भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति
North Eastern Regional Power Committee
एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

No. NERPC/OP/Committee/2023/***2861-2940*** Date: November 30, 2023

To,

1. Hon'ble Minister of Power, Govt. of Assam, Dispur - 781006
2. Hon'ble Minister of Power, Govt. of Manipur, Imphal – 795 001
3. Hon'ble Minister of Power, Govt. of Meghalaya, Shillong – 793001
4. Hon'ble Minister of Power, Govt. of Mizoram, Aizawl - 796 001
5. Hon'ble Minister of Power, Govt. of Nagaland, Kohima - 797001
6. Hon'ble Minister of Power, Govt. of Tripura, Agartala-799001
7. Member (GO&D), CEA, Sewa Bhavan, R. K. Puram, New Delhi - 110 066
8. Commissioner & Secretary (Power), Govt. of Arunachal Pradesh, Itanagar – 791 111
9. Principal Secretary (Power), Govt. of Assam, Dispur, Guwahati - 781 006
10. Commissioner & Secretary (Power), Govt. of Manipur, Imphal - 795001
11. Commissioner & Secretary (Power), Govt. of Meghalaya, Shillong - 793001
12. Commissioner & Secretary (Power), Govt. of Mizoram, Aizawl - 796001
13. Principal Secretary (Power), Govt. of Nagaland, Kohima - 797001
14. Principal Secretary (Power), Govt. of Tripura, Agartala – 799001
15. CMD, MeECL (MePDCL/MePGCL/MePTCL), Lumjingshai, S. R. Road, Shillong - 793 001
16. Managing Director, AEGCL, Bijuli Bhavan, Paltan Bazar, Guwahati - 781 001
17. Managing Director, APDCL, Bijuli Bhavan, Paltan Bazar, Guwahati - 781 001
18. Managing Director, APGCL, Bijuli Bhawan, Paltan Bazar, Guwahati – 781 001
19. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
20. Managing Director, MSPDCL, Secure Office Building Complex, South Block, Imphal –01
21. Managing Director, TSECL, Agartala - 799001
22. Managing Director, TPGL, Agartala - 799001
23. Chairman & Managing Director, NEEPCO Ltd., Lower New Colony, Shillong - 793 003
24. Director (Technical), NHPC Ltd., NHPC Complex, Sector-33, Faridabad - 121 003
25. Director (Finance), NTPC Ltd. NTPC Bhawan, Scope Complex, Institutional Area, Lodhi Road – 03
26. Managing Director, OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi - 110019
27. Director (Operation), POWERGRID, Saudamini, Plot No. 2, Sector-29, Gurgaon, Haryana – 122 001
28. CEO, NVVNL, Core 5, 3rd Floor, Scope Complex, 7 Institutional Area, Lodhi Road, New Delhi – 03
29. Chairman & Managing Director, PTC, NBCC Tower, 15 Bhikaji Cama, Place, New Delhi – 110066
30. COO, CTUIL, Plot No.2, sector-29, Gurgaon, Haryana – 122001
31. ED, NLDC, B/9, Qutub Institutional Area, Katwaria Sarai, New Delhi – 16
32. ED, NERLDC, Dongtieh-Lower Nongrah, Lapalang, Shillong- 793006
33. Head, Transmission, KMTL, 7th Floor, Fulcrum, Sahar Road, Andheri (E), Mumbai-400099

Sub: <u>Agenda for the 25th TCC & 25th NER Power Committee Meetings scheduled on 8th & 9th December 2023 respectively in Kolkata</u>– Reg.

Sir,

Please find attached herewith the agenda for the 25th TCC & 25th NER Power Committee meetings which are scheduled as below:

Date	Meeting	Venue	Time
8th December, 2023	**25th TCC**	**"Taj Bengal", Kolkata**	**10:30 Hrs**
9th December, 2023	**25th NERPC**	**"The Oberoi Grand", Kolkata**	**11:00 Hrs**

It is once again requested that name of participants and their travel plan may kindly be intimated to the following nodal officers of NTPC Limited with a copy to NERPC Secretariat, at the earliest, for making smooth arrangement for the meeting.

