARAMNASA	4.5		no	no	no	no
22	Karmnasha 132/33 kV	33 kV_RAMGARH	4	yes	no	no	no	no
23	Ramgarh 132/33 kV	33 kV_RAMGARH	8		no	no	no	no
24	Sherghati 132/33 kV	33 kV_SHERGHATI	19		no	no	no	no
25	Tarapur 132/33 kV	33 kV_SANGRAMPUR	5.9		no	no	no	no
26	Tarapur 132/33 kV	33 kV_TARAPUR	7.8		no	no	no	no
27	Tarapur 132/33 kV	33 kV_BELHAR	7.7		no	no	no	no
28	Sonenagar 220/132/33 kV	33 kV_NAVINAGAR	13		no	no	no	no
29	Sonenagar 132/33 kV	33 kV_DEHARA	10		no	no	no	no
30	Masaurhi 132/33 kV	33 kV_MASAURHI_OLD	10	yes	no	no	no	no
31	Sabour 132/33 kV	33 kV_Barari	4		no	no	no	no
32	Sabour 132/33 kV	33 kV_GERADIH	5	yes	no	no	no	no
33	Kudra 132/33 kV	33 kV_SHIVSAGAR	10	yes	no	no	no	no
34	Naugachia 132/33 kV	33 kV_Makanpur	9	yes	no	no	no	no

35	Naugachia 132/33 kV	33 kV_MAKANDPUR	9		no	no	no	no
36	Piro 132/33 kV	33 kV_PIRO	4	yes	no	no	no	no
37	Kerpa 132/33 kV	33 kV_KERPA	8		no	no	no	no
38	Wazirganj 132/33 kV	33 kV_WAZIRGANJ	13.5		no	no	no	no
39	Wazirganj 132/33 kV	33 kV_PAIMAR	13		no	no	no	no
40	Wazirganj 132/33 kV	33 kV_FATEHPUR	14		no	no	no	no
41	Warisaliganj 132/33 kV	33 kV_WARISALIGANJ	8.4	yes	no	no	no	no

D. Stage 1: 48.8 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	132/33 KV Gaighat	Saidpur	12	yes	yes	yes	no	no
2	220/132/33 KV Fatuha	Katra (Daniyawa)	12	yes	yes	yes	no	no
3		Meena Bazar	17	yes	yes	yes	no	no
4		Fatuha	28	yes	yes	yes	no	no
5		Dina Iron	10		yes	yes	no	no
6	132/33 kV Barh	Barh Town	20.5	yes	yes	yes	no	no
7		Pandarak	6		yes	yes	yes	yes
8	132/33 KV Bari Pahari	Bari Pahari I	12	yes	yes	yes	yes	yes
9		Bari Pahari II	6	yes	yes	yes	yes	yes
10		Sohsarai	22	yes	yes	yes	yes	yes
11		Ramchandrapur	22	yes	yes	yes	yes	no
12		Noorsarai	22	yes	yes	yes	yes	no
13		Asthama	14	yes	yes	yes	yes	yes
14	132/33 KV Harnaut	Line II Feeder (Charm)	6.32	yes	yes	yes	yes	no
15		Kalyanbigha	3.67	yes	yes	yes	no	yes

16		Harnaut	5	yes	yes	yes	no	yes
17	132/33 KV Ekangarsarai	Ekangarsarai	12		yes	yes	yes	yes
18		Hilsa	19.1		yes	yes	yes	yes
19	132/33 KV Katra	Pahari	24	yes	yes	yes	no	no
20		Sabalpur	31	yes	yes	yes	no	no
21		Karmalichak	20	yes	yes	yes	no	no
22		Ashoknagar (Technotuff)	25	yes	yes	yes	no	no
23		Kankarbag (Malsalami)	19	yes	yes	yes	no	no
24	220/132/33 KV Sampatchak	Bahadurpur (Beldarichak)	5	yes	yes	yes	no	no
25		Sampatchak	9	yes	yes	yes	no	no
26		KudaNawada	8		yes	yes	no	no
27	132/33 KV Purnea	Maranga	11	yes	yes	yes	no	no
28		Madhubani	6	yes	yes	yes	no	no
29	132/33 KV Nalanda	Nalanda	16	yes	yes	yes	yes	yes
30	132/33 KV Rajgir	Silao	12		no	no	no	no

2. Jharkhand (New Feeders Identification is pending)

A. Stage 1: 49.4 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Kamdara	Kamdara	3.5	yes	yes	yes	no	no
2	Gumla	Gumla	12	yes	yes	yes	no	no
3	Deoghar	Sarath	15	yes	yes	yes	no	no
4	Jamatara	Jamtara	10	yes	yes	yes	no	no
5	Deoghar	Baidyanathpur	18	yes	yes	yes	no	no
6	Garhwa	Ranka	8.5	yes	yes	yes	no	no
7	Garhwa	Bhawnathpur	7.5	yes	yes	yes	no	no
8	Loherdaga	Lohardaga	14	yes	yes	yes	yes	yes

B. Stage 1: 49.2 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Loherdaga	Tico	18	yes	yes	yes	yes	yes
2	Japla	Japla	10	yes	yes	yes	no	no
3	Namkum	Kokar	12	yes	yes	yes	yes	yes
4	Adityapur	Adityapur 1	13	yes	yes	yes	no	no
5	Adityapur	Adityapur 2	11	yes	yes	yes	no	no
6	Hatia	Brambay	12.3	yes	yes	yes	yes	yes

7	**Hatia**	**Dhurwa**	**17.1**	yes	yes	yes	yes	yes
8	**Latehar**	**Manika**	**12**	yes	yes	yes	yes	yes

C. Stage 1: 49.0 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	**Hatia**	**Agora**	**16.4**	yes	yes	yes	yes	yes
2	**Hatia**	**Harmu**	**17**	yes	yes	yes	yes	yes

D. Stage 1: 48.8 Hz

No feeders identified and UFR installation at present in 48.8 Hz.

