AGENDA

FOR

223RD OCC MEETING

Time of meeting: 10:30 Hrs.

Date of meeting: 28th February, 2025 (Friday)

Venue: NERPC Conference Hall, Shillong

Contents

NORTH EASTERN REGIONAL POWER COMMITTEE

AGENDA FOR 223RD OCC MEETING TO BE HELD ON 28.02.2025 (FRIDAY) AT 10:30 HRS

1. PART-A: CONFIRMATION OF MINUTES

1.1. Confirmation of Minutes of 222nd Meeting of OCC Sub-Committee of NERPC

The minutes of 222nd meeting of OCC Sub-committee held on 17.01.2025 at NERLDC Conference Hall, Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2025/ 3794-3836 dated 27th January, 2025.

Sub-committee may confirm the minutes of the 222nd OCCM.

2. PART-B: ITEMS FOR DISCUSSION

AGENDA FROM NERPC

2.1. Outage planning

I. Generation Planning (ongoing and planned outages)

a. Based on the reservoir level data provided by NEEPCO and NHPC, present day MU and projected number of days of operation are tabulated below -

Plants	Reservoir Level in meters (as on 15/01/2025)	MU Content	Present DC (MU)	No of days as per current Generation
Khandong + Khandong STG II	719.8	26.5	0.395	67
Kopili	608	89	1.21	74
Doyang	314.8	12	0.123	95
Loktak	767.66	71.75	2.49	28

The outage of generating stations may be approved considering the present water levels in reservoirs.

b. CEA has approved the generation outage plan for FY 2025-26. The outage plan for NER is attached as **annexure 2.1**. All the utilities may take note of it and in case of any modification from the Approved Planned Outages, the same may be finalized in consultation with GM Division.

c. The Annual Shutdown of Palatana Block-2 planned for FY 25-26 in June 2025, please note that the HGPI of Gas Turbine #2, the medium inspection of Steam Turbine Generator #2 and Gas Turbine Generator #2, and the minor inspection of Steam Turbine #2 are scheduled to begin on 25th June 2025, lasting for 21 days. Forum deliberate upon it and all the beneficiaries may take note of it

II. Outage Planning of Transmission elements

As per the Outage planning procedure of NER, the monthly planned outages have to be discussed in the monthly outage planning meeting or OCC meeting. Also, according to the procedure, the planned outages approved in the OCC forum has to be reconfirmed by the availing utilities on 10:00hrs.

of D-4 to 12:00 hrs. of D-3) to NERLDC in order to either avail the approved shutdown or cancel it.

If an outage is to be availed on say 10th of the month, the shutdown availing agency would reconfirm to NERLDC between 10 hrs. of 6th of the month to 12:00 hrs. of 7th of the month. This practice is necessary to ensure optimal capacity utilization and the time required for associated system study/coordination by/amongst RLDC/NLDC.

Subsequently NER stakeholders have provided shutdown request for transmission elements for the month of March 2025.

Sub-committee may deliberate upon the planned shutdowns for the month of March'25.

AGENDA FROM NERLDC

2.2. Operational Performance and Grid discipline during December 2024

NERLDC may present the Operational Performance and Grid Discipline Report for the month of February 2025.

Sub-committee may deliberate.

2.3. 12th Basic Level Certification Examination for Power System Operators

As per the CEA's Statutory Guidelines for Training and Certification of Load Dispatchers, it is mandatory for all employees working in the Control Room to hold a valid Basic Level Power System Operation Certification.

In this regard, NPTI (PSTI), Bangalore, will conduct the 12th Basic Level Certification Examination for Power System Operators on March 30, 2025, from 09:00 to 11:30 hours at various locations across the country.

This is for general information to all Power System Operators of NER to take the Basic Level Certification Examination.

Sub-committee may deliberate.

2.4. Mock Black Start of Units in compliance with IEGC

As per IEGC Clause 34 (3), The user shall carry out 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.

Accordingly, Mock Black Start of the following generating plants where conducted for the FY 2024-25:

Sl. No.	**Name of Power station**	**Date of Mock exercise**
1	AGBPS GTG 4	14-05-2024
2	Kopili Unit 1, 3 & 4	30-05-2024 (U 1) & 05-06-2024 (U 3 & 4)
3	AgGBPS GTG 2	11-09-2024

All utilities are requested to submit the latest status of planning related to mock black-start trials of ***all units*** that are pending or yet to be conducted and to complete these activities within FY 2024-25 to ensure compliance with IEGC.

Mock Black Start of the following generating plant are pending:

Sl. No.	**Name of Power station**	**Last date of Mock exercise**	**Expected date of Mock exercise**
1	Doyang HEP	12-05-2023	Feb/March'25
2	Khangdong Stg-2 HEP	-	Feb/March'25
3	Kameng HEP	-	Feb/March'25
4	Loktak HEP	31-07-2023	Feb/March'25
5	Pare HEP	10-01-2024	Feb/March'25

6	Panyor HEP	30-05-2023	Feb/March'25
7	Turial HEP	-	Feb/March'25

Sub-committee may deliberate

2.5. Sharing of Methodology of Day-Ahead/ week ahead/ Month ahead Demand Forecasting

As per deliberation in Agenda Item 2.4 of 222nd OCC meeting held on 17th January 2025, all the NER SLDC's were requested to review the respective methodology of the states for demand forecasting in Day-Ahead/ week ahead/ Month ahead Demand Forecasting horizon.

In view of the above, it is requested to accept the draft methodology. Further, proper analysis of the methodologies is requested for a more reliable demand forecast. The relevant methodology is attached in **Annexure 2.5**. A handholding session will also be organized to help increase familiarity with the forecasting methodologies.

Sub-committee may deliberate.

2.6. Urgent Review of Online Element Transfer at PLHPS

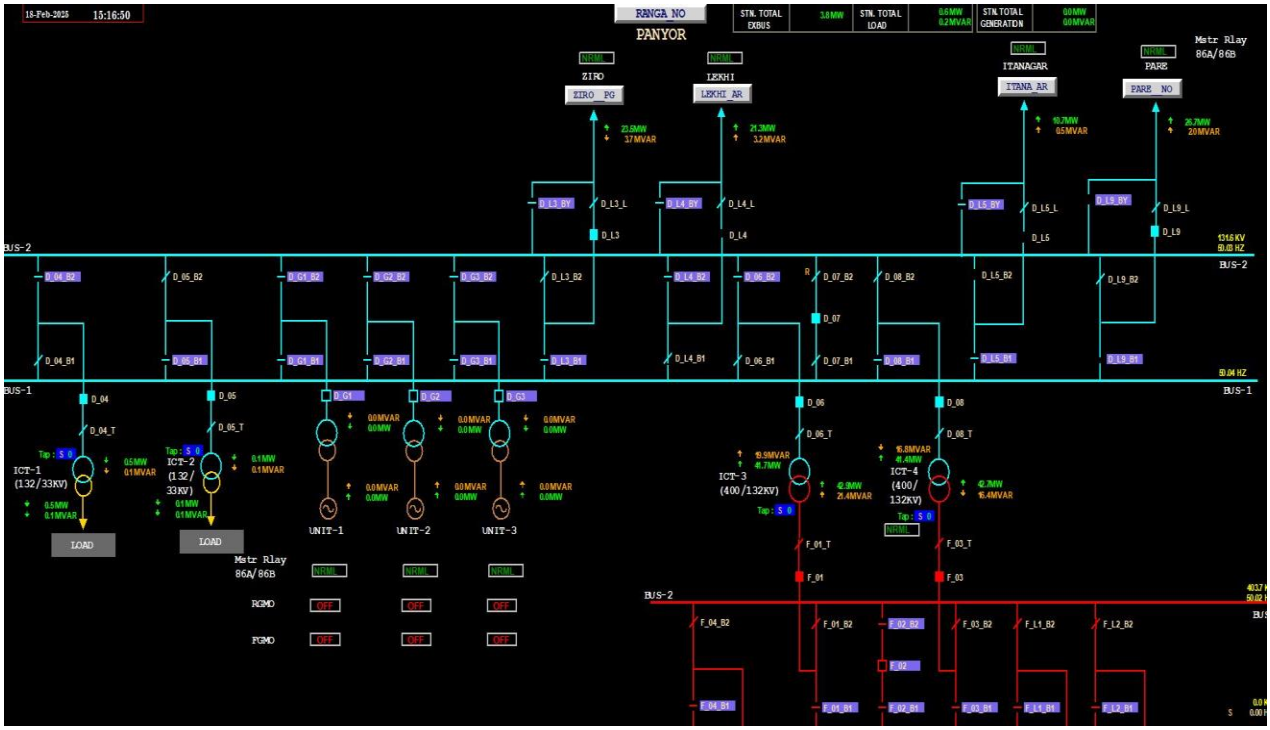
The Bus Scheme of PLHPS at the 132 kV level is a Double Main scheme, as confirmed via email. In this type of bus arrangement, the online transfer of elements from one bus to another can be performed seamlessly without any interruption in power flow.

As per the decision of the previous OCC forum, NERLDC requested PLHPS to transfer of an element to another bus on January 28, 2025, to facilitate the testing and verification of the healthiness of the non-energized element. However, in response to this request, Panyor NEEPCO stated that the existing scheme of PLHPS does not permit the online switching of isolators and that such an operation has never been carried out since the commissioning of the station.

This issue has already been raised with the NEEPCO team, highlighting that online bus transfers of elements are being successfully performed at multiple stations within the NER Grid, including AgGBPS, which is also owned by NEEPCO. However, PLHEP executives have consistently denied such operations, citing that they have never been practiced at their station.

It is important to note that with the commissioning of the 132 kV Roing-Chapakhowa D/C line and the increasing industrial load in the Pasighat area, the 132 kV Panyor-Ziro-Daporijo-Basar-Along-Pasighat-Roing-Chapakhowa link has become vital for Arunachal Pradesh and Assam power systems.

Given the importance of ensuring system reliability, a review of the non-transfer of elements at PLHPS is strongly recommended. If online element transfers are indeed not feasible under the current setup, experienced personnel should be consulted to explore possible solutions and address the issue effectively.



2.7. Submission of Dynamic Model for ±800 kV MTDC Agra-BNC-Alipurduar

As you are aware, GRID-INDIA is responsible for ensuring the secure and reliable operation of the Indian power system. A critical aspect of this responsibility involves conducting system studies and power system stability simulations to proactively implement measures for grid security.

In this regard, the submission of the dynamic model for the ±800 kV Agra-BNC-Alipurduar HVDC MTDC has already been communicated by NLDC, GRID -INDIA. Letter enclosed in **Annexure 2.7**.

However, we have not yet received the required dynamic model. ***This data is crucial for islanding formation studies, especially considering that the ±800 kV MTDC Agra-BNC-Alipurduar operates in frequency control mode.***

We kindly request you to submit the model at the earliest to facilitate these studies effectively.

2.8. Issues Identified During Recent Isolator Shifting activity

During the recent isolator shifting activities following measure issues were identified

1. Hotspots were detected at the 132 kV SM Nagar Substation and 132 kV PK Bari Substation after shifting the element from one bus to another. Due to this, the utility was advised to revert to the original configuration. The activity was carried out on 10th January 2025.
2. During bus shifting at 220 kV Balipara station, it was noted that the shifting of the 220 kV Balipara-Sonabil Line-2 was not completed. This was due to an alignment issue with the 220 kV Bus-1 Isolator. The activity took place on 18th December 2024.
3. Additionally, Power Grid has expressed issues to proceed with the shifting at multiple substations: PGCIL may clarify the reason.

Sub-committee may deliberate.

2.9. Status Update on Upcoming Elements and Their Impact on the NER Grid

Multiple elements have been approved by CTU and CEA for integration into the NER Grid based on future system studies. These additions are expected to enhance the overall reliability and stability of the grid.

A detailed list of these elements has been compiled in the table below. We request all utilities to provide the current status and estimated targets of these elements. Timely updates and completion of the project will help ensure a smooth and efficient integration process, contributing to the strengthening of overall NER Grid.

Sl. No.	Name of elements	State/States	Impact
	400 kV elements		
1	LILO of one D/c (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400kV (Twin Lapwing) 2xD/c lines at Gogamukh S/s	Assam	This will significantly improve the power transmission capability of the Assam and Arunachal Pradesh (AP) systems. Arunachal Pradesh will benefit from additional connectivity via the Gogamukh side, ensuring a more reliable power supply to the southeastern part of its network. This development is expected to result in an approximately 80 MW increase in the Total

2	1. Establishment of Gogamukh 400/220/132 kV substation 2. 400/220kV, 2x500MVA ICTs alongwith associated ICT bays at both levels 3. 220/132kV, 2x200MVA ICTs alongwith associated ICT bays at both levels 4. 420kV, 2x125MVAr bus reactor along with associated bays	Assam	Transfer Capability (TTC) of AP and Assam system will improve.
3	Installation of a new 420 kV, 1x125 MVAr bus reactor at Bongaigaon (POWERGRID) S/s in one of the vacated bays after decommissioning of above mention 420kV, 2x50MVAr bus reactors	Assam	around 3 kV Voltage change observed at Bongaigaon
4	One of the existing 2x80 MVAr bus reactors (presently installed in parallel in same bay) may be installed at Bongaigaon (POWERGRID) S/s in other vacated bay after decommissioning of above mentioned 420 kV, 2x50 MVAr bus reactors	Assam	Smooth switching of Reactors without any interupting any elements
5	Decommissioning of existing 420kV, 50MVAr (bus reactor-1) and installation of new 420kV, 125MVAr bus reactor	Assam	around 3 kV Voltage change observed at Bongaigaon

	in its place along with replacement of associated main and tie bay equipment at Balipara (POWERGRID) S/s.		
6	Installation of new 420 kV, 1x125 MVAr, 3-Ph Variable Shunt Reactor (VSR) having variable range from 63MVAr to 125MVAr (with at least 25 tap positions) along with associated GIS bay at Misa (POWERGRID) S/s	Assam	around 3-kV Voltage change observed at Misa
7	Establishment of new 400kV switching station (to be upgraded to 400/220kV level in future) at Bokajan in Assam	Assam	Bokajan S/S is a pooling station for 750 MW solar Project developed by AEGCL
8	LILO of both circuits of Misa (POWERGRID) – New Mariani (POWERGRID) 400kV D/c line at Bokajan	Assam	Bokajan S/S is a pooling station for 750 MW solar Project developed by AEGCL
9	Shifting of Palatana – Surajmaninagar (TSECL) 400 kV D/c line (operated at 132 kV) to the 400/132 kV ISTS S/s at Surajmaninagar so as to form Palatana – Surajmaninagar (ISTS) 400 kV D/c line and its operation at 400 kV (24 ckm)	Tripura	Improve the reliability of Palatana generation
10	LILO of Palatana – Surajmaninagar (ISTS) 400 kV D/c line at 400/132 kV	Tripura	Improve the reliability of Palatana generation

	Surajmaninagar (TSECL) S/s along with associated 4 no. 400kV linebays (12 ckm) - In matching timeframe of upgradation of 400/132kV Surajmaninagar (TSECL) substation		
11	LILO of both circuits of Bongaigaon – Balipara 400kV D/c (Twin Moose) line at Rangia	Assam	Around 200 MW increase in TTC of Assam
12	LILO of Silchar (PG) – Byrnihat (MePTCL) 400kV S/c line at Sonapur	Assam	Around 150 MW increase in TTC of Assam
	220 kV Elements		
1	Kathalguri (NEEPCO) – Namsai (POWERGRID) 220kV D/c line (150ckm)	Assam & AP	This will significantly improve the reliability of Assam and Arunachal Pradesh (AP) systems.
2	Bihpuria – Gogamukh 220kV D/c line (line to be implemented by AEGCL)	Assam	Around 60 MW increase in TTC.ATC of Assam. 10
3	Rowta (New)-Rangia (New) 220kV D/c Line (Single zebra)-80 km	Assam	Reliable power supply to Rowta, Depota and Ghoramaris Area of Assam powers system
4	LILO of both ckt of Alipurduar (PGCIL) - Bongaigaon (PGCIL) D/C line at Gossaigaon(AEGCLNew)	Assam	Minimum 100 MW increase in TTC of Assam. The Assam can draw more power from Agimoni side based on the development of downstream network.