Chitta R Biswal, Manager (PC); Mob: 9937838687; Email: crbiswal@ntpc.co.in
Soumajit Pakray, Asst Comml Executive; Mob: 9064486675; Email: spakray01@ntpc.co.in

Kindly make it convenient to attend the meeting for fruitful deliberation.

Yours faithfully,

(K. B. Jagtap)
Member Secretary

Copy to:

1. PS to Chairman, NERPC & Hon'ble Dy. Chief Minister & In-charge (Power), Govt. of Arunachal Pradesh, Itanagar- 791111
2. PS to TCC Chairman & Chief Engineer (P), CEZ, DoP, Govt. of Arunachal Pradesh, Itanagar- 791111

Copy for kind information with a request to kindly **send the travel plan at the earliest** (if not yet sent already)**.**

1. Director (Distribution), MePDCL, Lumjingshai, S.R. Road, Shillong – 793 001
2. Director (Generation), MePGCL, Lumjingshai, S.R. Road, Shillong – 793 001
3. Director (Transmission), MePTCL, Lumjingshai, S.R. Road, Shillong – 793 001
4. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
5. Managing Director, MSPDCL, Secure Office Bldg. Complex, Near 2nd MR Gate, Imphal – 795 001
6. Director (Tech.), TSECL, Bidyut Bhaban, Banamalipur, Agartala -799 001.
7. Director (Generation), TPGL, Bidyut Bhaban**,** Banamalipur, Agartala -799 001.
8. GM (Transmission), TPTL, Bidyut Bhaban, Banamalipur, Agartala -799 001.
9. Executive Director (O&M), NEEPCO Ltd., Lower New Colony, Shillong-793003.
10. Regional ED (East –II), NTPC, 3rd Floor, OLIC Bldg., Pl No- N.17/2, Nayapalli, Bhubaneswar-12
11. Executive Director, NERTS, PGCIL, Lapalang, Shillong - 793006
12. Executive Director (O&M), NHPC, NHPC Office Complex, Faridabad-121003.
13. Executive Director (Marketing), PTC, NBCC Tower, 15 Bhikaji Cama, Place, New Delhi – 110066
14. Chief Engineer (GM), CEA, 6th Floor, Sewa Bhawan, R.K.Puram New Delhi-110066.
15. Engineer-in-Chief, P&E Dept., Govt. of Mizoram, Aizawl – 796 001
16. Engineer-in-Chief, Dept. of Power, Govt. of Nagaland, Kohima – 797 001.
17. Chief Engineer (TPMZ), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 1
18. Chief Engineer (WEZ), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 1
19. Chief Engineer (EEZ), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 1
20. Chief Engineer (Commercial) -cum- CEI, Deptt. of Power, Govt. of Arunachal Pradesh, Itanagar- 11
21. VP (Plant), OTPC, Palatana, P.O Udaipur, Gomati Dist., Tripura – 799105
22. GM (BD), NVVNL, Core 5, 3rd Floor, Scope Complex, 7 Institutional Area, Lodhi Road, New Delhi-3
23. CGM, AEGCL, Bijuli Bhawan, Paltan Bazar, Guwahati – 781 001
24. CGM, APGCL, Bijuli Bhawan, Paltan Bazar, Guwahati – 781 001
25. CGM, APDCL, Bijuli Bhawan, Paltan Bazar, Guwahati – 781 001
26. CGM (LDC), SLDC Complex AEGCL, Kahelipara, Guwahati-781019.
27. Head of SLDC, Dept. of Power, Govt. of Arunachal Pradesh, Itanagar-791111