3. DVC (New Feeders Have been identified and UFR installation in Progress)

A. Stage 1: 49.4 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Jamuria	Jamuria	12	yes	yes	yes	yes	yes
2	Giridih	Jamua	1	yes	yes	yes	yes	yes
3	BTPS	BTPS	14	yes	yes	yes	yes	yes
4	Gola	Chargi	9	yes	yes	yes	yes	yes
5	Barhi	Padma	9	yes	yes	yes	yes	yes
6	KTPS	Gosala	17	yes	yes	yes	yes	yes
7	Kalipahari	Luchipur	1	yes	yes	yes	yes	yes
8	Gola	Huppu	13	yes	yes	yes	yes	yes
9	Hazaribagh	HZB F# 2&3	30	yes	no	no	no	no
10	Ramgarh	Ramgarh Feeder#1	15	yes	yes	yes	yes	yes
11	Giridih	Giridih	23	yes	yes	yes	yes	yes
12	Hazaribagh	Hazaribagh	11	yes	yes	yes	yes	yes
13	Kumardhubi	Mugma, Sanjoychowk,	9	yes	yes	yes	yes	yes
14	Mosaboni	Mosaboni	10	yes	yes	yes	yes	yes

B. Stage 1: 49.2 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Koderma	Koderma JBVNL 1&2	24.7	yes	yes	yes	yes	yes
2	Barhi	Barhi	18.6	yes	yes	yes	yes	yes
3	Hazaribagh	HBZ 4&5	30.0	yes	yes	yes	yes	yes
4	Ramgarh	Ramgarh Feeder#1	15.2	yes	yes	yes	yes	yes
5	Maithon Right Bank	Dendua	5.7	yes	no	no	no	no
6	Burdwan	MIRZAPUR	21.4	yes	no	no	no	no
7	Burdwan	MIRZAPUR	1.1	yes	no	no	no	no
8	Kalyaneswari	Maheshpur	11.2	yes	no	no	no	no
9	Kalyaneswari	Maheshpur	4.1	yes	no	no	no	no
10	Giridih	Mahtodih, Giridhih	13.3	yes	no	no	no	no
11	Durgapur	Gopinathpur	31.8	yes	no	no	no	no
12	Jamuria	Ikra,Jamuria	9.8	yes	no	no	no	no
13	Jamuria	Jamuria	8.0	yes	no	no	no	no
14	Parulia	Hetedoba,Durgapur	6.5	yes	no	no	no	no
15	Parulia	Hetedoba	8.0	yes	no	no	no	no

C. Stage 1: 49.0 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Howrah	132 kV Food Park, Sankrail, Howrah	7.1		no	no	no	no
2	Burdwan	MIRZAPUR	8.3		no	no	no	no
3	Kumardhubi	Dishergarh	8.5		no	no	no	no
4	Barjora	Barjora	14.8		no	no	no	no
5	Barjora	Barjora	1.2		no	no	no	no
6	Barjora	Ghutgoria	1.4		no	no	no	no
7	Barjora	Radhamadhabpur	16.9		no	no	no	no
8	Barjora	Gangajal Ghati	22.3		no	no	no	no
9	Barjora	MTPS	5.3		no	no	no	no
10	Barjora	MTPS	0.5		no	no	no	no
11	Barjora	Gangajal Ghati	13.2		no	no	no	no
12	Kalipahari	Luchipur	14.8		yes	yes	yes	yes
13	Ramgarh	Chaha	8.6		no	no	no	no
14	Ramgarh	MARAR	2.9		no	no	no	no
15	Koderma RS	Barwadih	9.2		no	no	no	no
16	Koderma RS	Barwadih	9.5		no	no	no	no
17	Koderma RS	Bandhi - Jhumritilaiya	0.8		no	no	no	no

18	Koderma RS	Gumo,Jhumritelaiya	1.7		no	no	no	no
19	Durgapur	Gopinathpur	31.8		no	no	no	no
20	Parulia	Kamalpur,Durgapur	39.6		no	no	no	no
21	Parulia	Hetedoba	2.5		no	no	no	no
22	Giridih	Daridih, Giridih	17.8		no	no	no	no
23	Giridih	BISWASDIH,GIRIDIH	0.5		no	no	no	no
24	Giridih	Bhorandih	2.6		no	no	no	no

D. Stage 1: 48.8 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Kalyaneswari	132 kV Debipur,Kulti	20.6		no	no	no	no
2	Kalyaneswari	Salanpur	23.3		no	no	no	no
3	Kalyaneswari	Salanpur	1.1		no	no	no	no
4	Barjora	132 kV Barjora	20.9		no	no	no	no
5	Barjora	132 kV Barjora	7.7		no	no	no	no
6	Barjora	132 kV Ghutgoria	44.4		no	no	no	no
7	Jamuria	132 kV Ikra,Jamuria	26.7		no	no	no	no
8	Jamuria	132 kV Jamuria	10.6		no	no	no	no
9	Durgapur	Banskopa,Durgapur	8.9		no	no	no	no
10	Giridih	Mohanpur	10.4		no	no	no	no
11	Giridih	MANJHALADIH,GIRIDIH	19.6		no	no	no	no
12	Giridih	MANJHALADIH,GIRIDIH	0.7		no	no	no	no
13	Giridih	Mohanpur	0.1		no	no	no	no
14	Giridih	Chatro,Giridih	0.4		no	no	no	no

15	Ramgarh	Marar	8.4		no	no	no	no
16	Ramgarh	Rauta, Marar, Hazaribah	7.7		no	no	no	no
17	Ramgarh	MARAR	28.0		no	no	no	no

4. Orissa (New Feeders Have been identified and UFR installation in Progress)

A. Stage 1: 49.4 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Nimapara	Nimapara Kakatpur	21	yes	yes	yes	yes	yes
2	Khurda	Khurda Delanga	19	yes	yes	yes	yes	yes
3	Nayagarh	Daspalla	18		no	no	no	no
4	Nayagarh	Nayagarh Khendpada	13	yes	yes	yes	yes	yes
5	Chandikhol	Kundal	13		no	no	no	no
6	Kalarangi	Kaliapani	4		no	no	no	no
7	Chainpal	Chainpal	9		no	no	no	no
8	Chainpal	Chainpal Parjang	18	yes	yes	yes	yes	yes
9	Rajnagar	Adhajori	7		no	no	no	no
10	Kendrapara	Kendrapara Luna	8	yes	yes	yes	yes	no
11	Bhadrak	Bhadrak Dhamnagar	16	yes	yes	yes	yes	yes
12	Balasore	Balasore Srijung	6.5	yes	yes	no	yes	no
13	Jaleswar	Kamarda	9		no	no	no	no
14	Agarpada	Bidyadharpur	9		no	no	no	no
15	Betnoti	Betnoti	11		no	no	no	no
16	Dhenkikote	Harichandanpur	3		no	no	no	no