5	220 kV New Kohima-Mokokchung (PG) S/C via Workha	Nagaland	
6	LILO of one ckt of Misa-Dimapur 220kV D/c at Tsitrongse (60km loop-in and 60km loopout)	Nagaland	Significantly improve the reliability of Dimapur of Nagaland systems. Minimum 80 MW increase in TTC/ATC of Nagaland. The Improvement in drawl capbility will depends on downstream devlopment.
7	Upgradation of 220/132 kV ICT at Rangia from 100 MVA to 220 MVA	Assam	This will improve the drawl capability of Rangia Area of Assaam Power system.
	132 kV elements		
1	Stringing of 2nd circuit of Pasighat (Arunachal Pradesh) – Roing (POWERGRID) 132kV S/c on D/c line with ACSR Panther conductor- 103km	AP	Significantly improve the reliability of Arunachal Pradesh (AP) systems.20-25Mincrease in TTC/ATC of Arunachal Pradesh.
2	Stringing of 2nd circuit of Roing (POWERGRID) – Tezu (POWERGRID) 132kV S/c on D/c line with ACSR Panther conductor- 73km	AP	
3	Stringing of 2nd circuit of Tezu (POWERGRID) – Namsai (POWERGRID) 132kV S/c on D/c line with ACSR Panther conductor- 95.24km	AP	

4	Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV ACSR Zebra D/c line	Assam & AP	Significantly improve the reliability of Arunachal Pradesh (AP) systems.80 MW increase in TTC/ATC of Arunachal Pradesh.
5	Upgradation of existing 132kV Namsai (POWERGRID) S/s to 220kV (with 220kV side as GIS) with 2x160 MVA ICTs	AP	
6	Reconductoring of Khandong (NEEPCO) – Halflong (POWERGRID) 132 kV S/c line [excluding the LILO portion of this line at Umrangshu (AEGCL) S/s, which is owned by AEGCL] with Single HTLS conductor of ampacity 600A (at nominal voltage level) (63.06km)	Assam	Improvement in reliability of Assam & Meghalaya po
7	Reconductoring of Halflong (POWERGRID) – Jiribam (POWERGRID) 132kV S/c line with Single HTLS conductor of ampacity 600A (at nominal voltage level) (100.63km)	Assam	Improvement in reliability of Assam power system.
8	LILO of one ckt of North Lakhimpur – Dhemaji at 132kV Gogamukh (LILO to be implemented by AEGCL	Assam	Improvement in reliability and drawl cpability of Assam power system.
9	Reconductoring of Loktak (NHPC) – Imphal (POWERGRID) 132 kV S/c line	Manipur	Improvement in reliability of Manipur power system.

	with HTLS conductor with Ampacity of single HTLS as 800A (at nominal voltage) along with strengthening of associated structure in NHPC switchyard, if necessary. (36.60ckm)		
10	Replacement of existing CT of 600-400-200/1A at Loktak HEP end in Loktak – Imphal 132kV S/c line with rating commensurate with ampacity (800A) of HTLS conductor.	Manipur	Full capacity of 132 kV Imphal-Loktak can be utilised after reconuctoring of line with HTLS.
11	Upgradation of Single Main and Transfer Bus to Double Bus arrangement with GIS at 132kV Khliehriat (POWERGRID) switching station	Meghalaya	Improvement in reliability of Meghalaya power system.
12	Reconductoring of Melriat (GIS) (POWERGRID) – Zuangtui (Mizoram) 132 kV ACSR Panther S/c line with Single HTLS conductor of 900A (at nominal voltage level) (10.19ckm)	Mizoram	Improvement in reliability of Mizoram power system.
13	Reconductoring of ISTS portion of Dimapur (POWERGRID) – Dimapur (DoP, Nagaland) 132kV (ckt-2) ACSR Panther S/c line with	Nagaland	Significantly improve the reliability of Nagaland systems.80 MW increase in TTC/ATC of Nagaland.

	Single HTLS conductor of 800A – 0.335km		
14	Reconductoring of ISTS portion of Dimapur (POWERGRID) – Kohima (DoP, Nagaland) 132kV ACSR Panther S/c line with Single HTLS conductor of 800A – 0.335km.	Nagaland	
15	132 kV Rabindranagar-Rokhia	Tripura	Significantly improve the reliability of Tripura systems.30 MW increase in TTC/ATC of Tripura.
16	132kV Nangalbibra (ISTS) – Nangalbibra (MePTCL) D/c	Meghalaya	
17	132 kV Monarchak-SM Nagar D/C	Tripura	Significantly improve the reliability of Tripura systems.30 MW increase in TTC/ATC of Tripura.
18	132 kV Balipara-Misamari D/C		Relieve congestion in 220 kV Balipara-Sonabil D/C. Improve drawl capbility of Assam power system.
19	Reconductoring of TPTL portion of 132 kV SM Nagar (ISTS) – SM Nagar (TPTL) D/C line with HTLS conductor of		Significantly improve the reliability of Tripura

Sub-committee may deliberate

2.10. Operational Planning and Resource Adequacy for March 2025

The Operational Planning and Resource Adequacy assessment for March 2025 is attached for review and comments.

Action Required:

- All utilities are requested to review the assessment and provide any necessary inputs or observations.
- Kindly share your feedback at the earliest to ensure comprehensive planning.

Sub-committee may deliberate

2.11. Procedure for Infirm Power Injection by Generators before COD

NERLDC presented the draft procedure for injection of infirm power by generators before COD in 221st OCC meeting. NEEPCO and NTPC opined that submission of intimation for injection of infirm power before COD 30 days prior is difficult subject to unexpected grid scenarios. The forum opined that generator can submit a tentative intimation 30 days prior and the final intimation to be shared in requisite format 15 days advance. The same has been included in the procedure (attached as **Annexure-2.11**).

The forum also advised all the stake holders to go through the draft procedure prepared by NERLDC and share the comments (if any) within 2 weeks. However, no comments have been received from NER stakeholders.

The procedure for injection of infirm power by generators before COD may be approved by the Forum.

AGENDA FROM POWERGRID

2.12. Requirement of outage for 400 KV D/C SILCHAR- P.K.BARI transmission line for diversion works due to road widening of KUMARGHAT-KAILASHAHAR road by NHIDCL

The span between tower location no 329 (DA+0) to 333 (DD+0) is to be diverted due to Kailashahar-Kumarghat road widening by M/S NHIDCL. The said diversion involves removing of 03 nos. of existing towers [Ext. Loc. 330 (DD+0), 331 (DD+0) & 332 (DC+0)] and installing of 05 nos of new towers [AP-

1 (DD+6), AP-2 (DD+6), AP-3 (DD+0), AP-4 (DD+9) and AP-5 (DD+0)]. The details of route drawing enclosed as **Annexure-2.12**.

The foundation work of 02 nos. of new towers AP-1 & AP-2 have already been completed and other 02 nos. of towers namely AP-3 & AP-4 are in advance stage of completion and subsequently, AP-5 will be completed. In the meantime, the erection gang has already been deployed and erection of tower loc. AP-2 is in progress. Further, it is expected to complete the erection of AP-3 & AP-4 by Feb'2025 and the stringing of the span from AP-2 to AP-3 & AP-3 to AP-4 will be completed by 06/03/2025.

It may be mentioned that the new tower AP-1 & AP-5 has been spotted directly below the existing line and as such, the erection cannot be completed without shutdown of both the circuits. Therefore, to carry out the erection of new tower AP-1 & AP-5 and further, the de-stringing of existing line from Loc. 329 to 333 and stringing from loc. 329 to AP-1 & AP-5 to Ext. Loc 333 requires **continuous shutdown of both the circuits for 19 days from 07/03/2025 to 25/03/2025**.

Further, the possibility of shifting one circuit on ERS near ext. Loc 332 (DC+0) & 329 (DA+0) for facilitating the erection of AP-1 & AP-5 found not feasible due to the presence of habitant area nearby both the tower and presence of a school near Loc. 329. Moreover, it may also be mentioned that severe ROW was prevailing in this area and the work of diversion has been delayed for more than a year now and the current progress is only after the intervention from the highest level of state administration on disbursement of compensation of payment in advance.

2.13. Requirement of outage for 400 KV D/C SILCHAR- P.K.BARI transmission line for balance work of vulnerable tower loc. 351 & 353

It may be mentioned that the tower loc. 353 & loc. 351 became vulnerable due to nearby river Manu and accordingly, 02 nos. of pile foundations were already constructed near Ext. Loc. 353 & Ext. Loc. 351.

On Feb'2024, 01(one) no. ERS was installed near loc. 353 and the erection of new-353 on pile foundation was completed, however, the balance work of erection at loc. 351 could not be carried out for unavailability of shutdown and moreover the ERS near loc. 351 could not be installed due the existence of habitant area in one side and the river on the other. As such, the **proposed continuous shutdown of both the circuits for 19 days from 07/03/2025 to 25/03/2025** will also be availed for erection of new-351(DD+3) on pile foundation including de-stringing of line section from ext. 350 to 354 and stringing from ext. 350 to ext. 354 through new-351 & new-353 on pile foundation and dismantling of ext. loc. 351 & ext. 353 respectively. The details of route drawing enclosed as **Annexure-2.13**.

In view of the above, the shutdown of both the circuits of 400 KV D/C Silchar-P K Bari T/L is required for 19 days in the month of March' 2025 w.e.f 07/03/2025 to 25/03/2025.

Placed for information of Sub-committee

2.14. Replacement of existing Busbar Protection at NEEPCO, Kathalguri under NERSS-XV Project

Under scope of ongoing North Eastern Region Strengthening Scheme-XV (Kathalguri-Namsai Transmission System), replacement of existing Static type Bus bar protection Relay with numerical Bus Bar protection Relay for existing bays and new bays is envisaged.

Accordingly, the replacement work is targeted for commencement w.e.f. 01/03/2025.

The new Busbar Protection shall cover existing 17 No. Bays & 2 New GIS Bays at NEEPCO Kathalguri end. For facilitating the replacement work, shutdown of the associated elements/ feeders shall be necessitated as per requirement of OEM in a phased manner. The entire activity is envisaged for completion by 25.03.2025.

Considering requirement of isolating the existing Bus Bar protection system & thereafter integration of multiple existing elements to the new Bus Bar

Protection, POWERGRID, in consultation with OEM & NEEPCO shall prepare a detailed plan to optimize shutdown & present the same shortly for appraisal of NERPC, NERLDC and constituent State Utility. Subsequently, approval for shutdown is proposed to be sought on D-5/ D-3 basis.

Placed for information of Sub-committee

2.15. Regarding objection by NEEPCO in Trial Operation of 132 kV Khliehriat – Khandong-1 & Khandong-Kopili-1 TL after upgradation to HTLS along with CT replacement at 132 kV Khliehriat (PG) & Khandong (NEEPCO)

For the above agenda item was discussed in 213th OCCM and subcommittee was deliberated to drop the agenda will be taken afterwards. The details of agenda as given below

First Time charging of following feeders were carried out after upgradation to HTLS conductors

1. 132kV Khliehriat – Khandong-1 TL along with CT replacement at 132kV Khliehriat (PG) on 30.03.2024.
2. 132kV Khandong-Kopili-1 TL along without CT replacement at 132kV Khandong (NEEPCO) on 09.05.2024

After completion of first time charging, the TOC application was applied for the completed portion of work, However, NEEPCO has raised objection for issuance of Trial Operation certificate from NERLDC vide email dtd 16.04.2024 by stating that, CTs at Khandong end (NEEPCO)) has not yet been replaced by POWERGRID and it has already informed to the NERPC forum that before June'24, readiness of those lines will not be possible.

It is here by informed to forum that, Out of 9nos CTs, installation of 6 No's of CTs for Khliehriat-1 and Kopili-1 Bays were completed on 28.09.2024. Further balance 3nos CTs installation for Bus Coupler Bay was completed on 11.09.2024.

Approval for energization of the installed 9 Nos of CT's was given by RIO CEA vide Ref No: RIO/NER/PG/KHANDONG-295/615 Dated 04.12.2024.

In view of the above, as per project scope of work under NERSS-XIX and as per Minutes of 11th CMETS NER dtd 29/09/2022 page no.08 , the scope of work in *132 kV Khliehriat – Khandong-1 & Khandong-Kopili-1 TL completed and requested to allow for the issuance of Trial operation certificate from NERLDC.*

2.16. Outage of 20 MVAr Bus Reactor at Aizawl S/s reg

As per 200th OCCM agenda point C.14, Natural Ester premium Grade oil supplied by the by M/s APAR Industries instead of Transformer Mineral Oil has been used with consent of OEM of the 20MVAR Bus Reactor (25 Years old equipment) at Aizwal SS on Pilot project basis first time in India.

During recent oil parameter testing, the water content (PPM) increasing gradually in the above reactor and same was reached from 20PPM to 90PPM and higher Winding Tandelat values on Testing

Further same was referred to the M/S APAR Industries and the OEM (M/s APAR) has recommended to carry out the following on urgent basis as a part of the system improvement:

- Oil Sample shall be taken in presence of M/s Apar Industries before Hot oil circulation and same to be sent to CIOTL, Hyderabad.
- LV Tests in presence of M/s Apar Industries representative
- 3-4 Cycles of Hot Oil Circulation in presence of M/s Apar Industries representative.
- Oil Sample after Hot oil circulation and same to be sent to CIOTL, Hyderabad.
- After achieving the water content within permissible limits <20PPM, LV Tests to be repeated.
- Charging of the Reactor.

In view of the above and for carrying out above works for system improvement & prevent unwanted damage in the equipment which may lead to prolonged outage, the shutdown of 20MVAR Bus Reactor was taken on 30.01.25 on

emergency basis and requires the shutdown of 20MVAR Bus Reactor at Aizwal Ss up to 20.02.2025 18:00Hrs.

Placed for information of Sub-committee

AGENDA FROM NETC

2.17. NERPC Sub-group Report on the vulnerable tower locations of 400 kV D/C Palatana-Silchar Transmission Line of NETC

NERPC Sub-group Report on the vulnerable tower locations of 400 kV D/C Palatana-Silchar Transmission Line of NETC is hereby presented for the consideration of the forum (**Annexure 2.17**). This report was prepared based on the site visit of the sub-group at Agartala on dated 20.01.2025 & 21.01.2025 as per recommendation of the 218th OCCM.

Sub-committee may deliberate

AGENDA FROM DOP AR. PRADESH

2.18. Reconductoring of 132 kV Transmission Lines with HTLS Panther

Reconductoring of 132 kV Transmission Lines with HTLS Panther (900 A) Conductor Transmission Lines Identified for Reconductoring:

a) 132 kV Panyor Lower HPS – Ziro S/C Transmission Line (PGCIL-ISTS)

b) 132 kV Ziro – Daporijo S/C Transmission Line (STS)

c) 132 kV Daporijo – Basar S/C Transmission Line (STS)

d) 132 kV Basar – Aalo S/C Transmission Line (STS)

e) 132 kV Aalo – Pasighat S/C Transmission Line (STS)

The 132 kV Panyor Lower – Pasighat Transmission Network forms the backbone of power supply to the central and eastern districts of Arunachal Pradesh. The existing single circuit transmission system, constructed in 2005, shall be inadequate to cater the anticipated increase in power demand

at these nodes, particularly due to upcoming construction power requirements at Daporijo and Aalo. With no upcoming alternate feeds at Daporijo and Aalo, the transmission systems connected to these nodes must be strengthened to effectively meet the increasing demand and ensure reliable power supply.

The Central Electricity Authority (CEA), in its report "Transmission System Requirement of North Eastern States and Sikkim by the Year 2031-32" (published in October 2024), has acknowledged the criticality of this network and specifically recommended the reconductoring of the Panyor Lower – Ziro and Ziro – Daporijo lines with HTLS Panther conductor to accommodate the projected load growth. To prevent transmission bottlenecks, it is essential that the reconductoring of the entire corridor from Panyor Lower to Pasighat be undertaken simultaneously, enabling a comprehensive and reliable strengthening of the network.

The proposed reconductoring will mitigate overloading risks, improve thermal stability, and enhance network resilience, ensuring a more reliable power supply to the region. Accordingly, the proposal for reconductoring of the identified transmission lines is submitted for approval by the forum/RPC.

Sub-committee may deliberate

2.19. Regional Capacity Building enhancements through overseas trainings under the aegis of NERPC with Central/DONER funding.

With rapid advancements in power sector technologies and increasing complexity in grid management, continuous skill development is essential to ensure efficient operations and system reliability. As significant power infrastructure is being developed under the Government of India-funded NERSIP and CSST&DS schemes, it is imperative to equip the workforce with the expertise required for the seamless integration, operation, and maintenance of these assets. Exposure to global best practices and emerging technologies through overseas training programs will further strengthen regional capacity, enabling professionals to adopt advanced techniques in transmission, distribution, and system planning. To support this initiative,

training programs may be proposed under the aegis of NERPC, and request Ministry of Power or the Ministry of DoNER, Govt. of India, for funding the scheme. In case of extreme reluctance of the Govt. of India we may propose for 50:50 funding arrangement between the Centre/DONER and the NER States, to ensure a well-prepared technical workforce to meet the region's evolving power sector challenges.