28. Head of SLDC, Dept. of Power, Govt. of Manipur, Keishampat, Imphal-795001
29. Head of SLDC, MeECL, Lumjingshai, S.R. Road, Shillong-793001
30. Head of SLDC, P&E Dept., Govt. of Mizoram, Aizawl-796001
31. Head of SLDC, Dept. of Power, Govt. of Nagaland, Dimapur
32. Head of SLDC, TSECL, Agartala – 799001
33. ED, NLDC, Grid-India, B-9 (1st Floor), Qutab Institutional Area, Katwaria Sarai, New Delhi-16
34. Dy. COO, CTUIL, Plot No.2, Sector-29, Gurgaon, Haryana-122001
35. Executive Director, NERLDC, Grid-India (POSOCO), Lapalang, Shillong – 793006
36. Head, Transmission, KMTL, 7th Floor, Fulcrum, Sahar Road, Andheri (E), Mumbai-400099

Special Invitee(s):

37. Member (Power System), CEA, Sewa Bhawan, R. K. Puram New Delhi-110066.
38. Member Secretary, ERPC, 14 – Golf Club Road, Tollygunge, Calcutta – 700 033
39. Member Secretary, NRPC, NRPC Complex, 18-A, S.J.S. Marg, Katwaria Sarai, New Delhi – 16
40. Member Secretary, WRPC, MIDC Area, Marol, Andheri (E), Mumbai – 400 093
41. Member Secretary, SRPC, 29 – R.C. Cross Road, Bangalore – 560 009
42. MD, NETC, #2C, 3rd Floor, D-21, DMRC Building, Corporate Park, Sector-21, Dwarka, Delhi-77
43. CISO-MoP & Member (Hydro), CEA, Sewa Bhawan, R. K. Puram New Delhi-110066.
44. Chief Engineer (NPC), NRPC Complex, Katwaria Sarai, SJSS Marg., New Delhi – 110016
45. Chief Engineer (Power Data Management & Load Forecasting Division), CEA, 6th Floor, Sewa Bhawan, R. K. Puram, New Delhi-110066

Member Secretary

भारत सरकार **Government of India**

विद्युत मंत्रालय **Ministry of Power**

उत्तरपूर्वी क्षेत्रीय विद्युत समिति **North Eastern Regional Power Committee**

AGENDA NOTES FOR DISCUSSION OF 25th TCC MEETING

(UNDER THE AEGIS OF NTPC LIMITED)

Venue: Hotel Taj Bengal, Kolkata

Date: 8th December, 2023

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1. MEETING SCHEDULE

SN	Meeting	Date	Time	Venue
1	TCC	08.12.2023	10:30 Hrs	Taj Bengal, Kolkata
2	NERPC	09.12.2023	11:00 Hrs	The Oberoi Grand, Kolkata

2. CONFIRMATION OF THE MINUTES OF 24th TCC MEETING & 24th NERPC MEETING

The minutes of the 24th TCC meeting & 24th North Eastern Regional Power Committee (NER Power Committee) meetings held on 27th June, 2023 & 28th June, 2023 respectively in Tawang, Arunachal Pradesh were circulated vide letter no. NERPC/OP/Committee/ 2022/*1332-1408* dated 24th July 2023.

No comments or observations were received from any constituents, the TCC and NER Power Committee may confirm the minutes of above meetings.

3. ARRANGEMENT OF AGENDA OF THE 25TH TCC MEETING:

SN	DESCRIPTION	CATEGORY
1	ITEMS FOR DISCUSSION	A
2	ITEMS FOR APPROVAL	B
3	COMMERCIAL ISSUES	C
4	ITEMS FOR INFORMATION	D
5	ITEMS RECOMMENDED TO BE REFERRED TO THE SUBCOMMITTEES/CMETS/PSDF ITEMS	E

1. CATEGORY - A : ITEMS FOR DISCUSSION

ITEM NO. A.01 : INSTITUTIONAL FRAMEWORK FOR DISASTER MANAGEMENT IN POWER SECTOR: NERPC

As per Section 36 of Disaster Management Act, it shall be the responsibility of every Ministry or Department of the Government of India to —

a) take measures necessary for prevention of disasters, mitigation, preparedness and capacity building in accordance with the guidelines laid down by the National Authority;

b) integrate into its development plans and projects, the measures for prevention or mitigation of disasters in accordance with the guidelines laid down by the National Authority;

c) respond effectively and promptly to any threatening disaster situation or disaster in accordance with the guidelines of the National Authority or the directions of the National Executive Committee in this behalf;

d) review the enactments administered by it, its policies, rules and regulations, with a view to incorporate therein the provisions necessary for prevention of disasters, mitigation or preparedness;

e) allocate funds for measures for prevention of disaster, mitigation, capacity-building and preparedness;

f) provide assistance to the National Authority and State Governments for—

(i) drawing up mitigation, preparedness and response plans, capacity-building, data collection and identification and training of personnel in relation to disaster management;