17	Baripada	Bangriposi	3.5		no	no	no	no
18	Ghens	Bijepur	21		no	no	no	no
19	Tusura	Tushra	17		no	no	no	no
20	Padampur	Paikmal	17		no	no	no	no
21	Padampur	Lakhmara	17		no	no	no	no
22	Kesinga	Kesinga Narla	11	yes	yes	yes	yes	yes
23	Junagarh	Junagarh Charbahalpur	10	yes	yes	yes	yes	yes
24	Bolangir (Old)	Bolangir Dumerbahal	10.5	yes	yes	yes	yes	yes
25	Bargarh	Baragarh Dunguri	15	yes	yes	yes	yes	yes
26	Rourkela	Rourkela Lathikata	8	yes	yes	yes	yes	no
27	Khariar	Khariar RE	15	yes	yes	no	yes	no
28	Bhanjanagar	Bhanjanagar KBpur	7	yes	yes	yes	yes	no
29	Aska	Aska Buguda	11	yes	yes	yes	no	no
30	Berhampur	Berhampur Chikiti	11	yes	yes	yes	no	no
31	Balugoan	Balugaon Khalikote	16	yes	yes	yes	yes	yes

B. Stage 1: 49.2 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Nimapara	Nimapara Konerk	8	yes	yes	yes	yes	yes
2	Nayagarh	Machhipada	6		no	no	no	no
3	Nayagarh	Odagaon	16		no	no	no	no
4	Nayagarh	Binopara	18	yes	yes	yes	yes	yes
5	Tirtol	Tirtol	12		no	no	no	no
6	Phulanakhara	Damodarpur	20		no	no	no	no
7	Narasinghpur	FDR-3(Khandabareni)	15		no	no	no	no
8	Chainpal	Rengali	20		no	no	no	no
9	Banki	Charchika	15		no	no	no	no
10	Jajpur Road	Jaipur Pannikoili	12	yes	yes	no	no	no
11	Chandikhole	Chandikhole Kabalabandha	15	yes	yes	yes	yes	yes
12	Basta	Jamsuli	17		no	no	no	no
13	Jajpur Town	Bari	20		no	no	no	no
14	Rairangpur	Bisoi	6		no	no	no	no
15	Barapali	Barpali	16		no	no	no	no
16	Barapali	Pandkital	14		no	no	no	no

17	Junagarh	Daspur	13		no	no	no	no
18	Sundargarh	Sankara	11		no	no	no	no
19	Ghens	Ghens	11		no	no	no	no
20	Sadeipali	Madhiapali	11		no	no	no	no
21	Thuapali	Khuntlipali	11		no	no	no	no
22	Kuchinda	Laikera	9		no	no	no	no
23	Sundargarh	Sundergarh Bargaon	6.5	yes	yes	yes	yes	yes
24	Jayanagar	Jayanagar Boriguma	10	yes	yes	yes	yes	no
25	Sunabeda	Sunabeda Laxmipur Nandpur	8	yes	no	no	no	no
26	Therubali	Therubali BisamKatak	8	yes	yes	yes	yes	no
27	Phulbani	Phulbani Kalinga	8	yes	yes	yes	yes	yes
28	Chatrapur	Chatrapur Taratarini/Rambha	14	yes	yes	yes	yes	yes
29	Bhanjanagar	Bhanjanagar Belagunth	12	yes	yes	yes	yes	no
30	Aska	Aska Budamba	15	yes	yes	yes	yes	no

C. Stage 1: 49.0 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Balugaon	Tangi	6		no	no	no	no
2	Narsinghpur	FDR-5 (Narsinghpur)	7		no	no	no	no
3	Kandrapara	Indupur	9		no	no	no	no
4	Puri	Sakhigopal	16		no	no	no	no
5	Salipur	Mahanga	21		no	no	no	no
6	Gundichapada	Hindol Road	10		no	no	no	no
7	Rajnagar	Rajanagar	13		no	no	no	no
8	Salipur	Salipur	21		no	no	no	no
9	Banki	Sunadei	12		no	no	no	no
10	Kendrapara	Danpur	16		no	no	no	no
11	Chandbali	Chandbali	16		no	no	no	no
12	Palasponga	Palasponga Remuli	18	yes	yes	yes	yes	yes
13	Jajpur Road	JajpurRD Kuakhia	8	yes	yes	yes	no	no
14	Udala	Udala	13		no	no	no	no
15	Soro	Gopinathpur	13		no	no	no	no
16	Jajpur Town	Binjharpur	13		no	no	no	no
17	Tusura	Deogarh	9		no	no	no	no
18	Ghens	Melchamunda	9		no	no	no	no

19	Lakhanpur	Muchbahal	7		no	no	no	no
20	Kantabanji	Kantabanji	6		no	no	no	no
21	Ghens	Sohela	18		no	no	no	no
22	Kuchinda	Kuchinda	10		no	no	no	no
23	Maneswar	Maneswar	16		no	no	no	no
24	Chiplima	Dhama-1	9		no	no	no	no
25	Padampur	Padampur	9		no	no	no	no
26	Sambalpur	Sambalpur Rengali	15	yes	yes	yes	yes	yes
27	Bargarh	Baragarh Turung	22	yes	yes	yes	yes	yes
28	Brajarajnagar	Brajrajnagar Sagripalli	15	yes	yes	no	yes	no
29	Kesinga	Kesinga Titlagarh	12	yes	yes	yes	yes	yes
30	Aska	Aska Nuagaon	10	yes	yes	yes	no	no