Sub-committee may deliberate

3. PART-C: METERING ITEMS

3.1. Procurement of SEMs for future requirements:

92 no. of SEMs may be procured to take care of future requirement (upto FY 2027) and to maintain spares. Estimation of the requirements is given below:
As per records received from different meetings (schemes approved in CMETS-NER, OCCMs, NCT, NERPC-TP/ NERSCT/ SCPSP-NER, NERPSIP, CTADS):

Location/STATE	**Element name**	**No of Meters**
Arunachal Pradesh	132 kV Pasighat - Roing 2	2
Arunachal Pradesh	132 kV Roing - Tezu 2	2
Arunachal Pradesh	132 kV Tezu - Namsai 2	2
Arunachal Pradesh	1x50MVA, 132/33kV (3rd) ICT at Namsai (POWERGRID) S/s	2
Arunachal Pradesh	132 kV Namsai - Miao	2
Arunachal Pradesh	132 kV Halaipani - Tezu	2
Arunachal Pradesh	132 kV Roing - Dambuk	2
Ngaland	New Kohima (TBCB) – New Kohima (Nagaland) 220kV D/c line	4
Meghalaya	Nangalbibra (MePTCL) end of Nangalbibra (ISTS) 132kV D/c	2
Assam	LILO of both circuits of Bongaigaon – Balipara 400kV D/c (Twin Moose) line at Rangia	4
Assam	Khumtai (AEGCL) – Biswanath Chariali (PG) 400kV D/c line	4

Assam	LILO of Silchar (PG) – Byrnihat (MePTCL) 400kV S/c line at Sonapur	2
Tripura	LILO of both circuits of Surajmaninagar (ISTS) – Palatana 400kV D/c line at Surajmaninagar (TPTL)	3
Nagaland	LILO of one ckt of Misa-Dimapur 220kV D/c at Zhadima	2
Arunachal Pradesh	400 kV Lower Subhansiri end of BNC D/C (2 lines)	4
Assam	LILO of one D/c line (ckt-1 & ckt-2 of line-1) of Lower Subansiri – Biswanath Chariali 400kV 2xD/c at Gogamukh	4
Assam/ Arunachal Pradesh	Gogamukh (ISTS) – Gerukamukh (Arunachal Pradesh) 132kV ACSR Zebra D/c line	4
Assam	400/220kV, 2x500MVA ICTs at Gogamukh	4
Assam	220/132kV, 2x200MVA ICTs at Gogamukh	4
Assam	Bihupuria (AEGCL) – Gogamukh (ISTS) 220kV D/c line	4
Assam	LILO of one ckt of North Lakhimpur (AEGCL) – Dhemaji (AEGCL) 132kV new D/c at Gogamukh	8
Assam	LILO of both circuits of Misa (POWERGRID) – New Mariani (POWERGRID) 400kV D/c line at Bokajan	4
Arunachal Pradesh	Lower Subansiri GTs	8
Arunachal Pradesh	Lower Subansiri ICTs	4
Arunachal Pradesh	Lower Subansiri STs	2
Assam	220 kV Salakati - Alipurduar D/C LILO at Gosaigaon	4
	Total	**89**

Location/STATE	OLD Locations and Elements having no meters:	
Tripura	PALATANA 3 METERS (400/132 kV ICT 2 HV & LV side, 400/132 kV ICT 1 LV Side)	**3**
Assam	BALIPARA 400/220KV(LV) ICT-1	**1**
Arunachal Pradesh	HV side of ICT 1 & 2 at Panyor Lower HEP	**2**
Arunachal Pradesh	LV SIDE OF 400/132KV KAMENG ICT-1	**1**
Assam	KHANDONG END OF 132KV KHLRT-1	**2**
Assam	KHANDONG END OF 132KV KOPILI-1	**2**
Assam	HV side of KHANDONG GTs	**2**
Arunachal Pradesh	132 kV Pasighat - Roing 1	**2**
Arunachal Pradesh	132 kV Roing - Tezu 1	**2**
Arunachal Pradesh	132 kV Tezu - Namsai 1	**2**
Arunachal Pradesh	132 kV Ziro - Daporijo	**2**
Arunachal Pradesh	132/33kV ICT at Ziro (PG)	**2**
Arunachal Pradesh	2x132/33 kV Ict at Roing	**4**
Arunachal Pradesh	2x132/33 kV Ict at Tezu	**4**
Arunachal Pradesh	2x132/33 kV Ict at Namsai	**4**
	Total	**35**

Meter Requirement	**124**
Spare (15%)	**19**
Total(with spare)	**143**

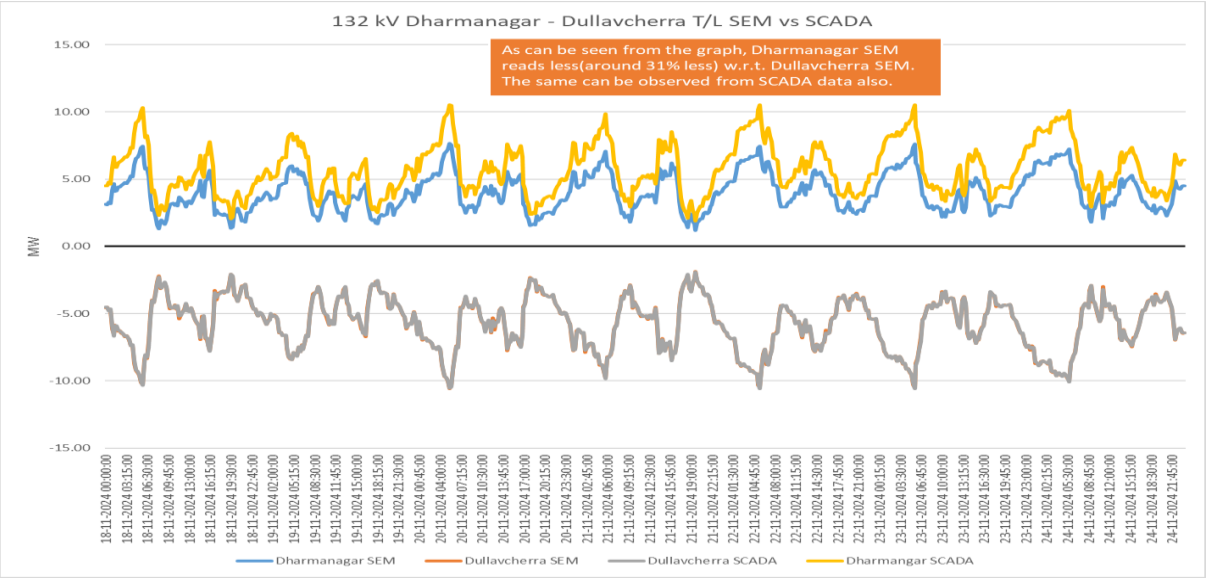
Existing Meters	**51**
New Meters Required	**92**

3.2. Issue in SEM data of 132 kV Dharmanagar end of Dullavcherra Feeder:

It has been observed that the data received from Dharmanagar end is erroneous and the same neither matches with SCADA data nor with data from Dullavcherra end. Several follow ups have been initiated regarding the matter with utility, however, matter is yet to be resolved.

It is also to be noted that since 222nd OCCM, data from Dharmanagar S/S has not been received by NERLDC from said substation. Issue with Vinplus Software had been mentioned by Tripura in the previous OCCM. Tripura is hereby requested to provide updates on the issue and also provide contact details of personnel stationed at Dharmanagar S/S for future communication.

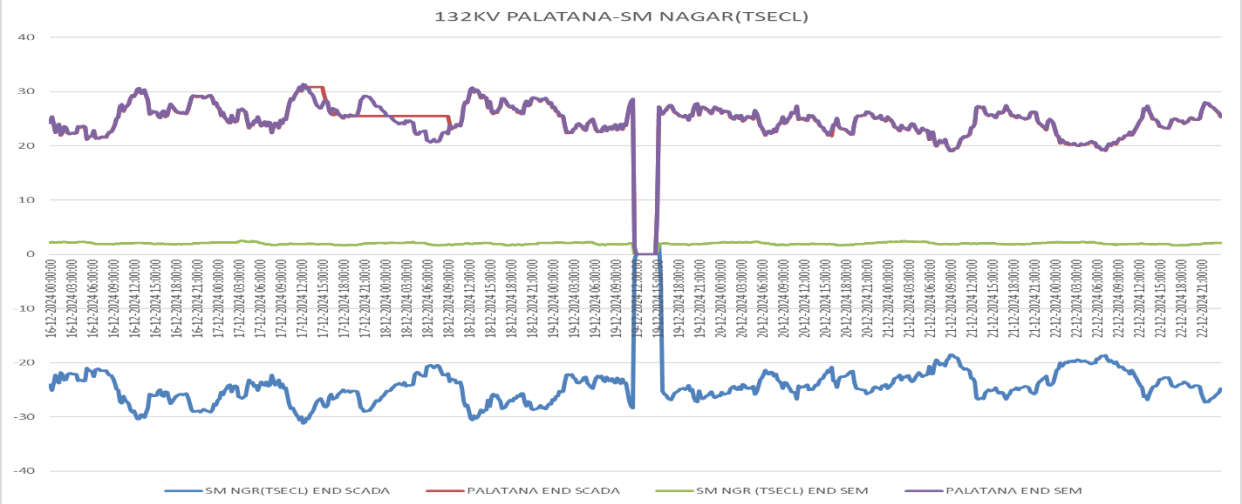
Forum may please Discuss.



3.3. Issue in SEM data of 132 kV SM Nagar (TSECL) end of Palatana Fdr. (400 kv T/L charged at 132 kV):

Weekly SEM data of 132 kV SM Nagar (TSECL) is essential for accounting of Tripura Drawal. Recently, Planned Shutdown was availed dated 02-12-2024 for Installation of ABT meter under SAMAST Project at SM Nagar end. On return of S/D, meter for SM Nagar end was reading close to zero (0). On intimation of the same to utility, S/D was availed again on 19-12-2024 to resolve the issue. However, the same could not be resolved. Tripura & POWERGRID may kindly look into the issue on priority basis.

In 222nd OCCM, forum advised Tripura to resolve the same by next OCCM. The same is yet to be resolved. Tripura may kindly update status.



3.4. Issue in receipt of data from 132 kV Tipaimukh S/S

Weekly SEM data from 132 kV Tipaimukh (Manipur) S/S is essential for accounting of Manipur Drawal. However, SEM data for said substation is not being received. On query, downloading data from DCD to laptop has been failing.

In 222nd OCCM, Manipur apprised the forum that the problem in downloading data from DCD
to laptop still persists. PGCIL agreed to help Manipur in resolving the issue.

Status of the same may be reviewed.

3.5. Issue in Receipt of Data from Luangmual S/S

Weekly SEM data from 132 kV Luangmual(Mizoram) Substation is important for accounting of Mizoram drawal. However, SEM data for said substation is not being received since 11/11/2024. Issue with licence of Vinplus Software in Designated laptop has been reported by the concerned Substation.

In 221st OCCM, forum advised Mizoram to take up the matter with L&T and resolve the issue by next OCCM.

In 222nd OCCM, Mizoram apprised the forum that the issue with licence of Vinplus Software in designated laptop has not been resolved yet and SLDC Mizoram is taking up the matter with M/s L&T. PGCIL also agreed to help Manipur in resolving the issue. Data is yet to be received from said Substation.

Mizoram may kindly update status.

3.6. Issue in Receipt of Data data from Udaipur S/S:

Weekly SEM data from 132 kV Udaipur(Tripura) Substation is not being received since replacement of old LnT Meter with Secure Make Meter on 23-12-2024(for 132 kV Udaipur end of Palatana T/L). In 222nd OCCM, the forum advised Tripura to resolve the issue by next OCC meeting. Data from the

replaced meter is yet to be received by NERLDC. Tripura may intimate present status of the same.

3.7. Receipt of SEM data from 132 kV Budhjungnagar, 132 kV Ambassa, 132 kV Dharmanagar, 132 kV PK Bari & 132 kV SM Nagar (TSECL) Substations:

As per 175th OCCM dated 18th Feb 2021 agenda D.12, Indigrid and Powergrid NERTS were given responsibility to collect and send SEM data on weekly basis for Tripura owned substations viz 132kV Ambassa S/s,132kV Budhjungnagar S/s, 132 kV PK Bari S/s and 132 kV SM Nagar S/s for the interim period, due to shortage of DCDs. The relevant extracts are furnished below

Quote:

"The forum noted that due to the existing shortage of DCDs, the same cannot be provided to Tripura for some time for new locations. This creates difficulty in getting SEM data from Budhjangnagar, Ambasa, PK Bari and SM Nagar. The Matter was discussed and it was decided that during the interim period Powergrid NERTS will provide readings from PK Bari and SM Nagar of Tripura and Sterlite will provide readings from Budhjangnagar and Ambassa of Tripura."

Unquote

As per IEGC 2023 Clause 49(12)(e) entity shall be responsible to send weekly meter data to RLDC. The relevant extracts are furnished below

Quote:

"Entities in whose premises the IEMs are installed shall be responsible for (i) monitoring the healthiness of the CT and PT inputs to the meters, (ii) taking

weekly meter readings for the seven day period ending on the preceding Sunday 2400 hrs and transmitting them to the RLDC by Tuesday noon, in case such readings have not been transmitted through automatic remote meter reading (AMR) facility (iii) monitoring and ensuring that the time drift of IEM is within the limits as specified in CEA Metering Regulations 2006 and (iv) promptly intimating the changes in CT and PT ratio to RLDC."

Unquote

In 221st OCCM, Tripura confirmed the receipt of 3 nos. of DCDs and that the same have been dispatched to Dharmanagar, Ambassa and SM Nagar(State) S/Ss. Tripura further intimated that the remaining works shall be completed by 21/12/2024 and the meters shall be reporting successfully from 23/12/24.

In 222nd OCCM, forum requested Tripura to resolve the issue by next OCC meeting.

However, data is yet to be received from concerned utilities on weekly basis.

Tripura may Update Status.

4. PART-D: ITEMS FOR UPDATE/FOLLOW-UP

4.1 Implementation/Review of Islanding schemes of NER:

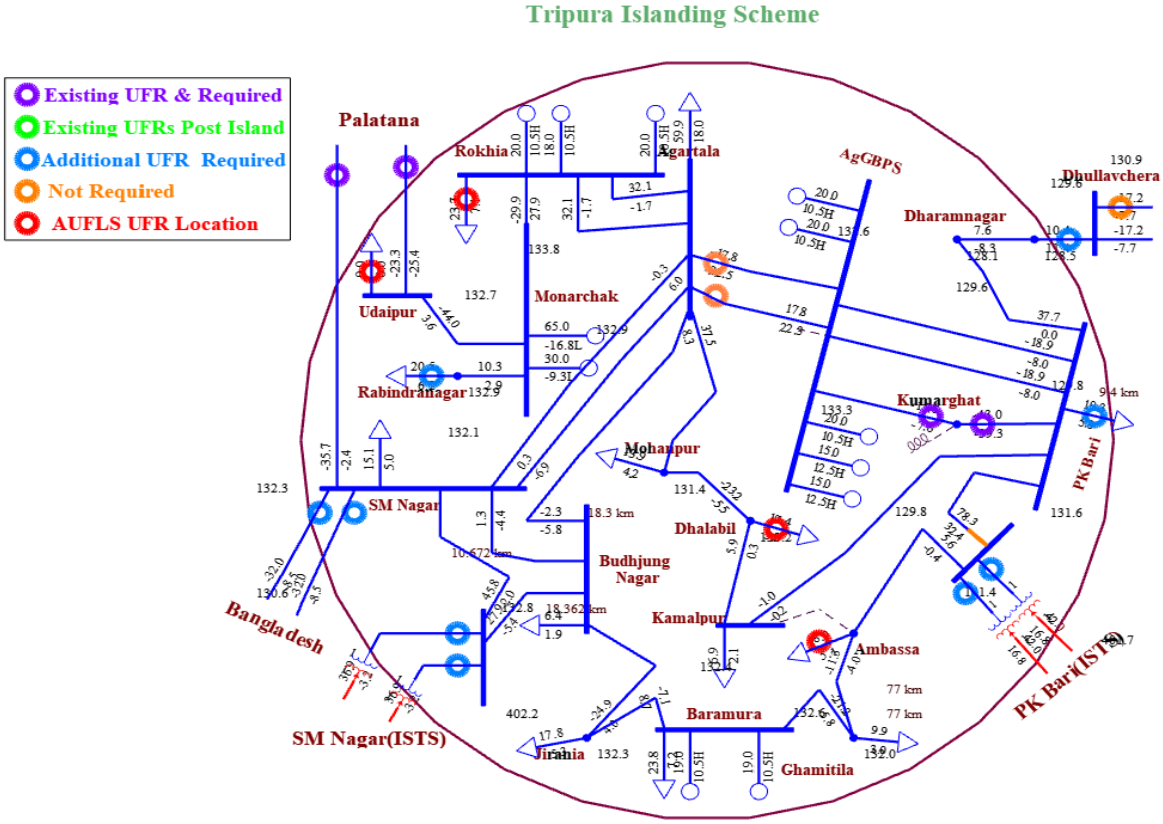
As per Clause 10 of the Central Electricity Authority (Grid Standards), Regulations, 2010: "Islanding Schemes- (1) The Regional Power Committees shall prepare Islanding schemes for separation of systems with a view to save healthy system from total collapse in case of grid disturbance. (2) The Entities shall ensure proper implementation of the Islanding Schemes". In this regard the Islanding schemes which are being planned/have been implemented in NER are mentioned below, along with the updates from previous OCCMs.

A. Guwahati Islanding Scheme

Assam updated that modified DPR has been sent to PSDF.