(ii) carrying out rescue and relief operations in the affected area;

(iii) assessing the damage from any disaster;

(iv) carrying out rehabilitation and reconstruction;

g) make available its resources to the National Executive Committee or a State Executive Committee for the purposes of responding promptly and effectively to any threatening disaster situation or disaster, including measures for—

(i) providing emergency communication in a vulnerable or affected area;

(ii) transporting personnel and relief goods to and from the affected area;

(iii) providing evacuation, rescue, temporary shelter or other immediate relief;

(iv) setting up temporary bridges, jetties and landing places;

(v) providing, drinking water, essential provisions, healthcare, and services in an affected area;

(vi) take such other actions as it may consider necessary for disaster management.

Disaster Management Groups (DMG) in Power Sector

To achieve the above objectives, a four-tier structure has been put in place at Central, Regional, State and Local Unit Levels, with intervention and response depending on the severity of the disaster /calamity for effectively dealing with disaster situations in power sector. Though the prime focus of activities would be at the actual installations that are affected due to the impending or actual event, it is envisaged to have a comprehensive disaster management system in place with initiatives/ support at the regional and central level, especially in case of major disasters affecting the plant, installation or site. While the Central & State Level interventions are necessitated for major calamities, the local agency should respond to minor incidents.

The Regional Level Disaster Management Group (RDMG) has to be constituted under the chair of Member Secretary, Regional Power Committee with composition of following members:

a) Member Secretary (RPC) - Chairman

b) Representative of Secretary in-charge of Rehabilitation and Relief of the affected State of the Region

c) Representatives of each State Civil Defence

d) Regional HODs CPSUs (NTPC, NHPC, PGCIL etc.)

e) CMDs State TRANSCOs/Power Departments

f) SLDC in charge of each state.

g) Chief Engineer, Central Water Commission (CWC), for floods related early warnings.

h) Deputy Director-General, Indian Meteorological Department (IMD), for Earthquake, and Cyclone related early warnings.
i) Group Head, Ocean Information and Forecast Services Group (ISG), for Tsunami related early warnings.
j) Head of RLDC

Further the Responsibilities of the RDMG shall be as follows:
a) To interact with CDMG for proper coordination.
b) To ensure that disaster management plans are in place.
c) To provide inter-state emergency & start-up power supply
d) To coordinate the early restoration of the regional grid.
e) To participate in damage assessment.
f) To facilitate resource movement to affected state (s) from other regional states

The matter regarding formation of Regional Level Disaster Management Group (RDMG) for Power Utilities in North Eastern Region shall be discussed in ensuing Sub-Committee /TCC/RPC meeting and expedite the same to make the effectively implementation of DMP/CMP at regional level in Power sector.

The matter was discussed in the 206th OCCM. The Subcommittee noted and referred to TCC/NERPC forum for further deliberation.

ITEM NO. A.02	**:**	**IMPLEMENTATION OF CRISIS MANAGEMENT PLAN (CMP) AND DISASTER MANAGEMENT PLAN (DMP) IN POWER UTILITIES: NERPC**

As per section 37 of the Disaster Management Act 2005, each Ministry/Department of the Government of India is required to prepare a Disaster Management Plan (DMP). Also, as per the Crisis Management Plan (CMP) of the Government of India prepared by the Cabinet Secretariat, each Central Nodal Ministry is required to prepare a detailed Crisis Management Plan for dealing with crisis situations falling in the areas of their responsibility.