D. Stage 1: 48.8 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Tirtol	Gorada	20		no	no	no	no
2	Tirtol	Jagannathpur	11		no	no	no	no
3	Dhenkanal	Banasingh	13		no	no	no	no
4	Choudwar	Choudwar	18		no	no	no	no
5	Salipur	FDR-4 (Bahugram)	9		no	no	no	no
6	Phulnakhara	Bhingarpur	6		no	no	no	no
7	Chandpur	Khandisi	9		no	no	no	no
8	Pratapsasana	Balipatna	8		no	no	no	no
9	Jagatsinghpur	Marakandapur	3		no	no	no	no
10	Choudwar	FDR-1 (Athagarh)	21		no	no	no	no
11	Balugaon	Balugaon	12		no	no	no	no
12	Polaponga	Polaponja Keonjhar	17	yes	yes	yes	yes	yes
13	Jajpur Road	Jajpur Anandapur	30.5	yes	yes	yes	yes	no
14	Bhadrak	Asurali	14.5		no	no	no	no
15	Bangriposi	Bangriposi	13		no	no	no	no
16	Balasore	Emami (Mitrapur)	3		no	no	no	no
17	Agarpada	Chhayalsingh	3		no	no	no	no
18	Brajrajnagar	Brajrajpur	8		no	no	no	no

19	Kesinga	Kesinga	8		no	no	no	no
20	Budhipadar	Bagdihi	6		no	no	no	no
21	Hirakud	Hirakud	6		no	no	no	no
22	Bhatli	Bhukta	16		no	no	no	no
23	Sonepur	Binka	9		no	no	no	no
24	Lakhanpur	Jharupada	10		no	no	no	no
25	Jayapatna	Ladugaon	9		no	no	no	no
26	Padampur	Gaisilat	8		no	no	no	no
27	Nuapada	Nuapada	7		no	no	no	no
28	Sundargarh	Subdega	8		no	no	no	no
29	Lephripada	Sargipalli	7		no	no	no	no
30	Khariar	Khariar Khariar 2	7	yes	yes	yes	yes	yes
31	Barkote	Barkote Mahuldhia	9	yes	yes	yes	yes	yes
32	Sundargarh	Sundergarh Sabdega	5	yes	yes	yes	yes	yes
33	Bolangir (New)	132 kVBolangirNew Patnagarh	22	yes	yes	yes	yes	no
34	Sunabedha	Sunabeda Nandakumar	7	yes	no	no	no	no
35	Aska	Aska Kabisuryanagar	13	yes	yes	yes	no	no
36	Bhanjanagar	132 kV Bhanjanagar Phulbani	22	yes	yes	no	yes	no
37	Kendrapara	132 kV Kendrapara Pattamundal	24	yes	yes	yes	yes	yes
38	Jayanagar	132 kVJayanagar Tentulikhunti	30	yes	yes	yes	yes	no

5. West Bengal- WBSEDCL (New Feeders not Identified)

A. Stage 1: 49.4 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	**Nbu**	33 kV Tcf	10	Yes	No	No	No	No
2		33 kV KHARIBARI	7	Yes	No	No	No	No
3		33 kV UJANU	11	Yes	No	No	No	No
4		11 kV DURGAMANDIR	2	Yes	No	No	No	No
5		11 kV PHASIDEWA	1	Yes	No	No	No	No
6		11 kV BAGDOGRA	1	Yes	No	No	No	No
7	**Uluberia**	Uluberia Banitabla	12	Yes	Yes	Yes	Yes	yes
8		Uluberia UIGC 1	4	Yes	Yes	Yes	Yes	yes
9		Uluberia UIGC 2	10	Yes	Yes	Yes	Yes	yes
10		33 kV BOROGRAM	4	Yes	No	No	No	No
11		Uluberia Foodpark	15	Yes	Yes	Yes	Yes	yes
12		Uluberia Skipper	7	Yes	Yes	Yes	Yes	yes
13		Uluberia Poly Park	18	Yes	Yes	Yes	Yes	yes
14		Uluberia Baganda	19	Yes	Yes	Yes	Yes	yes
15		33 kV GANES COMPLEX.	13	Yes	No	No	No	No
16	**Gangarampur**	33 kV Buniadpur-1	12	Yes	No	No	No	No
17		33 kV BUNIADPUR-2	8	Yes	No	No	No	No
18		33 kV SALAS.	8	Yes	No	No	No	No
19		33 kV RAMPUR.	5	Yes	No	No	No	No
20		2 X10 MVA (33/11 kV) TR#1,2	10	Yes	No	No	No	No
21	**Lakhikantapur**	33 kV Beliachandi.	11	Yes	No	No	No	No

22		33 kV PATHARPRATIM.	17	Yes	No	No	No	No
23		33 kV DEULA.	16	Yes	No	No	No	No
24		33 kV JAYNAGAR-1.	24	Yes	No	No	No	No
25		33 kV JAYNAGAR-2.	0	Yes	No	No	No	No
26		33 KV U. LAKHINARAYANPUR.	15	Yes	No	No	No	No
27		33 kV JAMTALA.	11	Yes	No	No	No	No
28	**Kakdweep**	33 kV Kakdweep-1.	10	Yes	No	No	No	No
29		33 kV KAKDWEEP-2.	11	Yes	No	No	No	No
30		33 kV KULPI-1.	5	Yes	No	No	No	No
31		33 kV KULPI-2.	8	Yes	No	No	No	No
32		33 kV RADHANAGAR-1.	7	Yes	No	No	No	No
33		33 kV RADHANAGAR-2.	4	Yes	No	No	No	No
34	**Jangipara**	Jangipara Jangipara	8	Yes	Yes	Yes	No	No
35		Jangipara Saikhala	13	Yes	Yes	Yes	No	Yes
36		Jangipara Singhati	11	Yes	Yes	Yes	No	No
37		Jangipara T1	0	Yes	Yes	Yes	No	No
38		Jangipara T2	7	Yes	Yes	Yes	No	No
39	**Tamluk**	Tamluk Barbela	12	Yes	Yes	Yes	Yes	Yes
40		Tamluk Moyna	17	Yes	Yes	Yes	No	Yes
41		Tamluk Gopalpur	9	Yes	Yes	Yes	Yes	Yes
42		Tamluk Tamluk	15	Yes	Yes	Yes	Yes	Yes
43		Tamluk T1	8	Yes	Yes	Yes	Yes	Yes
44		Tamluk T2		Yes	Yes	Yes	No	Yes