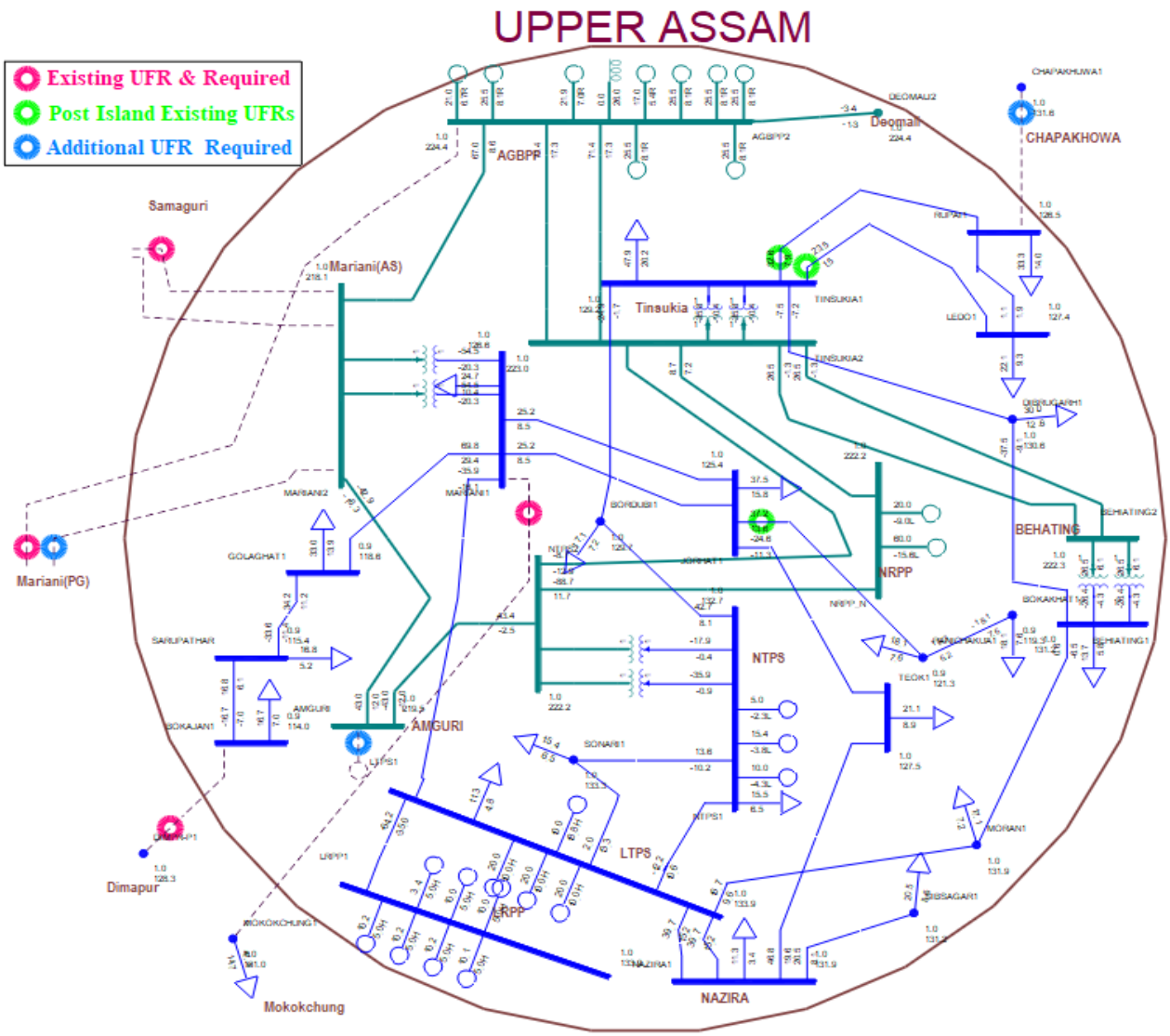
B. Tripura/Agartala Islanding Scheme

NERLDC apprised the forum that all the data has been received from Tripura. Dynamic study has been completed and Load-Generation study is under way.



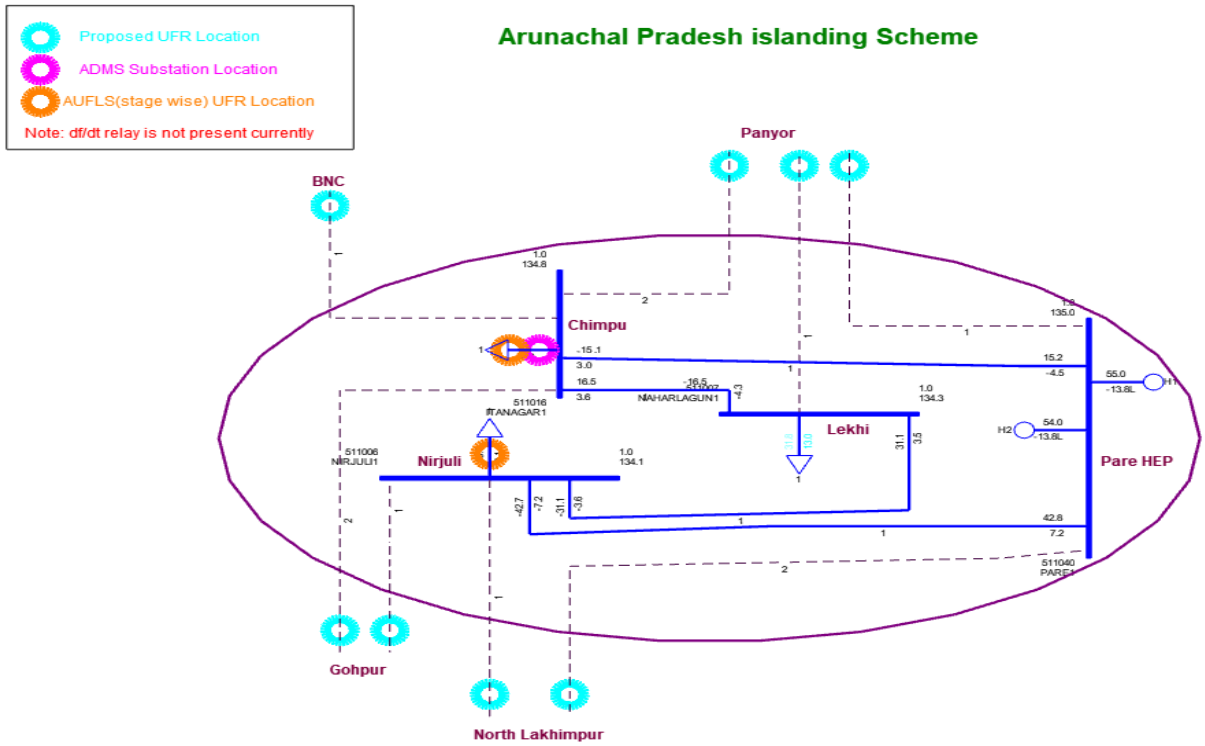
C. <u>Upper Assam Islanding Scheme</u>

NERLDC apprised the forum that dynamic study as well as Load-Generation study has been completed. However, NEEPCO is required to submit the UFR settings for 2 nos. of units of AGBPP. NEEPCO agreed to submit the information at the earliest. Assam may prepare the DPR post submission of data by NEEPCO.



D. <u>Itanagar Islanding Scheme</u>

NERLDC apprised the forum that all necessary study has been completed. Arunachal Pradesh may prepare the DPR for Itanagar Islanding Scheme.



For activation of Itanagar Islanding Scheme Activation. Following are the actions need to be taken as per the meeting whose status may be updated by utilities:

1. Regarding the UFR settings (48.2 Hz with a time delay of 300ms) at the locations detailed below the following updates have been made in 222nd OCC forum:

Sl. No	UFR Location	Implementing Agency	Status Update(as per 222nd OCC)
1	132 kV Panyor HEP-Pare HEP line at 132 kV Panyor HEP	NEEPCO	Completion by 17/01/25

2	132 kV Panyor HEP-Itanagar line at 132 kV Panyor HEP	NEEPCO	Completion by 17/01/25
3	132 kV Panyor HEP-Lekhi line at 132 kV Panyor HEP	NEEPCO	Completion by 17/01/25
4	132 kV Itanagar-BNC line at 132 kV BNC	PGCIL	Will be completed by this week.
5	132 kV Itanagar-Gohpur line at 132 kV Gohpur	ASSAM	Will be completed by first week of February-25.
6	132 kV Nirjuli-Gohpur line at 132 kV Gohpur	ASSAM	Will be completed by first week of February-25.
7	132 kV Nirjuli-North Lakhimpur line at 132 kV North Lakhimpur	MUML	Could not be discussed as representative of MUML was absent.
8	North Lakhimpur -	MUML	Could not be discussed as

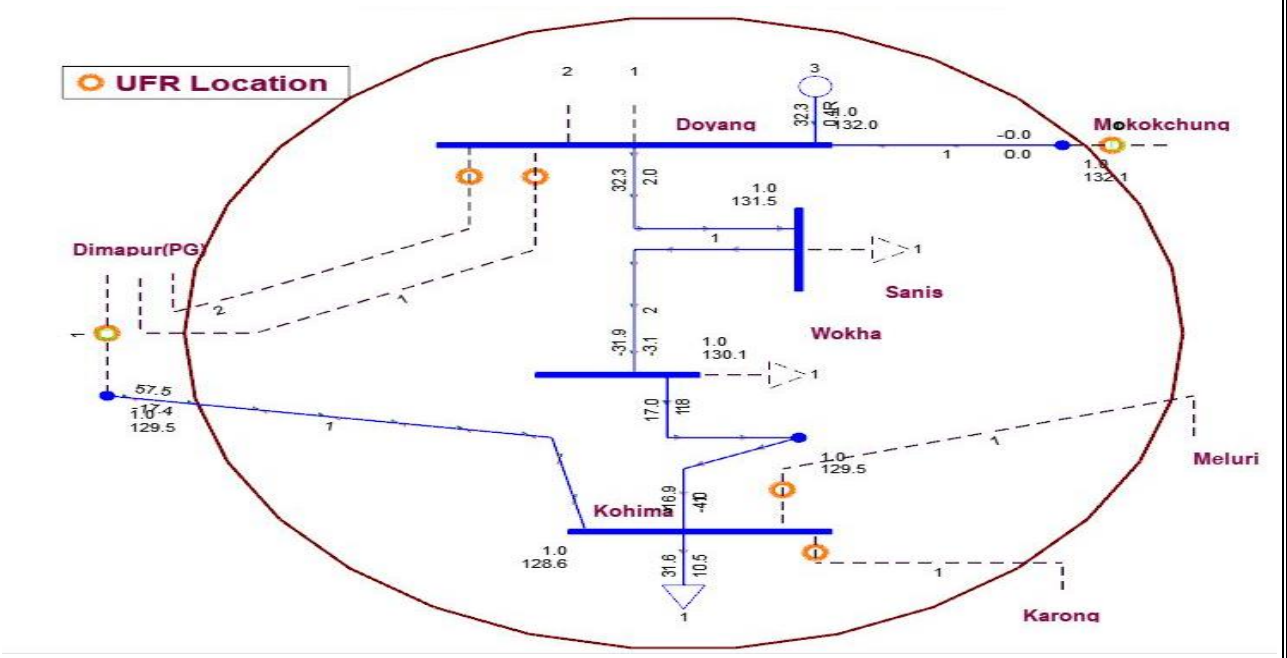
	Pare HEP line at 132 kV North Lakhimpur		representative of MUML was absent.

2. **SPS Implementation at Pare HEP**: SPS for tripping of one unit of Pare in case of two units are running is to be implemented- ***NEEPCO intimated the forum that the SPS logic at Pare HEP has been completed and duly shared with NERLDC.***
3. **UFR Post-Island Formation**: UFR setting at SMS and Salasar feeders is to be changed to 48.0 Hz and 47.8 Hz (instantaneous trip) respectively. Also an additional feeders of around 5 MW is to be identified as an UFR post island and to be set at 47.7 Hz instantaneous trip. -***DOP,AP updated the forum that additional feeders have been identified.***
4. The UFR for post Island Formation were for AUFLS purpose that quantum of load is to be shifted outside the island for AUFLS defence mechanism.

   The forum in principle agreed the AP islanding scheme (Itanagar islanding scheme) which will be implemented and operational by next month onward.

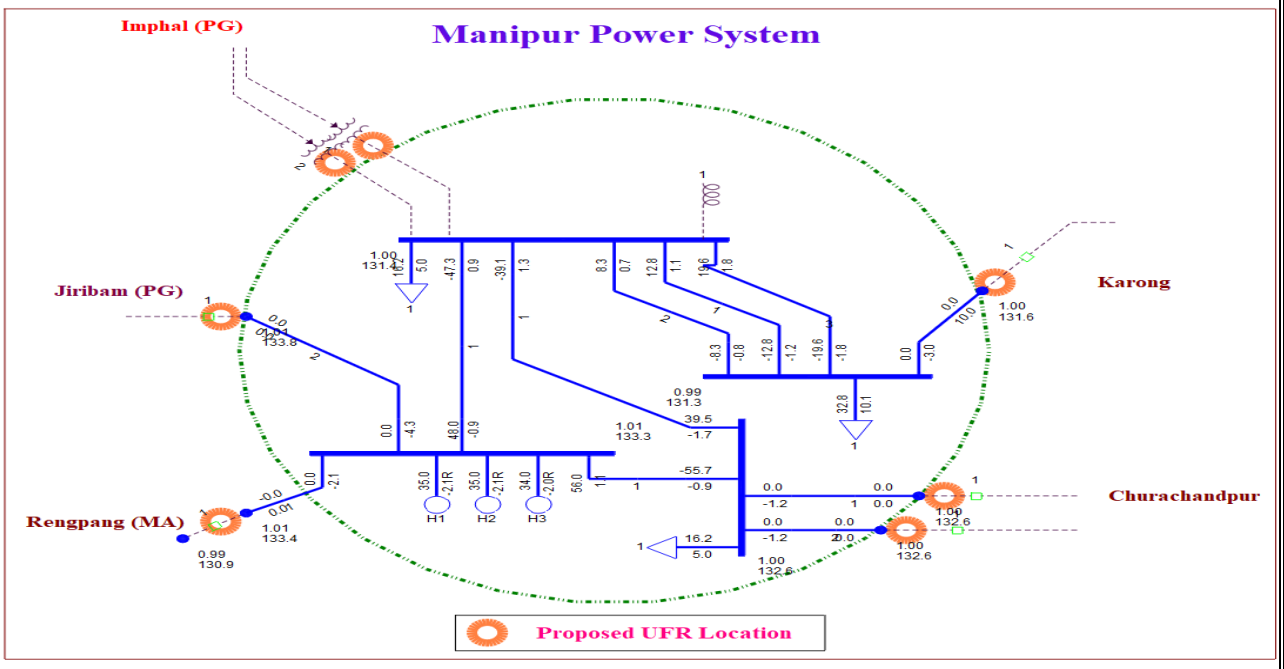
E. Kohima Islanding scheme

NERLDC apprised the forum that dynamic data has not been received from Doyang completely. As such dynamic study is pending. NEEPCO agreed to share the data at the earliest to NERLDC.



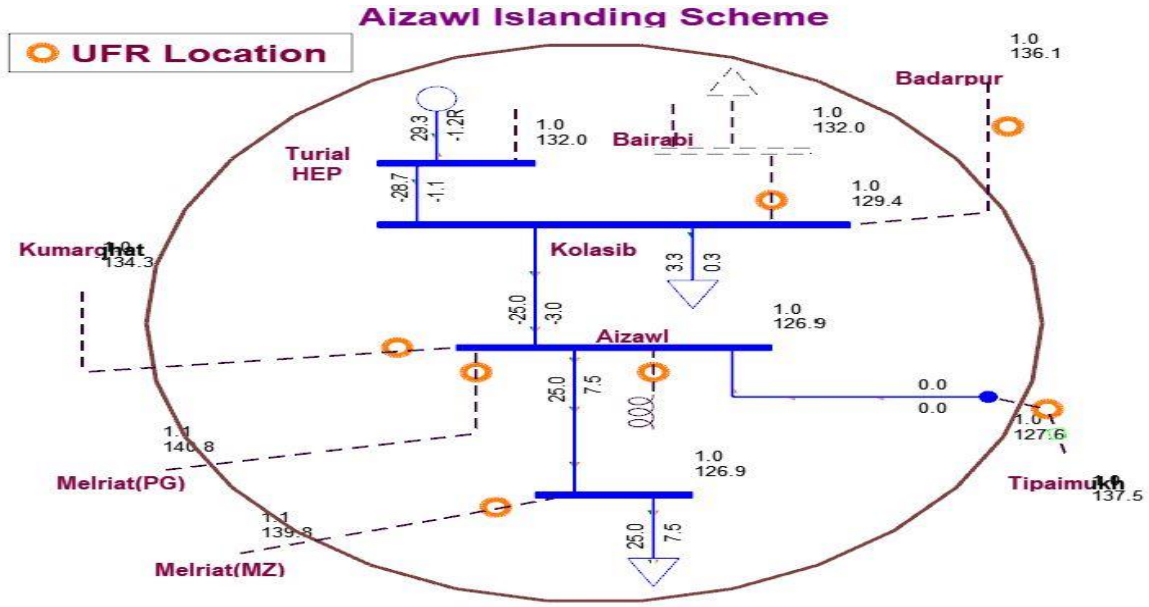
F. Imphal Islanding scheme

NERLDC apprised the forum that data from NHPC Loktak has been received. Manipur has identified the 33 kV feeders but are yet to share load-generation data for the identified feeders. Dynamic study is going on.



G. Aizawl Islanding scheme

NERLDC apprised the forum that dynamic data has not been received from Turial. NEEPCO agreed to share the data at the earliest. Mizoram also intimated the forum that exploration for a change in feeders is under way as per priority. Load-generation data for such feeders shall have to be shared with NERLDC.



H. Meghalaya/Shillong Islanding Scheme

Meghalaya apprised the forum that the old machine at Umium stage III is being replaced with a new machine. As such, NERLDC requested Meghalaya to share dynamic data for Umium Stage I, Stage II and Stage IV and also for New Umtru.

Sub-committee may deliberate

4.2 Automatic Under Frequency Load shedding (AUFLS) scheme of NER:

Status as updated till 222nd OCCM

Name of the State/utility	Installation of UFRs	Status of mapping
Ar. Pradesh	Completed	DoP Arunachal Pradesh stated that mapping of feeder at Lekhi SS (Industry feeder, stage 1) will be carried out by end of Oct'24.

		For rest of the feeders and substations, coordination with GE is underway and will be taken up gradually.
Assam	Completed	Completed
Manipur	UFR installed but not enabled as system integration work is underway, to be completed by Aug'24.	Mapping is pending from substations end, which is being hampered due to Law & Order situation in the State. It is in the last stage of integration (90%) and will be completed by Aug'24.
Meghalaya	Completed	Completed
Mizoram	Completed	Coordination with GE is underway for mapping, completion by Sep'24.
Nagaland	Completed	Completed
Tripura	Completed	All mapping done except for Ambassa SS due to communication link issue. To be done by next NeTEST meeting.