Accordingly, the Ministry of Power prepares DMP and CMP for the power sector in association with Central Electricity Authority. The CMP for power sector is reviewed

periodically by Secretary (Security), Cabinet Secretariat. The latest review meeting was held on 23.11.2022 wherein Secretary (Security) emphasized on the following points related to DMP and CMP:

i. Each power utility shall create a fund which would be 1.5% of the annual revenue of the Utility for meeting the requirement of crisis/disaster management plan.
ii. Power Utilities shall prepare Disaster Management Plan (DMP) and Crisis Management Plan (CMP) separately for their organisation.
iii. The Plan/report shall cover the management of different crisis scenarios as enlisted in the Ministry of Power Crisis management plan given in the table below:

S. No.	Crisis Situations in Power Sector
1.	Terrorist Threats and Attacks
2.	Bombs Threats, Hoax & Bomb Explosions
3.	Explosion in Equipment
4.	Crowd or Mob Attack
5.	Threat from UAV(Drone) attack
6.	Strike
7.	Sabotage
8.	Cyber-attack
9.	Fire/Forest Fire

iv. The report shall also indicate the response of the various teams, observations, and effectiveness for handling the emergency situation and the scope for improvements (new learnings, DOs, and Don'ts), etc,:
v. Sensitize and motivate both public and private sector power utilities to conduct mock drills on regular basis and submit the quarterly report.
vi. Involvement of other agencies such as District-level authorities/ NDRF/SDRF during the mock drill exercises conducted.
vii. Sharing the calendar of mock drills to be conducted by power utilities for next Year.

These plans/reports shall be up-dated and revised on a periodic basis to include any new inputs received from various stakeholders/new learnings during mock drill

exercises conducted/ or on the directives of the National Disaster Management Authority or Cabinet Secretariat.

Secretary (Security) has repeatedly stressed the aforementioned points in the review meetings held earlier and the same was communicated by CEA so many times. However, the majority of the power utilities have not communicated any action taken by them in this regard. They are also not submitting the quarterly mock drill report.

The power utilities in NE states shall furnish the Quarterly report for the mock drill exercises conducted for handling various crisis and disaster situations. The format of report to be submitted to CEA is attached at **Annexure-A.02.**

The matter was discussed in the 207th OCCM and the Subcommittee referred to TCC/NERPC forum for further deliberation.

ITEM NO. A.03 : ANNUAL CONTRIBUTION TOWARDS "NERPC SECRETARIAT ESTABLISHMENT FUND" FOR FY 2023-24: NERPC

In the 24th NERPC Meeting held on 28th June 2023, it was decided that the NERPC members will finance all NERPC Secretariat Expenses except for 'Salary'. The forum had approved the proposed Budget Estimate (BE) of Rs. 285.76 lakhs (approx.) for FY 23-24, which is to be shared by State Utilities/Departments and CPSUs/Private members in the ratio of 1:3, respectively. The contribution amount for each member/Utility for FY 2023-24 has been agreed upon and recommended by the NERPC forum as provided below.

Utilities	Annual contribution in INR
State Utilities / Departments	Rs. 7.52 Lakhs each
Central Utilities & Private Members	Rs. 22.56 lakhs each

Constituents are requested to kindly deposit their respective amount towards NERPC Secretariat Establishment Fund for FY 2023-24 at the earliest (if not yet deposited). The account details have been shared vide our letter dated 28.08.2023.

As on 23/11/2023, the following Utilities/DoPs have made the requisite payment:

F.Y 2023-24			
Constituents	**Status of Payment**	**Constituents**	**Status of Payment**
NTPC	Payment Received	Ar. Pradesh	Payment Received
NHPC	Payment Received	AEGCL	Payment Received
PTC	DUE	APDCL	Payment Received
NVVN	Payment Received	APGCL	DUE
OTPC	Payment Received	MePTCL	Payment Received
NEEPCO	Payment Received	MePDCL	Payment Received
PGCIL	DUE	MePGCL	Payment Received
KMTL	Payment Received	MSPCL	DUE
TPTL	DUE	MSPDCL	DUE
TPGCL	DUE	Mizoram	Payment Received
TSECL	DUE	Nagaland	DUE

Constituent members are requested to kindly deposit their respective contribution amount at the earliest.