B. Stage 1: 49.2 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	DOMJUR	33 kV JANGALPUR	11	Yes	No	No	No	No
2		33 kV JALADHULAGURI	11	Yes	No	No	No	No
3		33 kV MUNSIRHAT.	17	Yes	No	No	No	No
4		2 X 10 MVA TR#1,2	13	Yes	No	No	No	No
5	BAGNAN	Bagnan Bagnan 1	21	Yes	Yes	Yes	Yes	Yes
6		Bagnan Bagnan 2	0	Yes	Yes	Yes	Yes	Yes
7		Bagnan Amta	11	Yes	Yes	Yes	Yes	Yes
8		Bagnan Mungkalyan 1	16	Yes	Yes	Yes	Yes	Yes
9		Bagnan Mungkalyan 2	13	Yes	Yes	Yes	Yes	Yes
10	N.BISHNUPUR	NewBishnupur Rohit	14	Yes	Yes	Yes	Yes	Yes
11		NewBishnupur Patrasa	7	Yes	Yes	Yes	Yes	Yes
12		NewBishnupur Rohit	0	Yes	Yes	Yes	Yes	Yes
13	BARJORA	Barjora Barjora 2	18	Yes	Yes	Yes	Yes	Yes
14		Barjora T1	0	Yes	Yes	Yes	Yes	Yes
15		Barjora T2	6	Yes	Yes	Yes	Yes	Yes
16	Malda	33 kV SPARE EAST-1.	0	Yes	No	No	No	No
17		33 kV MILKY.	5	Yes	No	No	No	No
18		33 kV ENGLISH BAZAR-1.	11	Yes	No	No	No	No
19		33 kV SOJAPUR.	11	Yes	No	No	No	No

20		33 kV ENGLISH BAZAR-2.	0	Yes	No	No	No	No
21		33 kV MOTHABARI.	12	Yes	No	No	No	No
22		33 kV HABIBPUR.	16	Yes	No	No	No	No
23		33 kV KALIACHAK.	8	Yes	No	No	No	No
24		33 kV NARAYANPUR-1.	6	Yes	No	No	No	No
25		33 kV NARAYANPUR-2.	12	Yes	No	No	No	No
26		33 kV MANIKCHAK.	15	Yes	No	No	No	No
27		33 kV KPS.	12	Yes	No	No	No	No
28		33 kV RABINDRABHABAN.	15	Yes	No	No	No	No
29		33 kV BALIA.	3	Yes	No	No	No	No
30	O.BISHNUPUR	33 kV KOTOLPUR.	6	Yes	No	No	No	No
31		33 kV SIMLAPAL.	13	Yes	No	No	No	No
32		33 kV ONDA.	13	Yes	No	No	No	No
33		33 kV BAKADAHA.	5	Yes	No	No	No	No
34		2X10 MVA	7	Yes	No	No	No	No
35		33 kV BANKURA	14	Yes	No	No	No	No
36	NJP	33 kV RADHABARI.	11	Yes	No	No	No	No
37		33 kV RABINADRANAGAR.	10	Yes	No	No	No	No
38		33 kV DABGRAM-1	12	Yes	No	No	No	No
39		33 kV FATAPUKUR.	11	Yes	No	No	No	No
40		2X6.3 MVA TR#1,2(33/11 kV)	7	Yes	No	No	No	No
41		33 kV TINBATTI	15	Yes	No	No	No	No
42		33 kV FULBARI IP-1	6	Yes	No	No	No	No

43		33 kV FULBARI IP-2	6	Yes	No	No	No	No
44		33 kV GAZOLDOBA	10	Yes	No	No	No	No
45		33 kV DABGRAM-2	11	Yes	No	No	No	No
46		33 kV RANINAGAR	11	Yes	No	No	No	No
47		33 kV SUBHASPALLY.	6	Yes	No	No	No	No

C. Stage 1: 49.0 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	LILUAH	33 kV KONA.	4	Yes	No	No	No	No
2		33 kV JNP.	0	Yes	No	No	No	No
3		33 kV KTT.	0	Yes	No	No	No	No
4		33 kV MKD.	15	Yes	No	No	No	No
5		33 kV BALTIKURI-1	11	Yes	No	No	No	No
6		33 kV BALTIKURI-2	11	Yes	No	No	No	No
7		33 kV LLH-1	10	Yes	No	No	No	No
8		33 kV LLH-2	16	Yes	No	No	No	No
9	SILIGURI	Siliguri Siliguri 1	16	Yes	Yes	Yes	Yes	Yes
10		Siliguri Siliguri 2	21	Yes	Yes	Yes	No	Yes
11		Siliguri Rabindranagar	15	Yes	Yes	Yes	Yes	Yes
12		Siliguri HousingBoard	21	Yes	Yes	Yes	Yes	Yes
13		Siliguri Deshbandhupara	13	Yes	Yes	Yes	Yes	Yes

D. Stage 1: 48.8 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	RISHRA	33 kV RAGHUNATHPUR.	21	Yes	No	No	No	No
2		33 kV DANKUNI-1.	11	Yes	No	No	No	No
3		33 kV DANKUNI-2	15	Yes	No	No	No	No
4		33 kV KAIKALA-1	0	Yes	No	No	No	No
5		33 kV KAIKALA-2.	10	Yes	No	No	No	No
6		4X10 MVA TR#1,2,3,4	23	Yes	No	No	No	No
7		33 kV AJODHYA.	7	Yes	No	No	No	No
8	SALTLAKE AIS	33 kV M5-1.	12	Yes	No	No	No	No
9		33 kV M5-2.	12	Yes	No	No	No	No
10	BELUR	Liluah WBSETCL 1	40	Yes	Yes	Yes	Yes	Yes
11		Liluah WBSEDCL 2	40	Yes	Yes	Yes	Yes	Yes
12		Liluah WBSEDCL 3	40	Yes	Yes	Yes	Yes	Yes