Forum noted the status updated as provided in the above table.

As deliberated in 15th meeting of NPC held on 14.12.2024 against Agenda 6: "Report on Automatic Under Frequency Load Shedding (AUFLS) and df/dt scheme:" Quote: "The following quantum of load relief settings of AUFLS scheme for year 2024- 25 were approved by the Committee:

State	Stg I (MW)	Stg II (MW)	Stg III (MW)	Stg IV (MW)
Ar. Pradesh	8.659594937	10.39151392	12.12343291	12.12343291
Assam	112.3419494	134.8103392	157.2787291	157.2787291
Manipur	11.54612658	13.8553519	16.16457722	16.16457722
Meghalaya	18.85556962	22.62668354	26.39779747	26.39779747
Mizoram	7.542227848	9.050673418	10.55911899	10.55911899
Nagaland	8.100911392	9.721093671	11.34127595	11.34127595

Tripura	16.85362025	20.2243443	23.59506835	23.59506835
Total	**183.9**	**220.68**	**257.46**	**257.46**

"The implementation of the AUFLS and df/dt schemes must be completed by March 2025. RPCs are required to regularly monitor the implementation of the UFR scheme as a whole including the bulk consumers connected at the ISTS level. RPCs may communicate above decisions to the respective States for implementation."

SLDCs are requested to conduct meetings with their DISCOMs to find solutions for feeder mapping and expedite the same. It was also decided in the NPC meeting:

i) The AUFLS scheme must ensure Pumped storage hydro plants operating in pumping mode or ESS operating in charging mode shall be automatically disconnected before the first stage of UFR.

ii) Bulk consumers connected to ISTS and STU networks must implement the UFR scheme. Compliance should be ensured during the grant of connectivity by CTU and STU.

Status as per 222nd/221st OCCM -

Assam representative apprised the forum that the new AUFLS scheme has been completed.

Manipur apprised the forum that the scheme shall be implemented by June-25.

Meghalaya apprised the forum that the scheme has been finalised and rearrangement of loads is required in stages I,II and III & IV, The work shall be completed by the next OCC meeting.

Mizoram apprised the forum that the new AUFLS scheme has been completed.

Tripura apprised the forum that the work shall be completed by the next OCC meeting.

Arunachal Pradesh apprised the forum that the loads have been identified and approval is pending. AP, SLDC also apprised the forum that since RTU is not available at Bandardua for mapping, it is proposed to shift the loads to Nirjuli substation.

States may further update

4.3 Long Outage of NER State Generator and transmission lines:

The following NER State generators and Transmission lines are under long outage since long time. Considering the increasing demand trend and reliable power supply in the Region, respective utilities are requested to take necessary action to restore the mentioned units as follows:

Element Name	Outage time	Reason	Expected date
LTPS Unit 7	08-04-2024	Due to high vibration	-
Baramura Unit 5	26-03-2024	Gas fuel hydrolic trip low.	March'25
Rokhia Unit 8	02-05-2024	Hand Tripped due to low Gas Pressure	-
Baramura Unit 4	05-06-2024	Manually opened as there is issue in display, erroreous data was coming.	March'25
Kameng Unit 2	17-06-2024	Damage in the stator core & bar, and also on rotor poles due to dislodging of 1no. V-block	March'25
Rokhia Unit - 7	06-11-2024	Leakage in Heat Chamber	-

Transmission Lines

Element Name	Outage time	Reason	Expected date
400 kV Imphal - Thoubal I	18-10-2021	Tripped on DP, ROW issue.	-
132 kV Kohima - Meluri	27-09-2023	S/D taken by Kohima trans. Div. for dismantling of Tower no. AP 130	-
132 kV Jiribam-Rengpang	17-11-2023	Tripped on Earth fault	-
132kV Ningthoukhong-Churachandpur ckt 1	04-08-2024	Z-1, 18.5 km, O/C	-

In 219th OCCM, utilities updated as under: -

Generating units-

Sl. No	Unit details	Utility	Update on revival
1	Baramura Unit 4	TPGCL (Tripura)	Out due to shortage of gas
3	Baramura Unit 5	TPGCL	Out due to shortage of gas
4	LTPS Unit 7	APGCL	OEM parts ordered. Expected by Feb-25

Transmission lines-

Sl. No	Element	utility	Update on revival
1	400 Imphal-Thoubal ckt I &II	MSPCL	Ckt I - ROW, Litigation pending in court. Ckt II is already charged on 14th September 2024.
2	132kV Kohima-Meluri	DoP Nagaland	NHIDLC payment pending. 3 months after the payment
3	132kV Jiribam-Rengapng	MSPCL	Line partially charged. i.e. sectionalize charged upto Nongba from the Rengpang end (a distance of 5 km). The section from Nongba to Jiribam (Manipur) is yet to be charged which is around 45 km. Full charging will take time as no access to the affected area. Expected by December-24.

5. PART-E: ITEMS FOR STATUS

5.1 Implementation of projects funded from PSDF:

The status as informed in 219thOCCM:

State	R&U scheme	ADMS	Capacitor Installation	SAMAST**	Line Differential Protection
Ar. Pradesh	Package-I (Diagnostic tools) Complete in all respects. P-II (for PLCC & communication) Supply completed. Erection WIP. 50% requisition submitted. P-III (Substation equipment) Agreement signed and 10% requisition submitted. Total 90% requisition by Apr'22. Completion by Dec'22. (Approval from TSA and Account opening in 3 months)	Project completed in all respects.	-	30% requisition submitted. Amount not received in the TSA account.	By Aug.'24
Nagaland	Completed in all respects.	Work completed in all respects. UC submitted	-	30% requisition submitted	Lines identified. Under DPR preparation stage.

Mizoram	Final 10% disbursed. UC to be submitted.	Work completed in all respects. Remaining part of final 10% to be disbursed ASAP.	To reply to TESG queries.	30% requisition submitted.	Revised DPR including both 132kV Aizawl-Luangmual and 132kV Khamzawl-Khawiva to be submitted.
Manipur	Package-II: completed Package-I: all stations complete except Ningthoukhong. By May'22.	Work completed in all respects. UC submitted in Oct'21.	WIP.	10% disbursed for IT portion, no disbursement for Meter, AMR portion. 20% disbursement for IT portion after completion of 3rd milestone. 30% to be disbursed for Meter, AMR portion	Revised DPR for LDP of 132kV Imphal-Yurembam-III to be submitted by June'22.
	33kV System Integration with SLDC	In tendering stage			
	Reliable Communications for grid connectivity	In tendering stage			
Tripura	Completed. Final UC submitted on 04th May'22.	Final 10% requisition submitted.	Not relevant in present scenario with commissio	10% successfully disbursed. 20% fund reversed back from vendor	For 132kv 79Tilla-Budhjungnagar line and for Rokhia link

			ning of ISTS lines. Issue dropped	account. Will be resolved soon.	LDP at own cost. Tendering undergoing . DPR preparation for rest of the lines
Assam	Work completed except CRP, SAS work in 8stations which have been retendered and awarded to M/s SIEMENS. Completion by Dec'22	Project completed in all respects.	-	30% funds yet to be fully disbursed. 60% requisition sent.	Lines identified. DPR submitted.
Meghalaya	MePTCL – completed in all respects. MePGCL – Completed in all respects.	Project completed in all respects.	-	90% works completed. Communication pending.	All works except OPGW done

Members to update.

5.2 Status update of important grid elements under prolonged outage impacting system operation:

Sl. No	Element	Owner	Status up to the 218thOCCM	Latest Status
1	132kV Mariani – Mokokchung (*out since April'2008*)	AEGCL	DPR sent to PSDF	
2	132kV Roing-Pasighat (*charged through ERS tower*	NERTS	September'24	
3	132kV Srikona – Panchgram	AEGCL	task will be completed by Sept.'24	

4	400kV Imphal – Thoubal-I and 315MVA 400/132kV ICT at Thoubal	MSPCL	RoW, litigation pending in court.	
5	63MVAR Bus Reactor at Byrnihat to be replaced with 80MVAR Reactor	MePTCL	Installed. Relay system pending. To be completed shortly.	
6	Permanent restoration of Tower loc. No. 4 of 132kV Jiribam-Haflong line	NERTS	line was restored on ERS on 8th July. For permanent restoration survey is underway and the work will tentatively be completed within six months.	

Members to update.

5.3 Status of commissioning for upcoming projects

Sl. No	Name of the element	Utility	Status up to the 218th OCCM	Latest Status
1	132kV Monarchak-Surjamaninagar	TSECL	20 km stringing left, 2 tower foundation pending and pending 8 nos. tower erection. Tentative completion by Sept.'24	
2	PLCC for 132kV Loktak-Ningthoukong and 132kV Loktak-Rengpang(existing lines)	MSPCL	Sept.'24. Work hampered due to Law & order situation in Manipur	
3	220kV Samaguri – Mariani-I	AEGCL	Survey completed. Cost estimate being prepared.	
4	220kV AGBPP –Namsai D/C	TBCB	Oct'25, subject to RoW issue	
5	Upgradation of 132kV Surjamaninagar-Surjamaninagar(ISTS),	TSECL	Resolution adopted in 26th RPC. Sent to MoP, GoI	

	132kV Bodhjungnagar-SMNagar, 132kV P.K.Bari-Ambassa, 132kV P.K. Bari-P.K.Bari(ISTS)			
6	LILO of 132kV Leshka-Khliehriat-I at Mynkre and Mynkre SS and 33kV downstream at Mynkre.	NERPSIP	LILO line charged. SS by Sept.'24	
7	220kV Rangia – Amingaon D/C and 220/132kV 2x160MVA Amingaon S/S	NERPSIP	SS charged; Line idle charged. Load charging to be done shortly	
8	132kV Rengpang-Tamenglong and 132/33kV 4x6.67MVA at Tamenglong at Manipur	NERPSIP	Works hampered due to present law and order condition.	.
9	132/33kV West Phaileng S/S at Mizoram	NERPSIP	Ready for charging.	
10	132/33kV 2x12.5MVA Marpara S/S at Mizoram	NERPSIP	20 km stringing left, 2 tower foundation pending and pending 8 nos. tower erection. Tentative completion by August'24	
11	132/33kV 2x12.5MVA Lungsen S/S at Mizoram	NERPSIP	Sept.'24. Work hampered due to Law & order situation in Manipur	
12	132kV Chawngte – S.Bungtlang S/S at Mizoram	NERPSIP	Ready for charging.	.
13	132kV W.Phaileng-Marpara S/C at Mizoram	NERPSIP	Sept.'24, works hampered due to delay in tree cutting in forest area	

14	220kV Zhadima – Mokokchung at Nagaland	NERPSIP	Ckt 1 charged in Mar'23. Other ckt waiting for finalization of MoU	
15	132kV Wokha-Zunheboto – Mokokchung at Nagaland	NERPSIP	WokhaZunheboto section has been completed. Balance section by By Sept.'24	
16	132kV Tuengsang – Longleng at Nagaland	NERPSIP	Tuensang SS upgradation package has been awarded. August'24	
17	132/33kV Amarpur S/S at Tripura	NERPSIP	Sept.'24	
18	132/33kV Manu(new) S/S at Tripura	NERPSIP	Sept.'24	
19	132kV Dharmanagar-Kailashor	NERPSIP	Sept.'24	
20	132kV Ziro-Yazali and 132/33kV Yazali S/S	POWERGRID-Comprehensive	Sept.'24	
25	132kV Chimpu – Holongi and 132/33kV Holongi S/S	POWERGRID - Comprehensive	Clearance form AAI for SS and line is pending	
26	Unit 1 and 2 of Lower Subansiri HEP	NHPC	Sept.'24	
27	400kV Lower Subansiri-BNC line2	PGCIL	Line idle charged	
28	Gantry for LS-BNC line 2	NHPC	Sept.'24	
29	Bus reactor at Lower Subhansisri	NHPC	Sept.'24	
30	Conversion of MT to DM at (i) 132kV Khliehriat, (ii) 132kV		Imphal-depends upon the law and order in Manipur. No contracts coming up.	

	Badarpur, (iv) 132kV Imphal	NERTS	Badarpur and Khleihriat-order yet to receive	
31	220kV New Shillong-NangalBibra(ISTS 220/132kV) TL	MEPTCL	As updated by PGCIL, survey completed and report also completed	
32	220kV Bongaigaon-Nangalbibra (ISTS) DC and 220/132kV Nagngalbibra (ISTS) substation	Sterlite	Tentative completion by Sept.'24.	
33	HTLS reconductoring of 132kV Hailakandi-Dullavcherra	AEGCL	During 23rd TCC RPC meeting, the forum recommended for the upgradation and preparation of DPR by AEGCL. AEGCL is already planning for reconductoring of the lines. However, Funding source is not finalized yet.	
34	HTLS reconductoring of 132kV Panchgram-Hailakandi	AEGCL	Included in CEA 2030 Augmentation Scheme. AEGCL is already planning for reconductoring of the lines. However, Funding source is not finalized yet	.
35	HTLS reconductoring of 132kV Srikona-Pailapool	AEGCL	Included in CEA 2030 Augmentation Scheme. AEGCL is already planning for reconductoring of the lines. However, Funding source is not finalized yet.	

Members to update.

5.4 Status of ISTS expansion scheme in NER

A. Status of downstream 220kV or 132kV network by STUs from the various commissioned and under-construction ISTS substations in NER

Sl	ISTS S/s	State	Voltage ratio, Trans. Cap	Down- stream Voltage level (kV)	Unutilized bays	Status of ISTS bay	STU Lines for unutilized bays	Status of Lines (as updated in 219thOCCM)	
								Date of Award	Completion schedule
1	New Mariani (POWERGRID)	Assam	400/220kV, 2x500MVA	220	2	Commissioned	New Mariani (POWERGRID) – Diphu (Assam) 220kV D/c line	Plan for route survey from Diphu to New Mariani is underway. The transmission route traverses designated forest area. Survey work is completed only funding is pending. Three years from date of LoA. Completion is expected by 2028.	Plan for route survey from Diphu to New Mariani is underway. The transmission route traverses designated forest area. Survey work is completed only funding is pending. Three years from date of LoA. Completion is expected by 2028.
2	New Kohima (TBCB)	Nagaland	400/220kV, 2x500 MVA	220	2	Commissioned	New Kohima (TBCB) – New Kohima (Nagaland) 220kV D/c line	LoA Feb'2021	OPGW and PLCC work will be completed by Oct 2023. All works are being implemented by Nagaland only. Line would be charged after completion of communication link.
3	Nangalbibra (TBCB)	Meghalaya	220/132kV, 2x160MVA	132	2	Under construction (Dec'23)	Nangalbibra (ISTS) – Nangalbibra (MePTCL) 132kV D/c	LoA is under process. Fund is yet to be	within 6 months after award.

							(HTLS,800A) Line:about 5km	released from the Govt. of Meghalaya.	

B. Status of 400kV substations and other important elements being implemented by STUs in NER under intra-state schemes to be connected through ISTS

Sl. No.	Substation/Location	Transformation Capacity/ Element	Date of Award	Completion Schedule
B	**Tripura (to be implemented by TSECL)**			
I	**Surajmaninagar (TSECL)**	400/132kV, 2x315MVA	JV formation, between PGCIL and STU by Mar'23	12 months from Date of Award
a)	LILO of both circuits of Surajmaninagar (ISTS) – Palatana 400kV D/c line atSurajmaninagar (TSECL) S/s	400kV D/c	All works except 400kV termination at Surjamaninagar(TSECL) by POWERGRID to be done. Balance works under separate contract.	LILO completed for 400kV ckt 2 (by PGCIL) without bay readiness, LILO has been charged.Total completion subjected to Sub-station readiness at Surajmaninagar

Members to update

5.5 Status Review for the Items Referred from previous OCCMs:

SL No.	Item for Discussion	Status as per 219thOCCM	Latest Status
1.	Voltage and MVAR issues at 400kV Kameng S/Sn (Agenda No. C7 of 189th OCCM)	Discussion with OEM M/s BHEL is underway.	
2.	Implementation of Bus Bar Protection at 132 kV Kahilipara (AEGCL)	CT under procurement. Tentative target is Dec'24	

	Substation (C.8 of 196th OCCM)		
3.	Installation of Line differential protection in Rokhia-N.Rokhia line	CBs arrived. Tentative completion by Sept.'24	
4.	Reconductoring of Umiam stg I stg III, upgradation of CT ratio to 800/1	Approaching PSDF for funding	
5.	Restoration of tower no. 3 and 12 of LILO of Nirjuli-Dikrong Transmission line to Lekhi Substation (B.23. of 193rd OCCM)	Tower locations in spate of floods. Works stalled. Expected completion after monsoon.	
6.	Upgradation of Tuensang substation to 132kV level, under NERPSIP. (item B.15 of 203rd OCCM)	NERPSIP updated that tender has been awarded by the end of June'23 and the work will be completed in Sept.'24	
7.	Khandong Bus A, Kopili ckt 1 bay and Khliehriat ckt 1 bay at Khandong SS	NEEPCO updated that LoA has been awarded on 30th August 2023 and work to be tentatively completed by Sept.'24	
8.	400kV Bus Bar 2 at Panyor Lower HEP (Item C.9 of 216th OCCM)	NEEPCO informed that the isolator spares had arrived and for SF6 breaker, retendering was underway. He further stated that the work would be tentatively completed by May'25.	

Members to update.