ITEM NO. A.04 : NERPC SECRETARIAT BUDGET ESTIMATES (BE) FOR FY 2024-25 AND ANNUAL CONTRIBUTION TOWARDS "NERPC SECRETARIAT ESTABLISHMENT FUND" FOR FY 2024-25: NERPC

The proposed BE for FY 2024-25 is placed below:

Sub-Head/Minor Head/Name of Scheme	**Proposed Budget Estimates 2024-25 (in thousands INR)**	**Remarks**
Salary	**0**	Budget for Salary would continue to be provided by CEA/MoP
Medical (MED)	**1000**	
Domestic Travelling Alowances	**2500**	
Fuels and Lubricants	**500**	
Printing Publication	**60**	

Advertising and Publicity	**250**	
Professional Services	**10**	
Office Expenditure	**10000**	
Minor Work	**6000**	NERPC Complex is not under any annual maintenance contract. Budget includes estimates as per CPWD, Shillong for Annual Electrical Maintenance & Annual Civil Maintenance. And other Minor works for Office Complex
TOTAL	**20320.000**	

The actual contribution amount towards FY 2024-25 will be intimated by NERPC Secretariat separately, after adjusting unspent amount (if any) from current FY 2023-24, post reimbursement to CEA for the budget already provided during FY 2023-24.

Put up for approval of the TCC/RPC.

ITEM NO. A.05 : CONSENT FOR PURCHASE OF POWER FROM 60 MW NAITWAR MORI HYDRO ELECTRIC POWER PROJECTS (NMHEP) OF SJVN LTD. AND SIGNING OF PPA: NERPC

Request letter for purchase of power from Naitwar Mori Hydro Electric Power Projects (NMHEP) of SJVNL was forwarded vide mail dt. 02.11.2023 (copy of letter attached **Annexure-A.05**) by IRP Division, CEA.

Interested States/DISCOMs are requested to convey their willingness to take power from this project and same may be communicated to IRP Division at the earliest.

Levelized tariff is Rs 9.51 per unit as per capital cost submitted to CERC. Efforts have been made to reduce tariff by lowering ROE, Loan restructuring etc. Accordingly, levelized tariff is worked out at **Rs 6.85 per unit**.

ITEM NO. A.06 : FURNISHING OF DATA FOR FINALIZATION OF GENERATION PROGRAMME 2024-25: NERPC

Annual assessment and finalization of the generation program for the year 2024-25 is being undertaken by OPM Division, CEA. In this regard, the deadline provided to the Generating stations for furnishing the data was 31.08.2023

However, data from following stations of NER has still not been received for Generation program 2024-25

Station ID	Station Name	CAP	ST_NM	SH_NM	FUEL_NM
100712	Baramura GT	42.00	Tripura	TSECL	Natural Gas
100665	Kathalguri CCPP	291.00	Assam	NEEPCO.	Natural Gas
100705	Lakwa GT	97.20	Assam	APGCL	Natural Gas
100810	Lakwa Replacement Power Project	69.76	Assam	APGCL	Natural Gas
100707	Leimakhong DG	36.00	Manipur	ED, Manipur	Diesel
100708	Namrup CCPP	139.40	Assam	APGCL	Natural Gas
100053	Rokhia GT	63.00	Tripura	TSECL	Natural Gas

Concerned Utilities/States are requested to further the generation data to the OPM Division, CEA at the earliest without further delay.

Draft LGBR of NER (2024-25) has been shared by email with all the constituents. All constituents are requested to furnish comments within one week.