6. West Bengal- CESC (New Feeders Identified and UFR implemented)

A. Stage 1: 49.4 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Chakmir(CESC)	Chakmir Maheshtala N F1	9	Yes	Yes	Yes	Yes	Yes
2		Chakmir Maheshtala 1	16	Yes	Yes	Yes	Yes	Yes
3		Chakmir Maheshtala 2	24	Yes	Yes	Yes	Yes	Yes
4		Chakmir Maheshtala 3	8	Yes	Yes	Yes	Yes	Yes
5		Chakmir T1	7	Yes	Yes	Yes	Yes	Yes
6		Chakmir T2	11	Yes	Yes	Yes	Yes	Yes
7	WBRS(CESC)	Serampore F-1//F-2	14	Yes	Yes	Yes	Yes	Yes
8		Serampore F-6	7	Yes	Yes	Yes	Yes	Yes
9	BBGS SW House(CESC)	Charial F-1	12	Yes	Yes	Yes	Yes	Yes
10		Garment Park Budge Budge	12	Yes	Yes	Yes	Yes	Yes

B. Stage 1: 49.2 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Dum Dum station (CESC)	DumDum T1	19	Yes	Yes	Yes	Yes	Yes
2		DumDum T2	19	Yes	Yes	Yes	Yes	Yes
3		DumDum South DumDum	17	Yes	Yes	Yes	Yes	Yes
4		DumDum Nager Bazar	19	Yes	Yes	Yes	Yes	Yes
5		RMU at Nagerbazar (N) D/S	19	Yes	Yes	Yes	Yes	Yes
6	Botanical Garden (CESC)	BGSS Bauria 2	14	Yes	Yes	Yes	Yes	Yes
7		BGSS Bauria	33	Yes	Yes	Yes	Yes	Yes

C. Stage 1: 49.0 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Majerhat (CESC)	RMU at Barisha D/S	32	Yes	Yes	Yes	Yes	Yes
2		Majerhat Thakurpukur T1	10.5	Yes	Yes	Yes	Yes	Yes
3		Majerhat Thakurpukur T2	19.5	Yes	Yes	Yes	Yes	Yes
4	Jadavpur (CESC)	Jadavpur Tollygunge	26	Yes	Yes	Yes	Yes	Yes
5		Baranagar GIS F1 and F2	13.5	Yes	Yes	Yes	Yes	Yes
6	NCSS (CESC)	NCGS T2	13	Yes	Yes	Yes	Yes	Yes
7		NCGS T4	14	Yes	Yes	Yes	Yes	Yes
8		Kamarhati D/S T1	8.5	Yes	Yes	Yes	Yes	Yes
9		Amherst D/S T2	7.5	Yes	Yes	Yes	Yes	Yes
10		Kamarhati D/S T2	15.5	Yes	Yes	Yes	Yes	Yes

D. Stage 1: 48.8 Hz

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	UFR installed	MW integrated at ERLDC	CB Status integrated at ERLDC	MW reporting at ERLDC	CB Status reporting at ERLDC
1	Majerhat (CESC)	O/D SIE GIS 3 (for Barisha T1 only)	11	Yes	Yes	Yes	Yes	Yes
2		Barisha T-2//SRS-3//Elgin T-1	11	Yes	Yes	Yes	Yes	Yes
3	Jadavpur (CESC)	SIE RMU No 2 at Jad SS (South City T-2 and Jad GIS F-3)	18	Yes	Yes	Yes	Yes	Yes
4	BELUR	Liluah WBSETCL 1	40	Yes	Yes	Yes	Yes	Yes
5		Liluah WBSEDCL 2	40	Yes	Yes	Yes	Yes	Yes
6		Liluah WBSEDCL 3	40	Yes	Yes	Yes	Yes	Yes

Annex B.2.18

सत्यमेव जयते

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

विषय:	Charging of Electric Supply lines without having obtained PTCC approval

S. No	**Reference No.**	**Dated**
(i)	CEA Letter No: CEA/PCD/10CLPTCC/72	18.01.2019

Vide CEA letter referred at S. No. (i) (copy enclosed), request was made to NLDC for issuance of necessary directions to respective RLDCs for seeking documentary evidence of PTCC clearance from concerned utilities before issuing charging code/ permission.

In the recently held 112th CLPTCC Meeting, BSNL highlighted that some State Transmission Utilities (STUs) are getting their transmission lines charged without verifying the status of PTCC approval and for few of these cases are applying for post-facto PTCC approval. Such a situation wherein charging of transmission lines has been allowed without verifying the impact on nearby communication assets of BSNL, Railway and Defense may pose serious hazard for the personnel working and telecom equipment installed in nearby communication assets.

In this regard, attention is drawn towards amended "Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023" wherein Section- 80 specifies as follows:

*"Protection against electromagnetic interference. – The owner of **every electric supply line of voltage level 11 kV or above** shall obtain the clearance of Power Telecommunication Co-ordination Committee to ensure the safety of the personnel and telecommunication line as per the requirement of section 160 of the Act."*

Though PTCC approval is mandatory for charging of Transmission Lines as per Electricity Act 2003 and CEA Safety Regulations 2023, it has been brought to our notice that some Utilities are getting their lines charged without getting necessary PTCC approvals.

Thus, it is advised that necessary directions shall be issued to concerned officials for allowing charging of *electric supply line of voltage level 11 kV or above* after due diligence pertaining to PTCC approval. Also for electric supply lines which have already been charged without having obtained PTCC approvals shall be regularized at the earliest for compliance with provisions of Electricity Act 2003 and CEA Safety Regulations 2023.