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STATION NAME	UNIT NO	CAPACITY	STATION TYPE	REGION	STATE	ORGANIZAT	Outage 1 (Fro	Outage 1 (To	Outage 2 (Fro	Outage 2 (To	Outage 3 (Fro	Outage 3 (To	Outage 4 (Fro	Outage 4 (To D
BONGAIGAON TPP	2	250.00	COAL	NER	Assam	NTPC Ltd.	18-01-2026	21-02-2026						
BONGAIGAON TPP	3	250.00	COAL	NER	Assam	NTPC Ltd.	01-04-2025	20-04-2025						
KATHALGURI CCPP	1	33.50	GAS	NER	Assam	NEEPCO.	01-07-2025	14-07-2025	01-11-2025	07-11-2025	01-02-2026	07-02-2026		
KATHALGURI CCPP	2	33.50	GAS	NER	Assam	NEEPCO.	15-07-2025	28-07-2025	01-11-2025	07-11-2025	08-02-2026	14-02-2026		
KATHALGURI CCPP	3	33.50	GAS	NER	Assam	NEEPCO.	01-08-2025	14-08-2025	08-11-2025	14-11-2025	15-02-2026	21-02-2026		
KATHALGURI CCPP	4	33.50	GAS	NER	Assam	NEEPCO.	15-09-2025	28-09-2025	15-09-2025	19-10-2025	08-11-2025	14-11-2025	22-02-2026	28-02-2026
KATHALGURI CCPP	5	33.50	GAS	NER	Assam	NEEPCO.	15-11-2025	21-11-2025	15-11-2025	09-12-2024				
KATHALGURI CCPP	6	33.50	GAS	NER	Assam	NEEPCO.	15-02-2026	21-02-2026	15-02-2026	11-03-2026				
KATHALGURI CCPP	7	30.00	GAS	NER	Assam	NEEPCO.	01-02-2026	10-02-2026	01-02-2026	07-02-2026				
KATHALGURI CCPP	8	30.00	GAS	NER	Assam	NEEPCO.	08-02-2026	17-02-2026	08-02-2026	14-02-2026				
KATHALGURI CCPP	9	30.00	GAS	NER	Assam	NEEPCO.	01-12-2025	14-12-2025	15-02-2026	24-02-2026	15-02-2026	21-02-2026		
AGARTALA GT	1	21.00	GAS	NER	Tripura	NEEPCO.	05-07-2025	05-07-2025	26-12-2025	27-12-2025				
AGARTALA GT	2	21.00	GAS	NER	Tripura	NEEPCO.	15-07-2025	15-07-2025	28-12-2025	29-12-2025				
AGARTALA GT	3	21.00	GAS	NER	Tripura	NEEPCO.	07-08-2025	14-08-2025	05-12-2025	06-12-2025				
AGARTALA GT	4	21.00	GAS	NER	Tripura	NEEPCO.	05-09-2025	10-10-2025	05-01-2026	06-01-2026				
AGARTALA GT	5	25.50	GAS	NER	Tripura	NEEPCO.	16-05-2025	22-05-2025	24-05-2025	30-05-2025	16-11-2025	30-11-2025		
AGARTALA GT	6	25.50	GAS	NER	Tripura	NEEPCO.	01-06-2025	07-06-2025	01-11-2025	15-11-2025	14-12-2025	20-12-2025		
TRIPURA CCPP	1	363.30	GAS	NER	Tripura	ONGC	10.07.2025	20.07.2025	05.11.2025	08.11.2025				
TRIPURA CCPP	2	363.30	GAS	NER	Tripura	ONGC	10.06.2025	29.06.2025	01.12.2025	04-01-1900				
MONARCHAK CCPP	1	65.40	GAS	NER	Tripura	NEEPCO.	01-12-2025	10-12-2025						
MONARCHAK CCPP	2	35.60	GAS	NER	Tripura	NEEPCO.	01-12-2025	10-12-2025						

Methodology of Day-ahead Demand Forecast

Assam

Forecasting for Assam is done by the commercial team (APDCL). The steps for day ahead block-wise forecasts are:

The day-ahead forecasting process begins with gathering time block-wise availability data for the upcoming day. Detailed power availability reports are taken from:

1. Day ahead NERLDC WBES schedule
2. Assam Power Generation Corporation Limited (APGCL) provide the projected availability of power for the next day from the State Sector generating stations.
3. Independent Power Producers (IPPs) provide data on regarding their projected generation.

These reports provide an overview of the available power from Long-Term Agreements and Short-Term agreements and sets the foundation for demand-supply matching for the next day.

Each of the previous days scheduled versus actual power drawl for each time block are compared to assess the deviations and patterns. Such deviations and patterns are then incorporated with the day ahead generation availability to arrive to a forecast for the whole state.

In addition to the above forecast, experience based factors are incorporated during special occasions for increasing/ decreasing the forecast:

1. Weather forecasts available in public domain
2. Forced generator outages, maintenance shutdowns, or system constraints that could affect supply availability.
3. Significant events like holidays, festivals, or elections, which tend to influence typical consumption behavior, are carefully considered in our forecasts. We maintain a comprehensive dataset on load pattern shifts observed during these events, allowing us to incorporate historical consumption trends and adjustments specific to each type of event.

Meghalaya

1. The block-wise average of the past 3 days is taken as the base data.
2. Additional load of new consumers which will be given clearance on the next day (if any) is then incorporated in the demand forecast.
3. The planned and forced outages were also incorporated in the demand forecast for the day ahead.
4. Before finalization of the Demand forecast, SLDC is collecting information from the NERLDC/IMD website about the weather prediction for the next day and the same was incorporated in the demand forecast of the next day.

Mizoram

For day ahead forecast during week days, previous day actual SCADA data is taken to know the demand trend along with the previous week's similar day block wise data to compare. In case of weekends and Sundays, previous weeks corresponding days' demand is taken as the forecast.

Manipur

For day ahead forecast, previous 2-3 days' block-wise actual SCADA data is used. In case of any major outages/ disturbances occurred in the past days, slot-wise affected load is estimated and is

added or a different day is chosen for reference. In addition, the affected load for the upcoming planned shutdowns are also accounted for the specified slots of shutdowns. As per weather reports in public domain, a day with the similar weather conditions is chosen for the forecasts. For weekends and holidays, previous adjacent holiday drawl pattern is also considered above the normal procedures. If required, the values are changed on experience basis to meet the current trends.

Tripura

For day ahead forecasting previous 3 days' block-wise demand is averaged. For weekends and per the weather reports in public domain, the averaged data is then increased/decreased on experience basis with a suitable factor.

Nagaland

For day ahead forecasting, last 6 days' block-wise demand as well as average is compared with the demand of previous day and the best fit is given as forecast for the next day. For weekends and as per the weather reports in public domain, the forecast data is then increased/decreased on experience basis with a suitable factor.

Arunachal Pradesh

SCADA data of previous 4 days' load pattern are usually referred for the preparation of day ahead load forecast.

Following factors are taken care while preparing Load Forecast.

1. Weather prediction by IMD
2. Plan SD proposed
3. Festival, Mage Event, VVIP programs, weekend and etc.
4. State Generation scheduled.

Methodology of Week-ahead Demand Forecast

Assam

For week-ahead forecasts, the past weeks historical data are examined to check the consumption patterns observed over the past weeks. Patterns related to similar days of the week are particularly compared, as consumption behavior tends to follow weekly cycles.

For the upcoming week, weather data, especially forecasts of extreme temperatures or rainfall is incorporated to adjust the baseline demand predictions. The weather forecast is available from the public domain.

Any known events, such as public holidays, festivals, or special regional occasions, are factored into the forecast, as they may lead to deviations in usual demand patterns.

Meghalaya

1. Actual Demand of the previous week is taken as the base data.
2. Additional load of new consumers which was connected during the week (if any) is then incorporated in the demand forecast.
3. The planned and forced outages were also incorporated in the demand forecast.

4. Finally, depending on the trends of weather forecast by IMD available at the public domain is also considered for the entire state demand forecasting.

Mizoram

The past week data is studied to find the demand trend for the upcoming week.

Manipur

The previous week data is taken as the base data for the forecast. However, on the basis of experience, changes during the winter peak, summer peak is calculated by a suitable factor.

Tripura

The forecast for the next week is calculated by taking the change of demand from the previous 2 to 3 weeks and incorporating the factor in the previous week demand.

Nagaland

The last 6 days' block-wise demand as well as average is compared with the demand of previous day and the best fit is given as forecast for the next week. For weekends and as per the weather reports in public domain, the forecast data is then increased/decreased on experience basis with a suitable factor.

Arunachal Pradesh

The last 7 days' actual demand data is studied to find the demand trend for the upcoming week.

Methodology of Month-ahead Demand Forecast

Assam

For month-ahead forecasts, demand patterns for the same month in previous years are reviewed to identify recurring consumption trends.

Monthly weather trends like anticipated high temperatures in summer or cooler months in winter are incorporated into the demand estimate, as these factors strongly influence the demand for an extended period.

Any pre-planned major events, known holidays, are considered. Additionally, maintenance schedules of major plants or transmission lines are factored in, as these may impact power availability and thus affect supply-demand balancing.

Meghalaya

1. Actual Demand of the same month in previous year is taken as base data.
2. Additional load of new consumers was then incorporated in the Monthly demand forecast.
3. Finally, the actual demand met of the previous month was incremented depending on the seasonal change of demand.

Mizoram

The past month demand data as well as monthly peak demand met data is used to find out the probable demand met during peak hours for the upcoming month.

Manipur

Month ahead demand forecast is calculated by looking at the previous 3 years' average demand for the month and applying a suitable increase as per the yearly increase percentage. In case of any major outages/ disturbances occurred in the specified month in past years, slot-wise affected load is accounted and adjustments are made in the forecast.

Tripura

Month ahead demand forecast is calculated by looking at the previous year demand for the month and applying a suitable % age increase as per the yearly increase in demand percentage.

Nagaland

Based on the Load analysis for the preceding 2 Years Load forecasting is done. Weather forecasting is also taken into account which is available in the public demand. Shutdown or outages of the lines are also taken into account.

Arunachal Pradesh

Average value of SEM data of last five years are taken and added 5% to 10% as spike load. In addition, expected bulk load with the expansion of transmission network and its sanction loads are accounted.

Others factors are same as in Day ahead load forecast.

ग्रिड-इंडिया
GRID-INDIA

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
राष्ट्रीय भार प्रेषण केन्द्र / National Load Despatch Centre

आज़ादी का अमृत महोत्सव

कार्यालय : बी-9, प्रथम एवं द्वितीय तल, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली - 110016
Office : 1st and 2nd Floor, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi -110016
CIN : U40105DL2009GOI188682, Website : www.grid-india.in, E-mail : gridindiacc@grid-india.in, Tel.: 011- 42785855

संदर्भ: NLDC/SO/DYNAMICS/HVDC/FACTS/ **दिनांक:** 17th Sep 2024

To,

Sh. Rajesh Wadhwa
Chief General Manager (I/C), Asset Management
Power Grid Corporation of India Limited,
Saudamini, Plot No.2, Sector-29
Gurugram 122001, Haryana

विषय: Requirement of HVDC and FACTS devices model data for simulation of power system stability and dynamics – Regarding

Ref: a) NLDC communication dated 22nd July 2021 regarding Requirement of HVDC and FACTS devices model data for simulation of power system stability and dynamics
b) NLDC communication dated 19th Sep 2019 regarding HVDC and FACTS devices model submission

Dear Sir,

Grid-India (RLDCs/NLDC) is responsible for secure and reliable operation of the India power system. Simulation of power system stability conditions is an important operational planning activity in this regard for taking advance measures to ensure the security of the grid. For carrying out these studies, all the stakeholders shall submit the modelling data to respective load dispatch centers as per Central Electricity Authority (CEA, Technical Standards for Connectivity to the Grid, Regulations quoted below:

General Connectivity Conditions, Clause 6 (4):

"The requester and user shall cooperate with the Regional Power Committees, and Appropriate Load Despatch Centres in respect of the matters listed below, but not limited to:

*...furnish **data** as required by Appropriate Transmission Utility or Transmission Licensee, Appropriate Load Despatch Centre, Appropriate Regional Power Committee, and any committee constituted by the Authority of appropriate Government for **system studies or for facilitating analysis of tripping or disturbance in power system**;..."*

General Connectivity Conditions, Clause 6 (6):

*" ...Provided that in order to carry out the said study, the requester shall present the **mathematical model of the equipment** in accordance with the requirements as stipulated by the Appropriate Transmission Utility or distribution licensee, as the case may be."*

In this regard, the status of submission of dynamic modelling data for grid elements owned by POWERGRID is provided below.

S. No.	Equipment	Total	Dynamic Model Received		Dynamic Model Pending	
			RMS	EMT	RMS	EMT
1.	HVDC (LCC)	**10**	4	0	**6**	**10**
2.	HVDC (VSC)	**1**	1	0	**0**	**1**
3.	STATCOM	**19**	14	11	**5**	**8**
4.	SVC	**4**	0	0	**4**	**4**

The detailed list in this regard is enclosed at **Annexure – I**.

Apart from the pending model submission, the RMS models submitted are user defined models compatible with a specific PSS/E version (V33 or 34). These models can't be used with latest PSS/E versions due to dependency on version specific library files. It is to inform that from PSSE V36 onwards, the version specific dependency of the UDM library files has been removed. This means that if an UDM is prepared/converted for compatibility with PSSE V36, then it will work with subsequent versions also.

In respect of submission of modelling, a meeting was also convened by Central Electricity Authority (CEA) in 2023. The minutes of the meeting are enclosed at **Annexure-II** for reference. Further, it is pertinent to mention here that Grid-India uses the dynamic models

collected from utilities only for the purpose of system studies and preserves the confidentiality of submitted data.

A functional dynamic model would significantly help Grid-India in ascertaining the true dynamic behavior of the Indian power system and managing the present and future grid in a reliable manner. Therefore, the following is requested from you end:

a) Submission of dynamic simulation models (RMS and EMT both) of HVDCs and FACTS (STATCOMs/SVCs) devices owned by POWERGRID as per the detailed list provided in **Annexure – I.**

b) One-time conversion of 08 nos. user defined models (RMS) of FACTS and HVDCs to PSSE Version 36. Once these UDMs are converted to V36, they can be used with subsequent versions also (V37 and beyond) without any conversion.

The templates and model compatibility guidelines specified by Grid-India in its updated *'Detailed Procedure covering modalities for First Time Energization and Integration of new or modified power system element"* - https://posoco.in/wp-content/uploads/2023/09/Final-draft-NLDC-FTEI-Procedure-submitted-to-CERC-for-kind-approval.pdf may be referred for model submission.

Thanking you,

Yours faithfully,

19/9/24

(S Usha)

Chief General Manager (I/C), NLDC

Encl: As above

Copy to:

1. Member (GO&D), CEA
2. Member (Power System), CEA
3. Director (Operations), POWERGRID
4. Director (SO), Grid-India
5. Chief Engineer (PSP&A – I & II), CEA
6. Chief Operating Officer, CTUIL
7. Heads of RLDCs, Grid-India

Annexure-I

Region wise list of STATCOMs owned by POWERGRID and Model Submission Details											
Region	Name	VSC	MSC	MSR	Make	MSC / MSR Switching Logic	RMS Model Details		EMT Model Details		Action Required
							Submission Status	Model Type - Generic or UDM (PSSE version)	Submission Status	EMT Model Version and Compiler	
Eastern Region	Rourkela	2X150	Nil	2X125	Siemens	Current Based	Pending	-	Pending	-	Submission of pending RMS (PSS/E V36) and EMT models (V5.0)
	Kishanganj	2X100	Nil	2X125	Siemens		Pending	-	Pending	-	
	Ranchi (New)	2X150	Nil	2X125	Siemens		Pending	-	Pending	-	
	Jeypore	2X100	2X125	2X125	Siemens		Pending	-	Pending	-	
Western Region	Satna	2X150	1X125	2X125	RXPE	Bus Voltage Based	Submitted	Generic	Submitted	PSCAD V4.5, 32 bit, Visual studio 2010, Intel® Visual Fortran Compiler for Windows 13.x	-
	Aurangabad	2X150	1X125	2X125	RXPE		Submitted	Generic	Submitted		
	Solapur	2X150	1X125	2X125	RXPE		Submitted	Generic	Submitted		
	Gwalior	2X100	1X125	2X125	RXPE		Submitted	Generic	Submitted		
Southern Region	NP Kunta	2x50	-	-	Hyosung	Bus Voltage Based	Pending	-	Pending	-	Submission of pending RMS (PSS/E V36) and EMT models (PSCAD V5.0) Conversion of PSS/E V33 UDMs to PSS/E V36
	Trichy	2x100	1 x 125	2 x 125	Hyosung		Submitted	UDM (V33)	Pending	-	
	Hyderabad	2x100	1 x 125	2 x 125	Hyosung		Submitted	UDM (V33)	Pending	-	
	Udumalpet	2x100	1 x 125	2 x 125	Hyosung		Submitted	UDM (V33)	Pending	-	
Northern Region	Nallagarh	2X200	2 x 125	2 x 125	RXPE	Bus Voltage Based	Submitted	Generic	Submitted	PSCAD Ver. 4.6 / G Fortran compiler 8.1 (64 bit)	-
	Lucknow	2X300	2 x 125	2 x 125	RXPE		Submitted	Generic	Submitted		
	Fatehgarh-II	2X150	2 x 125	1 x 125	Siemens	Current Based	Submitted	Generic	Submitted	PSCAD Ver. 5.0.1 / Intel® Visual Fortran Compiler (64 bit)	
	Fatehgarh-II	2X150	2 x 125	1 x 125	Siemens		Submitted	Generic	Submitted		
	Bhadla-II	2X150	2 x 125	1 x 125	Siemens		Submitted	Generic	Submitted		
	Bhadla-II	2X150	2 x 125	1 x 125	Siemens		Submitted	Generic	Submitted		
	Bikaner-II	1x300	2 x 125	1 x 125	Siemens		Submitted	Generic	Submitted		
North Eastern	No Statcom										