ITEM NO. A.07 : ALLOCATION OF GAS TO OTPC PALATANA STATION: TSECL

MOP has allocated OTPC power to all beneficiary of NER.As per allocation, Tripura was allocated for 196 MW but presently getting only 125 to 130 MW. TSECL buys power for consumption of its consumers from various entities like NEEPCO, NHPC, NTPC, OTPC and various own generation. Power supply obligations of TSECL have gone up considerably due to the supply of power to Bangladesh as per the terms of

agreement between India and Bangladesh. The power market prices are also too high due to unavailability of power in the market. NE region presently facing huge demand. Power is not available in the summer in the DAM as well as RTM market also. In this critical period sometimes BGTPP, OTPC, Monarchak generates less due to Coal and Gas shortage. NERPC/NERLDC has taken the BGTPP matter seriously.

OTPC Palatana is one of the most economical and reliable projects for NER and Tripura state has been regularly requesting more power from Palatana in various forums of NERPC. However, due to various reasons OTPC has not been able to provide higher than the allocated quota of TSECL. As such energy needs of TSECL as well as other NER states shall be somewhat satisfied if Palatana generates more power.

In such a scenario, it would be prudent if economical and efficient plants like Palatana can be assured higher fuel gas supply so that the competitive power can be availed by NER discoms like TSECL & others. This matter of making available higher fuel gas supply to Palatana has been discussed earlier in NERPC forums and was supported by several delegates due to economic power and high efficiency machines being available at Palatana.

In view of the above, TSECL request the forum to consider supply of higher quantum of fuel gas to OTPC Palatana station so that it can provide higher allocated contracted capacity of its beneficiaries. TSECL also requests the forum to take up the matter with CEA/MOP for necessary directions to the Fuel supplier.

The matter was deliberated in 208th OCC and referred to TCC/RPC for further deliberation.

ITEM NO. A.08 : TARIFF OF LOWER SUBANSIRI HEP OF NHPC: TSECL

It is expected that Subansiri Lower HEP 2000MW of NHPC in Arunachal Pradesh is in under advance stage of execution and expected commissioning of first 2 (Two) units are to be in the month of January/February, 2023. The expected generation from Subansiri HEP is far beyond its declared (Scheduled) commissioning time for which the tariff may be (have been) increased. Hence,

TSECL requests NHPC to inform the suitable tariff of the project so that Beneficiaries

can review the same.

ITEM NO. A.09	:	RENOVATION AND MODERNIZATION OF AGBPP PROJECT OF NEEPCO: TSECL

The Renovation and Modernization of 291 MW Assam Gas Based Power Station for life extension for further period of 20 years was discussed in the last CC meeting. As the station is now nearly completed its useful life of 20 years which is due to expire in March 2024. Communication from NEEPCO has not been received till date.

It is requested that NEEPCO may inform tentative tariff to the forum so that beneficiaries may take decision for renewal.

ITEM NO. A.10	:	INSTALLATION OF TRANSMISSION LINE SURGE ARRESTOR: TPTL

Tripura's vulnerability to lightning and thunder strikes is of moderate to high intensity. The lightning strike injects a current into the power system when it hits a transmission line. There have been several incidents of tripping of intra-state transmission lines due to severe thunder strikes resulting in puncture of insulators etc. which has caused major disruption in Tripura power system and disturbances in intra-state grid.

In order to arrest tripping of 132kV Transmission lines of NER during lightning; installation of TLSA was explored. Line surge arresters are designed to arrest surges and prevent ground faults and short circuits in power lines caused by lightning or switching over voltages.

SLDC, Tripura maintains record of lines frequently tripped due to thundering. Those lines are required to be included for installation of Surge Arrestor.

Installation of Transmission Line Surge Arrester are to be implemented on a Pilot Project basis in the following EHV line sections being frequently tripped due to thundering:

i) 132 KV Agartala (79 Tilla) – Rokhia Double circuit Transmission line.

ii) 132 kV Udaipur – Monarchak Transmission line.

Cost Estimate along-with Detail Project Report (DPR) of the proposal will be

submitted for exploring funding of the project.

In the 208th OCC meeting, the subcommittee in-principle recommended for approval of TCC/RPC with the remarks that TSECL may furnish more details about the no. of lightning incidences, Tower Footing Resistance to quantify number of TLAs, cost estimate etc.

Put up for the deliberation and approval of TCC forum.