Encl: A/a

Signed by Suman Kumar Maharana
Date: 17-10-2024 12:25:00

Chief Engineer

To,

1. National Load Despatch Centre
2. Northern Regional Load Despatch Centre
3. Western Regional Load Despatch Centre
4. Southern Regional Load Despatch Centre
5. Eastern Regional Load Despatch Centre
6. North Eastern Regional Load Despatch Centre
7. Andhra Pradesh State Load Dispatch Center
8. Assam State Load Dispatch Center
9. Bihar State Load Dispatch Center
10. Chhattisgarh State Load Dispatch Center
11. Delhi State Load Dispatch Center
12. Gujarat State Load Dispatch Center
13. Haryana State Load Dispatch Center
14. Himachal Pradesh State Load Dispatch Center
15. Jharkhand State Electricity Board
16. Karnataka State Load Dispatch Center
17. Kerala State Load Dispatch Center
18. Madhya Pradesh State Load Dispatch Center
19. Meghalaya State Load Dispatch Center
20. Mizoram State Load Dispatch Center
21. Odisha State Load Dispatch Center
22. Punjab State Load Dispatch Center
23. Rajasthan State Load Dispatch Center
24. Sikkim State Load Dispatch Center
25. Tamil Nadu State Load Dispatch Center
26. Telangana State Load Dispatch Center
27. Tripura State Load Dispatch Center
28. Uttar Pradesh State Load Dispatch Center
29. Uttarakhand State Load Dispatch Center
30. West Bengal State Load Dispatch Center
31. CGM, QA&I, BSNL (For information)

Annexure-1

सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
पावर कम्युनिकेशन डवलप्मेंट प्रभाग
Power Communication Development Division

No. CEA/PCD/10CLPTCC/72 Date: 18/01/2019

ED, NLDC, POSOCO,
B-9, Qutub Institutional Area,
Katwaria Sarai,
New Delhi – 110 016

Subject: PTCC Clearance mandatory before charging Transmission Line

Sir,

Section 77 of CEA (Measures relating to Safety and Electric Supply) Regulations, 2010 relates to protection against electromagnetic interference. It has derived strength from Section 160(1) of the Act which provides protection to telephonic and signaling communication.

Section-77
"The owner of every overhead power line of voltage level 11kV or higher shall submit proposal for obtaining Power Telecommunication Co-ordination Committee (PTCC) clearance to ensure safety of the personnel and telecom Equipment"

Regarding PTCC, it is to inform that PTCC (Power and Telecommunication Coordination Committee) is a Standing Committee having stakeholders – Power Utilities, BSNL, Railways and Defense. PTCC is for coexistence of Power and Telecom sectors by ensuring safety of human lives and telecommunication equipment from hazardous induction effects due to power line under fault conditions. PTCC clearance is issued after taking care of protection of affected telecom circuits.

Though PTCC clearance is mandatory but some power lines are charged without PTCC. RLDCs can check such action by denying the charging code. Therefore, it is requested that NLDC may issue instructions that RLDCs may ask for documentary evidence of PTCC clearance from the concerned transmission licensee in their respective Region, before issuing charging code/permission.

Yours faithfully,

(Naresh Bhandari)
Chief Engineer

एन आर पी सी परिसर, कटवारिया सराय, नई दिल्ली-110016 टेलीफैक्स: 011-26565214 ईमेल: nbnareshbhandari@nic.in
NRPC Complex, Katwaria Sarai, New Delhi-110016 Telefax: 011-26565214 Email: nbnareshbhandari@nic.in

Annex B.2.20

ERPC:: Kolkata

MOM OF 1st MEETING ON REGIONAL DISASTER MANAGEMENT (EASTERN REGION) HELD VIRTUALLY ON 09.07.2024 THROUGH MS TEAMS PLATFORM

☐ *List of participants is attached at **Annex A.***

❖ *The meeting was convened under the chairmanship of Member Secretary, Eastern Regional Power Committee(ERPC) who also happens to be the Chairman of Regional Disaster Management Group (RDMG) .*

❖ *On welcoming members of Eastern Regional Disaster Management Group (RDMG) and other participants, paramount significance of disaster management was underscored, especially in critical and dynamic landscape of power sector serving as the backbone of our developing nation.*

❖ *Regional Disaster Management Group (RDMG) has been constituted as per guidelines of **Disaster Management Plan for Power Sector** (2022) as drafted by CEA and approved by Ministry of Power (Govt. of India) in compliance to provisions of Disaster Management Act 2005 (same is attached at **Annex-C** for perusal of all concerned stakeholders) .*

❖ *A comprehensive presentation (enclosed as **Annex B**) was delivered from ERPC highlighting the key facets of DISASTER MANAGEMENT as:*

- *Background and basic framework of Disaster Management in India with relevance to Power sector.*
- *Broad scope of responsibilities for key stakeholders in Disaster Management.*
- *Significane of Periodic mock drill, ERS, EOC , financial planning and cybersecurity in domain of Disaster preparedness.*
- *Roadmap of financial planning for disaster mitigation in line with the mandate of Disaster Management Act 2005 as well as Disaster Management Plan for Power Sector(2022) by CEA.*
    - *"Every Ministry or Department of the Government of India shall make provisions, in its annual budget, for funds for the purposes of carrying out the activities and programmes set out in its disaster management plan."*
    - *Each power utility shall create a fund for meeting the requirement of disaster management plan.*
    - *The disaster management fund must be 1.5% of the annual revenue of the utility with scope of Annual replenishment.*
    - *Sufficient amount should be reserved especially for immediate relief and rehabilitation depending upon revenue potential of the utility.*
    - *Insurance coverage for Generation, Transmission and Distribution assets for risk transfer.*

☐ ***Key Decisions:***

- *All concerned stakeholders involved in regional disaster management were advised to discharge respective responsibilities delineated in Disaster Management Plan for Power Sector(2022) (**Annex-C**)*
- *All generating stations (Thermal, Hydro and RE), transmission licensees(ISTS and state) and DISCOMs were directed to identify potential risks to their respective assets(plant/equipment/lines,etc) and intimate the same along with their preparedness to mitigate the identified risks.(**Action**: All thermal GENCOs (Central,IPP), all hydro*

generating stations, all ISTS licensees . SLDCs to coordinate with respective GENCOs,STUs and DISCOMs within their jurisdiction)