Region wise List of SVCs Owned by POWERGRID and Model Submission Status					
Region	**Name**	**Rating**	**RMS Model Submission**	**EMTP Model Submission**	**Action Required**
Northern Region	KANPUR	2x +140 / - 140	**Pending**	**Pending**	**Submission of pending RMS (PSS/E V36) and EMT models (PSCAD V5.0)**
	Ludhiana	+600 /-400	**Pending**	**Pending**	
	Kankroli	+400 /-300	**Pending**	**Pending**	
	New Wanpoh	+300 /-200	**Pending**	**Pending**	

List of HVDCs owned by POWERGRID and Model Submission Details							
S. No.	**Name**	**Type**	**Make**	**RMS Model Details**		**EMT Model Details**	**Action Required**
				Submission Status	**Model Type - Generic or UDM (PSS/E version)**	**Submission Status**	
1.	Champa Kurukshetra Bipole – I & II	LCC	GE	**Submitted**	**UDM (PSSE V34)**	**Pending**	**Conversion of PSS/E V33 UDM (RMS model) to V36 Submission of pending EMT model (PSCAD V5.0)**
2.	MTDC BNC-APD-Agra	LCC	ABB	**Pending**	**-**	**Pending**	**Submission of pending RMS (V36) and EMT model (V5.0)**
3.	Rihand Dadri Bipole	LCC	ABB	**Submitted**	**UDM (PSSE V35)**	**Pending**	**Conversion of PSS/E V35 UDM (RMS model) to V36 Submission of pending EMT model (PSCAD V5.0)**
4.	Balia - Bhiwadi Bipole	LCC	Siemens	**Pending**	**-**	**Pending**	**Submission of pending RMS (V36) and EMT model (V5.0)**
5.	Vindhyachal B2B	LCC	Siemens	**Submitted**	**UDM (PSSE V34)**	**Pending**	**Conversion of PSS/E V34 UDM (RMS model) to V36 Submission of pending EMT model (PSCAD V5.0)**
6.	Talcher - Kolar Bipole	LCC	Siemens	**Pending**	**-**	**Pending**	**Submission of pending RMS (V36) and EMT model (V5.0)**
7.	Gazuwaka Back to Back	LCC	Pole-1: GE (ALSTOM) Pole-2: ABB	**Pending**	**-**	**Pending**	**Submission of pending RMS (V36) and EMT model (V5.0)**
8.	Sasaram Back to Back	LCC	GE	**Pending**	**-**	**Pending**	**Submission of pending RMS (V36) and EMT model (V5.0)**
9.	Raigarh – Pugalur Bipole – I & II	LCC	ABB	**Submitted**	**UDM (PSSE V34)**	**Pending**	**Conversion of PSS/E V34 UDM (RMS model) to V36 Submission of pending EMT model (PSCAD V5.0)**
10.	Bhadrawati B2B	LCC	GE (ALSTOM)	**Pending**	**-**	**Pending**	**Submission of pending RMS (V36) and EMT model (V5.0)**
11.	Pugalur – Trichur (VSC based) Bipole	VSC	Siemens	**Submitted**	**UDM (PSSE V34)**	**Pending**	**Conversion of PSS/E V34 UDM (RMS model) to V36 Submission of pending EMT model (PSCAD V5.0)**

CEA-PS-11-16(11)/1/2018-PSPA-I Division

Annexure-II

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन- प्रभाग
Power System Planning & Appraisal - I Division

सेवा में / To,

1. Chief Engineer, PSETD Division, CEA, Sewa Bhawan, New Delhi-110066
2. COO, CTUIL, Saudamini, Plot no. 2, Sector -29, Gurgaon-122001
3. CMD, Grid Controller of India limited, B-9 (1st Floor), Qutab Institutional Area, Katwaria Sarai, New Delhi -110016
4. CEO, REC Power Development and Consultancy Limited, D Block, Plot No. 1-4, Sector-29, Gurugram, Haryana-122 001
5. Vice President, Hitachi Energy India Limited, Kodigehalli Main Road, Bengaluru-560092
6. Vice President, Siemens Limited, Birla Aurora, Level 21, Plot No. 1080, Dr. Annie Besant Road, Worli, Mumbai – 400030

विषय/ Subject: Minutes of Meeting regarding Signing of Non Disclosure Agreement (NDA) for Rajasthan Phase-III - Part C1 & Part F Transmission schemes

Madam/Sir,

Please find enclosed minutes of meeting held on 21.07.2023 under the Chairmanship of Member (Power Systems), CEA on the above mentioned subject.

भवदीय / Yours faithfully

2/8/2023

(कोमल दुपारे / Komal Dupare)
सहायक निदेशक /Assistant Director

सेवा भवन, आर. के. पुरम-I, नई दिल्ली-110066 टेली:011-26732305, ईमेल:cea-pspa1@gov.in वेबसाइट:www.cea.nic.in
Sewa Bhawan, R.K Puram-I, New Delhi-110066 Tele: 011-26732305, email: cea-pspa1@gov.in Website: www.cea.nic.in

Minutes of the Meeting regarding Signing of Non Disclosure Agreement (NDA) for Rajasthan Phase-III - Part C1 & Part F Transmission schemes

List of Participants is enclosed as **Annexure-I.**

For the transmission schemes under Phase-III, Part C1 and Part F, additional clarifications pertaining to STATCOM were provided by the Bid Process Coordinator (BPC) dated 10.07.2023. As per the clarification, it was mentioned that the "Bidder will share STATCOM models with CTU and Grid-India along with detailed documentation for above study purposes and simulations without any conditions/agreement. CTU & Grid-India will not sign any agreement in this regard."

In view of above, Hitachi and Siemens have informed that they are in receipt of letters from OEMs (Original Equipment Manufacturer) of STATCOM, wherein OEMs are in disagreement to submit the STATCOM models and other project related detailed documentation with other entities including CEA/CTU/STU/GRID-INDIA/external consultants/project engineer etc. other than the customer without signing the Non-Disclosure Agreement (NDA).

In view of above, RECPDCL, the Bid Process Coordinator of the transmission schemes vide their letter dated 20.07.2023 has requested to convene a meeting to sort out the issue, as the Bid submission date for both the projects were scheduled on 25.07.2023. Accordingly, a meeting was scheduled on 21.07.2023 under the chairmanship of Member (Power Systems), Central Electricity Authority (CEA), along with officials from Central Transmission Utility of India (CTUIL), Grid India, REC Power Development and Consultancy Limited (RECPDCL), Hitachi Energy and Siemens.

Based on the deliberations held in the meeting, it was decided that further extension on the bid submission date for Part C1 and Part F transmission schemes would not be given, as this would affect the implementation of other interlinked Phase-III transmission schemes. Accordingly, it was decided to issue the following amendment to the bidders:

Original para	Amended para
PSS/E files may be used for developing RTDS files/ models. For simulation of STATCOM in PSS/E file (load flow & dynamic) and PSCAD/EMTP-RV (Transient) model for STATCOM is required for study. Bidder will share STATCOM models with CTU & Grid-India along with detailed documentation for above study purposes and simulations without any conditions/ agreement. CTU & Grid-India will not sign any agreement in this regard.	PSS/E files may be used for developing RTDS files/ models. For simulation of STATCOM in PSS/E file (load flow & dynamic) and PSCAD/EMTP-RV (Transient) model for STATCOM is required for study. **TSP** will share STATCOM models with CEA, CTU & Grid-India along with detailed documentation for above study purposes and simulations. **For PSS/E, both Generic & User-defined models shall be shared by the TSP with the CEA, CTU & Grid-India. Generic model response shall be benchmarked with user-defined model to the extent possible by the**

Original para	Amended para
	TSP. Generic models can be shared by the CEA, CTU & Grid-India with the concerned stakeholders e.g. STUs etc. For User Defined model, confidentiality shall be maintained by the CEA, CTU & Grid-India. **For PSCAD/EMTP-RV, User Defined model shall be provided by the TSP for which confidentiality shall be maintained by the CEA, CTU & Grid-India.**

Meeting ended with thanks to the chair.

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CEA-PS-11-16(11)/1/2018-PSPA-I Division

Annexure-I

List of Participants

I	**CEA**	
	Ashok Kumar Rajput	Member (Power Systems)
	Ishan Sharan	Chief Engineer (PSPA-I)
	Bhanwar Singh Meena	Director (PSETD)
	Komal Dupare	Assistant Director (PSPA-I)
II	**CTUIL**	
	K. K. Sarkar	Sr. General Manager
	Kashish Bhambhani	General Manager
III	**GRID INDIA**	
	Surajit Banerjee	HOD, System Operations
	Rahul Shukla	Chief Manager
	Priyam Jain	Manager
IV	**RECPDCL**	
	P S Hariharan	Chief General Manager
	Amit Chatterjee	Chief Manager
V	**Hitachi Energy**	
	Aishwarya Dixit	Business Development
VI	**Siemens**	
	Alok Sharma	General Manager
	Ankit Pandey	

Procedure for Infirm Power Injection by Generators in NERLDC Control Area

1. Objective:

the purpose of this procedure is to establish a systematic process for the injection of infirm power into the grid by generators within the NERLDC (North Eastern Regional Load Dispatch Centre) Control Area, ensuring compliance with relevant regulations, standards, and roles.

2. Scope:

This procedure applies to all generating stations and captive generating plants that have been granted connectivity to the inter-State Transmission System (ISTS) under the GNA Regulation, within the NERLDC Control Area.

3. Definitions and relevant regulatory provisions:

- Definition of Infirm Power **(IEGC 2023, Clause 3.69)**: "*means the electricity injected into the grid prior to the date of commercial operation of a unit of the generating station*"
- **(IEGC 2023, Clause 19.1) :** " *A unit of a generating station including unit of a captive generating plant that has been granted connectivity to the inter-State Transmission System in accordance with GNA Regulations shall be allowed to inter-change power with the grid during the commissioning period, including testing and full load testing before the COD, after obtaining prior permission of the concerned Regional Load Despatch Centre: Provided that the concerned Regional Load Despatch Centre while granting such permission shall keep grid security in view."*
- **(IEGC 2023, Clause 19.7): "***The onus of proving that the interchange of infirm power from the unit(s) of the generating station is for the purpose of pre-commissioning activities, testing and commissioning, shall rest with the generating station, and the concerned RLDC shall seek such information on each occasion of the interchange of power before COD. For this, the generating station shall furnish to the concerned RLDC relevant details, such as those relating to the specific commissioning activity, testing, and full load testing, its duration and the intended period of interchange. The generating station shall submit a tentative plan for the quantum and time of injection of infirm power on day ahead basis to the respective RLDC."*

4. Procedure:

4.1 Notification and Application for Infirm Power Injection:

- **Advance Notification**:
    - The generator shall provide information regarding the tentative first-time unit synchronization time and their intention to inject infirm power in the NERPC OCC forum.

- **Application Submission**:
    - The generator shall intimate NERLDC about the injection of infirm power with tentative data at least **30 days** before the tentative synchronization date.
    - The generator shall apply to NERLDC for approval of infirm power injection at least **15 days** before the synchronization date. The application must include but not limited to:
        - synchronization date.
        - Type of test (e.g., commissioning, full load testing).
        - Estimated period for infirm power injection.
        - Quantum of power to be injected into the grid.
- **Approval Process:**
    - Upon receipt of the application, NERLDC's Reliability/Study/Operation Group will review the request, considering grid conditions and overall system safety.
    - NERLDC will issue **provisional consent** for the infirm power injection at least **7 days** before the synchronization date.

4.2 Documentation and Communication for Infirm Power Injection:

- **Day-Ahead Reporting**:

    - The generator must submit a day-ahead plan detailing the following for each unit undergoing the infirm power injection test:
        - The test to be conducted, including the expected duration and specific time frame of the activity.
        - The quantum and timing of the infirm power injection.

    - This plan must be submitted to the NERLDC Control Room using the format specified in **Annexure I** for review and approval.

- **Real-Time Communication with NERLDC**:

    - The generator is required to communicate with the NERLDC Control Room prior to each test or activity and obtain a code.
    - The generator shall not proceed with any infirm power injection without obtaining the code from NERLDC Control Room.
- **End-of-Day Reporting:**
    - At the end of each operational day, the generator must provide the following details to the NERLDC Control Room:
        - Net and gross generation (in MUs).
        - A summary of the activity or test conducted, including the period of infirm power injection.
- **Record Retention:**

    - The generator shall retain comprehensive records of all communications related to infirm power injection.
    - These records must be readily available for review upon request by relevant authorities.

4.3 Monitoring and Real-Time Updates:

- NERLDC will monitor the infirm power injection through SCADA or other real-time monitoring systems. The generator is expected to provide periodic updates on the status of the unit and the power being injected.
- Any deviation from the approved injection plan shall be immediately informed to NERLDC control room by the Generator.
- NERLDC may direct the plant to modify the schedule or injection of infirm power based on any situation deemed necessary by NERLDC.

4.4 Termination of Infirm Power Injection:

- NERLDC reserves the right to direct the termination of infirm power injection at any time if it is deemed necessary for maintaining grid security or stability, or if the generator fails to comply with the established procedures or fails to comply NERLDC instructions.

5. Conclusion:

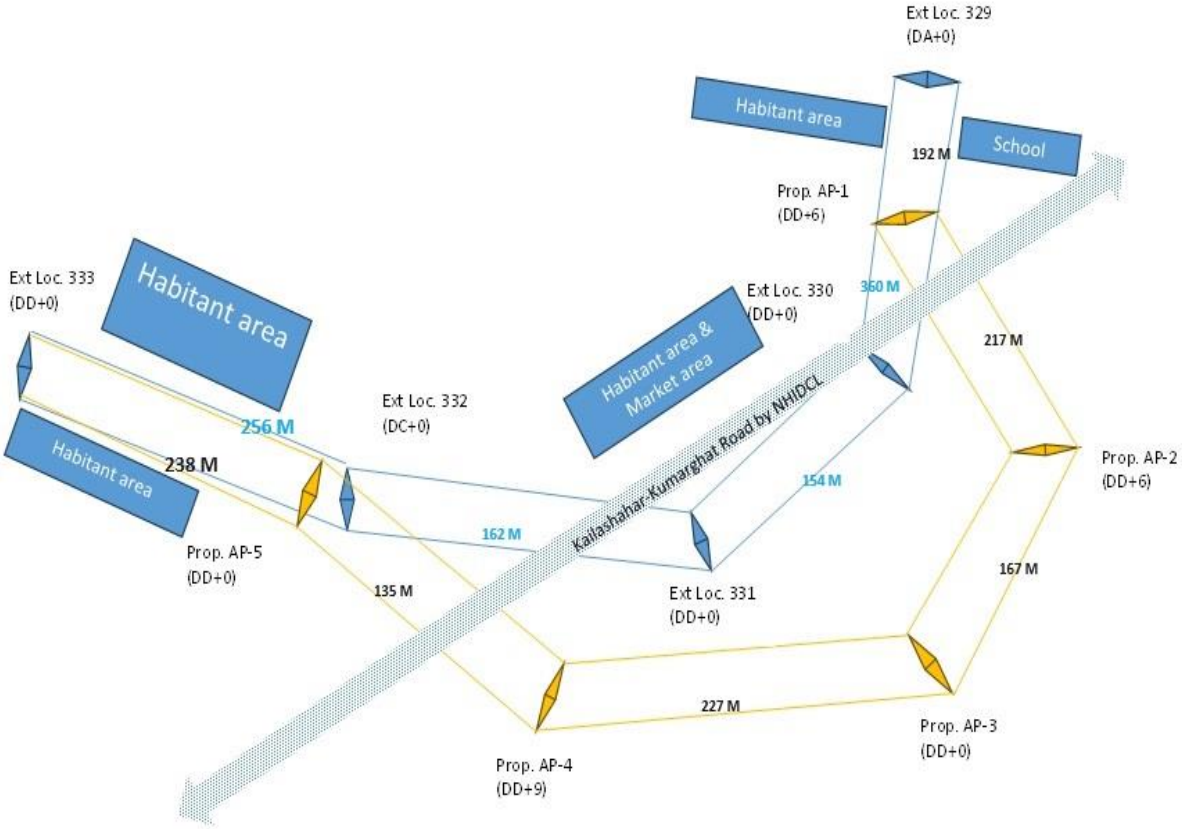
- The generator must follow the procedure for each unit's first-time synchronization and infirm power injection.
- Regular reviews and updates to this procedure may be made based on operational experience, regulatory changes, or any other circumstances deemed necessary by NERLDC or relevant authorities.