- *At least one mock drill exercise for every crisis/disaster situation to which the installation/plant is vulnerable must be undertaken in each quarter and quarterly report by the utilities to be shared with CEA for review and onward submission to Ministry of Power (Govt of India) . (**Action**: All thermal GENCOs (Central,IPP), all hydro generating stations, all ISTS licensees . SLDCs to coordinate with respective GENCOs,STUs and DISCOMs within their jurisdiction)*
- *All utilities were advised to periodically share the experience on mock drill exercises in OCC forum, emphasizing scope for improvement. (**Action** : All utilities)*
- *In compliance to provisions of Disaster Management Act 2005, all utilities were directed to update the following:*
  - ✓ *Creation of the disaster management fund by utilities.*
  - ✓ *Status of the funds available in the disaster management fund.*
  - ✓ *Utilization pattern of the fund under various circumstances. (**Action** : All utilities)*
- *All Transmission licensees were requested to update the status of ERS infrastructure, strategic locations identified for ERS and incidents of ERS deployment in the recent past.(**Action** : All ISTS licensees and STUs)*
- *ERLDC was advised:*
  - ✓ *To furnish details of Mock black start i.r.o black start capable generating units and mock drills of Islanding schemes in ER in monthly OCC meetings.(**Action:** ERLDC**)***
  - ✓ *To periodically update grid restoration procedure in partial/total blackout in consultation with concerned SLDCs taking changes in network configuration into consideration. (**Action:** ERLDC**)***
- *CWC and IMD were requested to share warning alerts i.r.o impending floods and cyclones of high damage potential with ERPC and all members of RDMG so that adequate preventive measures may be undertaken in advance to safeguard power sector establishments and regional grid. Both CWC and IMD representatives agreed to the same.*
- *All utilities were urged to update the operational practices of the established Emergency Operation Centers (EOCs)/Control Rooms and back up EOC/ Control rooms status. (**Action** : All utilities)*
- *All generators(Central sector,State and IPPs) were advised for constitution of Plant level Emergency Management Group (EMG). (**Action** : All generators)*
- *All Utilities were instructed:*
  - ✓ *To ensure compliance to CEA Guidelines on Cyber Security in the Power Sector.*
  - ✓ *To update the status of the Cyber Risk Assessment and Mitigation Plan developed by them and also provide the incidents of cyber threats in the recent times.*
  - ✓ *To have proper CCMP (Cyber Crisis Management Plan) in place. (**Action** : All utilities)*

❖ *All concerned utilities of ER were advised to comply with decisions (mentioned above) and provide all requisite information latest by 31st August 2024.*

Meeting ended with vote of thanks to the chair.

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Annexure D.1

Anticipated Peak Demand (in MW) of ER & its constituents for February 2025

1	**BIHAR**	**Demand (MW)**	**Energy Requirement (MU)**
	NET MAX DEMAND	5704	2792
	NET POWER AVAILABILITY- Own Sources	382	378
	Central Sector+Bi-Lateral	6234	3836
	SURPLUS(+)/DEFICIT(-)	912	1422
2	**JHARKHAND**		
	NET MAXIMUM DEMAND	1959	1021
	NET POWER AVAILABILITY- Own Source	394	187
	Central Sector+Bi-Lateral+IPP	1337	710
	SURPLUS(+)/DEFICIT(-)	-199	-125
3	**DVC**		
	NET MAXIMUM DEMAND	3527	1975
	NET POWER AVAILABILITY- Own Source	5603	3040
	Central Sector+MPL	252	111
	Bi- lateral export by DVC	2415	1623
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	-87	-446
4	**ODISHA**		
	NET MAXIMUM DEMAND (OWN)	4800	2487
	NET MAXIMUM DEMAND (In Case of CPP Drawal of 900 MW(peak) and average drawl of 700 MW)	5325	2999
	NET POWER AVAILABILITY- Own Source	3261	2850
	Central Sector	2060	1259
	SURPLUS(+)/DEFICIT(-) (OWN)	521	1622
	SURPLUS(+)/DEFICIT(-) (I(In Case of CPP Drawal of 900 MW(peak) and average drawlm of 700 MW)	-4	1110
5	**WEST BENGAL**		
	WBSEDCL		
5.1	NET MAXIMUM DEMAND	6868	3573
	NET MAXIMUM DEMAND (Incl. Sikkim)	6873	3576
	NET POWER AVAILABILITY- Own Source (Incl. DPL)	5125	2772
	Central Sector+Bi-lateral+IPP&CPP+TLDP	2652	1200
	EXPORT (To SIKKIM)	5	3
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	905	395
5.2	**CESC**		
	NET MAXIMUM DEMAND	1600	685
	NET POWER AVAILABILITY- Own Source	700	379
	IMPORT FROM HEL	541	256
	TOTAL AVAILABILITY OF CESC	1241	635
	SURPLUS(+)/DEFICIT(-)	-359	-50
	WEST BENGAL (WBSEDCL+CESC+IPCL)		
	(excluding DVC's supply to WBSEDCL's command area)		
	NET MAXIMUM DEMAND	8468	4258
	NET POWER AVAILABILITY- Own Source	5825	3151
	CS SHARE+BILATERAL+IPP/CPP+TLDP+HEL	3193	1456
	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXPORT	551	348
	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXPORT	546	345
6	**SIKKIM**		
	NET MAXIMUM DEMAND	129	70
	NET POWER AVAILABILITY- Own Source	44	29
	Central Sector	308	153
	SURPLUS(+)/DEFICIT(-)	223	112
	EASTERN REGION		
	NET MAXIMUM DEMAND	24104	12602
	NET MAXIMUM DEMAND ((In Case of CPP Drawal of 800 MW(peak) and average drawl of 700 MW)	24619	13115
	BILATERAL EXPORT BY DVC (Incl. Bangladesh)	2415	1623
	EXPORT BY WBSEDCL TO SIKKIM	5	3
	EXPORT TO B'DESH & NEPAL OTHER THAN DVC	642	431
	NET TOTAL POWER AVAILABILITY OF ER	26478	15536
	(INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL)		
	SURPLUS(+)/DEFICIT(-)	2370	2931
	SURPLUS(+)/DEFICIT(-) (In Case of CPP Drawal for Odisha)	1855	2418