****

Annexure -I

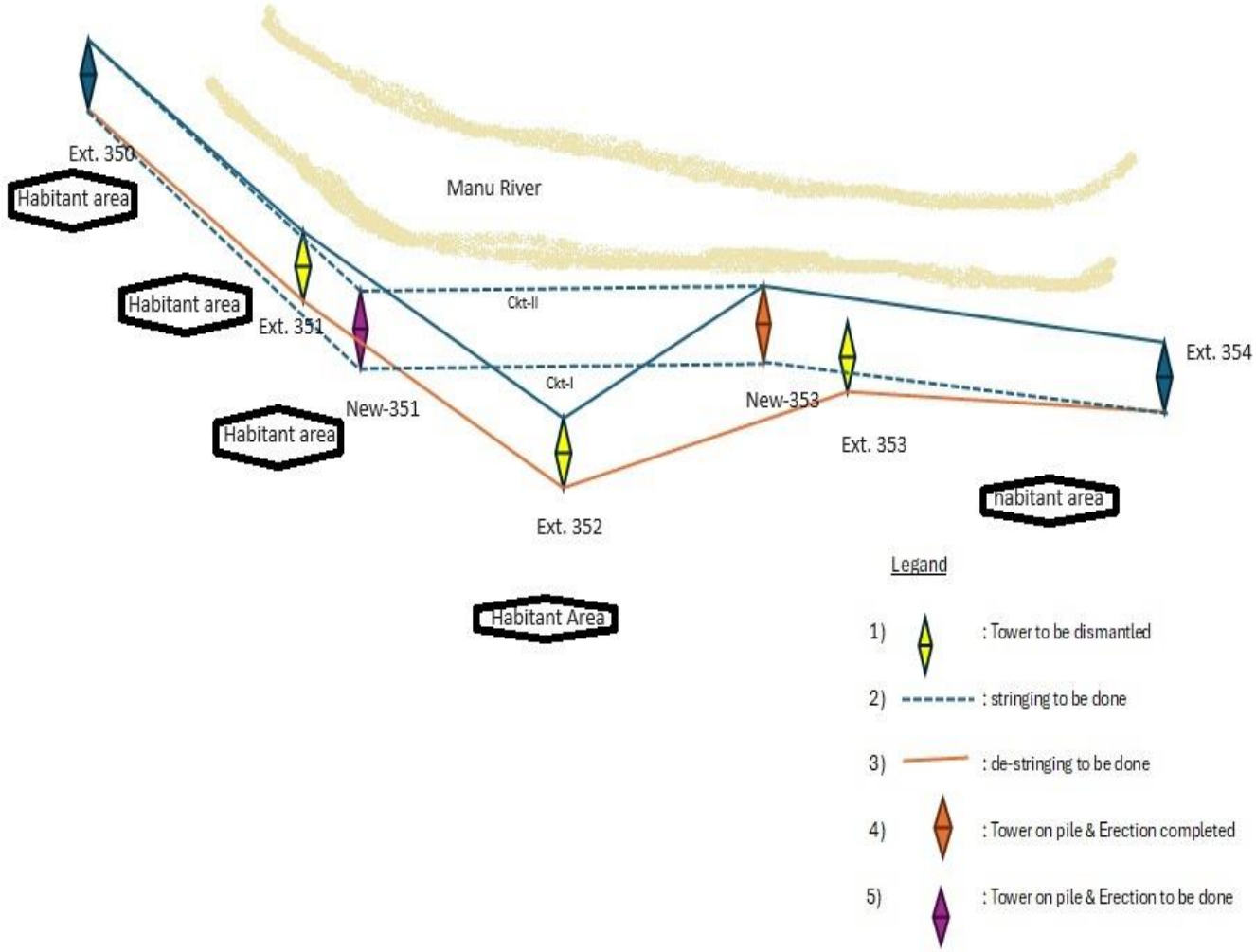
S. No	Name of the Generating Station	Category (Thermal/ Hydro/RE)	Capacity of the Generating Station (in MW)	Period of injection of infirm power (Date and Time)	Purpose of injection of infirm power	Details of specific tests carried out during injection of infirm power	Reference of communication made by the generator (e-mail/letter date)	Quantum of infirm power injection (in MW)	Maximum quantum of infirm power injection (in MW)

Annexure- 400 KV D/C SILCHAR- P.K.BARI T/L: DIVERSION WORKS DUE TO ROAD WIDNING OF KUMARGHAT-KAILASHAHAR ROAD BY NHIDCL



Diversion of line section of 400 KV D/C Silchar-P K Bari Transmission line for road widening of Kailashahar-Kumarghat road by M/S, NHIDCL

Annexuer :400 KV D/C SILCHAR- P.K.BARI T/L: DIVERSION WORKS DUE TO VULNERABLE TOWER LOC. 351 & 353 :-



Diversion of Loc. 351 & 353 of 400 KV D/C Silchar-P K Bari T/L

NERPC sub-group Report on the vulnerable tower locations of 400 kV Palatana-Silchar transmission line.

A. Background

The state of Tripura witnessed very heavy rainfall and unprecedented floods in the month of August 2024, causing loss of human lives and extensive damage, destruction and loss of both public and public infrastructure & properties and subsequently the state of Tripura was declared as **"Natural Calamity Affected Area"** vide notification dated 27th August 2024 by the Relief, Rehabilitation and Disaster Management, Government of Tripura. A copy of the notification & relevant newspaper clippings is placed as **Annexure-1** for reference.

218th OCC Meeting Held on 12th September 2024

NETC submitted an agenda (item no. C.5 – copy enclosed at **Annexure-2** for reference) in the 218th OCC meeting held on 12th September 2024 in Guwahati informing about the status of the damages caused and also requesting that NETC being a single project organization with limited resources, will find it difficult to bear such major financial implications for these protection works and tower shifting necessitated due to Force Majeure and proposed that the financial implications incurred on this account may be considered. The agenda was deliberated by the sub-committee and the deliberation of the sub-committee is presented hereunder;

"NETC informed the forum that due to heavy rain in Tripura massive landslides had occurred which left some towers of the line vulnerable and prone to collapse. NETC also informed the forum that immediate action needed to be taken to restore the condition of the affected tower. NETC further requested that a sub-group under aegis of NERPC may be formed so that the same might visit the affected locations and suggest the immediate and long-term solution to the problem. NERTS suggested that on the basis of study and suggestion of the sub-group, some guidelines may be framed for future references.

After detailed deliberation, the forum opined to form a sub-group consisting of representatives of CEA, NERPC, NERLDC, Powergrid, IIT Guwahati, Assam, Meghalaya and Tripura."

NERPC order No.: No. NERPC/SE(O)/OCC/2024/3642-3649 dated 09th January 2025

NERPC vide order No.: No. NERPC/SE(O)/OCC/2024/3642-3649 dated 09th January 2025 (copy enclosed as **Annexure-3** for reference) informed the formation of NERPC sub-group to visit the vulnerable towers of the 400 kV Palatana-Silchar TL with the following members to visit and inspect the vulnerable tower locations and suggest remedial measures. The sub-group visit was scheduled for 20th January 2025 & 21st January 2025.

Sl. No	Name	Designation	Organization
1.	Sh. Vikash Shankar	Asst. Director	NERPC
2.	Sh. Sunil Singha	Manager	NERLDC
3.	Sh. Arindam Dam	DGM	PowerGrid
4.	Sh. Asif Iqbal Jahan Mazumder	DGM	AEGCL
5.	Sh. G V Diengdoh, EE (T&T)	EE (T&T)	MePTCL
6.	Sh. Dulal Chakraborty.	DGM	TSECL
7.	Prof. Vivek Padmanabha.	Prof. Civil Engg. Department	IIT Guwahati

It is to mention that the nominated members from MePTCL (Sl no. 5 above) could not join the sub-group during the visit. Further, the representative from TSECL (Sl No. 6 above) requested NERPC to consider the nomination of Sh. Bathe Jamatia, Manager (Civil) in place of himself and the same was concurred by NERPC.

B. **Sub-group visit on 20th & 21st January 2025** (photographs of the sub-group visit is enclosed as **Annexure-4**).

Day-1 (20th January 2025)

The committee visited and inspected 6 tower locations on 20th January 2025 (tower nos. 200, 205, 209, 211, 217 & 222).

Day-2 (21st January 2025)

The committee visited and inspected 6 tower locations on 21st January 2025 (tower nos. 137, 182, 357, 385, 393 & 430).

Sub-group methodology for inspection & recommendation.

The sub-group while inspecting the 12 nos. tower locations considered the profile of the soil, topography of the area, proximity of the tower legs to edge of slope, extent of soil movement and slope failure caused by the extensive rain that occurred in Aug'24, vegetation in the proximity of tower legs etc... and recommended the following measures:

Sub-group recommendations:

	Date of Visit/ Day	Tower No	Observation & Recommendations
1	20.01.2025	200	**Observation:** • The tower is located on a hilltop connecting forward and backward spans, both of which cross NH-08. The C leg is situated just 8 meters horizontally from the hillock edge, followed by a gradient slope of height approximately 4 meters, and then a steep slope of 18 meters height from NH-08. The slope appears to consist of loose soil with low shear strength, indicating a risk of landslides and further deterioration of the existing slope. **Recommendation:** • It is recommended to construct an 8-meter high RRM (Random Rubble Masonry) protection wall along the NH side to protect the existing slope and soil erosion. • Further Based on the soil report, a platform for the construction of the 2nd RRM protection wall is proposed by step-cutting the soil slope along the edge of the hill and gradient sloped areas. The soil test report should be shared with Prof. Vivek Padmanabha by NETC. • The soil area after the RRM wall should be secured by covering it with geo net.
2	20.01.2025	205	**Observation:** • The B leg is located just 7 meters horizontally from the hillock edge, with a slope of 11 meters height from NH-08. **Recommendation:** • It is recommended to adopt a "wait and watch" approach without disturbing the existing soil conditions for the time being.
3	20.01.2025	209	**Observation:** • Heavy soil erosion and landslides have occurred on the downhill side of Leg C. The erosion started approximately 8 meters from Leg C. Temporary protection using bamboo palisading and soil-filled

			gunny bags has been provided in 9 steps along the affected areas. **Recommendation:** • While the temporary measure may help stabilize the soil to some extent, however the tower is not fully stable. Considering the condition of loose soil and low bearing strength It is recommended to construct a 3-step Random Rubble Masonry (RRM) wall along with geo textile reinforcement to provide long-term stability and protection.
4	20.01.2025	211	**Observation:** • Soil erosion and landslides have been observed near Legs A and D. Erosion has started approximately 9 meters from both legs. Runoff from the uphill side of the tower flows through a natural channel near Leg D, which has formed into a drain. Temporary protection using bamboo palisading and soil-filled gunny bags has been provided in 4 steps along the affected areas. **Recommendation:** • The temporary measure may offer partial stabilization of the soil, the tower is not fully stable. It is recommended to construct a 3-step Random Rubble Masonry (RRM) wall to ensure long-term stability and protection. • Additionally, two independent stone-pitched /brickbat / cement grout drainage systems should be constructed on both sides of the RRM walls to facilitate natural drainage from the uphill side.
5	20.01.2025	217	**Observation:** • The tower is approximately 25 meters horizontally from NH-08, with a 20-meter vertical difference between the tower and NH. • The tower foundation has been compromised due to cracking and sinking of the adjacent National Highway (NH-08) and the uphill slope near the tower. This has led to severe structural issues, including bending in some of the tower's bracing members and legs. **Recommendation:** • A feasibility study should be conducted to assess the possibility of shifting the tower, as the soil in the area is highly susceptible to further movement. During the survey, options should be explored, including replacing the current tower with a suitable monopole structure or relocating the tower at position 216 to a specialized tower and directly connecting it to tower 218, bypassing tower 217.

			• A Random Rubble Masonry (RRM) wall with an integrated drain should be immediately constructed on the uphill side (towards highway) to prevent the slope failure and redirect the drain water from accumulation the tower foundation area and further avoid sinking. • A profile study of the downstream side of the tower should also be conducted.
6	20.01.2025	222	**Observation:** • The tower is located adjacent to NH-08, with Legs C and D facing NH. These legs are situated just 8 and 9 meters horizontally from the hillock edge, followed by a steep slope of 15 meters in height from NH-08. The tower connects the forward span (loc 222-223) and backward span (loc 222-221), both of which cross NH-08. **Recommendation:** • It is recommended to adopt a "wait and watch" approach without disturbing the existing soil conditions for the time being.
7	21.01.2025	137	**Observation:** • The landslide occurred approximately 10 meters from both Leg A and Leg D. A permanent protection wall was constructed at Leg D during the construction phase. Temporary bamboo palisading has been provided in five steps, and the tower is currently stable. **Recommendation:** • It is recommended to adopt a "wait and watch" approach without disturbing the existing soil conditions for the time being. Proper drainage for runoff water should also be ensured.
8	21.01.2025	182	**Observation:** • Soil erosion and landslides have been observed near Legs A and B. Erosion has started approximately 10 meters from both legs, with a 60-degree slope and a height of 25 meters from the foothill level. Temporary bamboo palisading has been provided in 3 steps, and the tower remains stable. **Recommendation:** • It is recommended to adopt a "wait and watch" approach without disturbing the existing soil conditions for the time being.

9	21.01.2025	357	**Observation:** • The tower is located on a hillock, with an uphill slope on the A-D leg side, while the B-C and C-D leg sides are situated on a downhill terrain. Soil erosion and landslides have been observed near Leg C. Temporary protective measures consisting of bamboo palisading and soil-filled gunny bags have been provided in five steps along the affected areas. **Recommendation:** • While the temporary measure may provide partial stabilization, the tower is not fully stable. It is recommended to construct a 2-step Random Rubble Masonry (RRM) wall, along with a dressing platform, to ensure long-term stability with a geotextile layer at the end of each step which would further offer protection of the tower foundation. • Additionally, stone-pitched or brickbat drainage systems, or a cement grout drainage system, should be constructed to divert water away from the tower and prevent further erosion.
10	21.01.2025	385	**Observation:** • Soil erosion and landslides have been observed on the downhill side of Leg D at a distance of 5 meters, and soil erosion has occurred at a distance of 12 meters from Leg C. Temporary protective measures consisting of bamboo palisading and soil-filled gunny bags have been provided in 5 steps along the affected areas. • **Recommendation:** While the temporary measure may help stabilize the soil to some extent, the tower is not yet fully stable. • It is recommended to construct a 1-step Random Rubble Masonry (RRM) wall, along with a dressing platform, and to backfill the area with compacted soil. The slope near Leg D should be properly maintained. • Additionally, an additional RRM wall should be constructed along Leg C to provide further stabilization.

			• Stone-pitched or brickbat drains, or a cement grout drainage system, should be installed to effectively divert water away from the tower and prevent further erosion.
11	21.01.2025	393	**Observation:** • Soil erosion and landslides have been noticed near Leg A. The A leg is situated just 7 meters horizontally from the hillock edge, followed by a steep slope of 18 meters height from ground level. Temporary protection using bamboo palisading and soil-filled gunny bags has been provided in three steps along the affected areas. **Recommendation:** • While the temporary measure may offer partial stabilization of the soil, the tower is not yet fully stable. It is recommended to construct a 1-step RRM wall, along with a dressing platform. • Further the soil area after the Random Rubble Masonry (RRM) wall should be secured by covering it with geo net.
12	21.01.2025	430	• **Observation:** Soil erosion and landslides have been noticed near Legs B and C. Erosion started at a distance of 9 meters from Leg C and 14 meters from Leg B. Temporary protective measures consisting of bamboo palisading and soil-filled gunny bags have been provided in 9 steps along the affected areas. **Recommendation:** While the temporary measure may provide partial stabilization, the tower is not yet fully secured. It is recommended to construct a 2-step Random Rubble Masonry (RRM) wall, along with a dressing platform. Additionally, the wall should be reinforced with geo grid in the exposed areas to ensure long-term stability and protection. Further Stone-pitched or brickbat drains, or a cement grout drainage system, should be installed to effectively divert water away from the tower and prevent further erosion.

Other observations & recommendations of the sub-group.

NETC also informed the sub-group that a total of 25 tower locations have been affected due to floods & landslides caused due to the heavy rainfall in the month of August 2024 (photographs & profile details enclosed as **Annexure-5**), however, due to paucity of time, the other 13 affected locations could not be visited by the sub-group. NETC also informed the sub-group members that NETC has undertaken immediate temporary protection measures at 14 affected tower locations and is continuously monitoring the affected locations through extensive patrolling routines. The sub-group appreciated the NETC for its prompt and dedicated action to provide immediate protection measures to the affected towers.

The sub-group after assessing the topography /terrain of the Palatana-Silchar transmission line, general soil characteristics of Tripura and the monsoon rains in the state, also viewed / recommended the following:

1. The sub-group, after assessing the mentioned locations, is of the view that considering the geographical terrain and soil profile of the Palatana-Silchar section in Tripura, similar landslide issues may occur at other tower locations in the future. Given the importance of the 400 kV Palatana-Silchar transmission line for the stability of the entire northeastern grid, the sub-group recommends that, during the monsoon season, if such situations arise, an immediate site assessment by an expert consultant should be conducted. Necessary follow-up remedial measures should then be implemented promptly, with prior intimation to NERPC, to prevent any disruption to the power network.

2. Sub-group advised NETC to continuously monitor the conditions of vulnerable towers in the area adopt a general approach of stabilizing the slopes around the affected towers with geo-mats or geo textiles and ensure vegetation on the slopes.

3. The sub-group emphasized the critical role of the 400 kV Silchar-Palatana transmission line in evacuating power from the Palatana generation and highlighted the vulnerability of its towers, especially during the upcoming monsoon season. Given the risk of landslides in the hilly terrain, any

failure of these towers could severely impact power evacuation and grid stability. To mitigate this risk, the sub-group recommended continuous monitoring of vulnerable towers by NETC and immediate site assessments by expert consultants if instability is detected. Necessary measures should be implemented promptly to ensure the secure evacuation of Palatana generation and prevent major grid disturbance.

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