ITEM NO. A.11 : MOBILE SUB-STATION FOR EMERGENCY RESTORATION OF EHV SYSTEM: TPTL

In Tripura, it has been experienced that there are outages of substation/ Generating Station/ EHV element /s due to natural calamities. These disasters cause extensive damage to transmission networks resulting in wide spread disruption of many important transmission links and substations affecting power Supply for long periods due to the time taken in restoration.

For restoration of EHV systems in time, insurmountable constraints is faced like tough terrain, poor response from vendors for supply & services especially in remote locations within stipulated period.

Under such adverse situations, the availability of an effective mechanism for emergent restoration of transmission lines the shortest possible time is of utmost importance. Immediate and temporary restoration of transmission networks is possible by deploying the "Emergency Restoration Systems (ERS)." Grid Standards notified by the Central Electricity Authority (CEA) stipulate that every Transmission Licensee shall have an arrangement for restoration of transmission lines through the use of ERS.

In view of above, mobile substation may be kept available where the affected station (suffering outage) in part can be bypassed under urgency and Incoming & Outgoing transmission lines be directly connected/ terminated to transmission line towers through the mobile station solution) till the main station is restored to its shape.

The transmission network of Tripura is of 132 KV level. Hence, the Mobile substation with bay modules is proposed to be procured for emergency restoration of 132kv Intra-state EHV System pertaining to the state Tripura.

NERLDC & NERPC also stressed the need for mobile substation in various forums.

Cost Estimate along-with Detail Project Report (DPR) of the proposal will be submitted for exploring funding of the project.

The agenda is hereby placed before the 25th TCC meeting & 25th NERPC meeting for consideration and approval.

ITEM NO. A.12	**:**	**BUILDING CONSTRUCTION AND ASSOCIATED INFRASTRUCTURE REQUIREMENTS FOR ESTABLISHMENT OF BACKUP SLDC AT TRIPURA UNDER ULDC PHASE-III IN NORTH EASTERN REGION.: TPTL**

The ongoing SCADA-EMS system of Tripura SLDC was established under ULDC Phase-2 scheme during period of 2014-2016 with M/s GE T&D India Limited as the Contractor and all these systems at SLDC are near to its life-cycle completion. Most of the hardware and software systems are obsolete and getting its support from OEMs is proving difficult with time. SLDC has already completed seven (07) years AMC cycle. Considering round-the-clock operations of SCADA-EMS systems at SLDC, the associated systems need to be upgraded/replaced at the earliest.
As per letter ref. NLDC-PSDF/21st MoCo/2023-24/ dated 18th October 2023, the PSDF Secretariat at NLDC (Grid-India) informed that Monitoring Committee of PSDF has agreed for the funding of SCADA/EMS project (incl. AMC) for the seven (07) NER states and has directed TESG to examine these proposals.

Apart from Main SLDC, establishment of Backup SLDCs has been mandated in “Disaster Management Plan for Power Sector” by CEA released in December 2022 and available at web-link on CEA website at https://cea.nic.in/wp-content/uploads/ps___lf/2023/01/Disaster_Management_Plan_DMP_2022_for_power_sector.pdf which states that - “Back up EOC/ Control room should also be set

up preferably at remote location & kept ready to manage adverse situations if main control room dysfunctions or gets affected due to any disaster. Back up control room should be set up keeping all important features/functions of main control room with full access control so that officials can operate the entire system without any difficulty. Backup control room should be tested periodically for intended functionality by making it main control room."

Presently, Tripura SLDC has submitted its signed BoQ to NERLDC and an initial meeting among nodal officers from all SLDCs, NERLDC and Corporate-Engineering dept. of Grid-India had been conducted on 22-Nov-2023 at NERLDC, Guwahati premises. In this meeting, Tripura has brought out that the locations of Backup SLDC has been finalized as P. K. Bari (150 km away from main Control Centre) but necessary infrastructure readiness (such as building, manpower deployment, basic amenities, security, earth pits, DG set platform, etc.) shall need to be ensured prior to delivery of material at Backup Control Centre site (P. K. Bari).

As building expenditure for Backup SLDC does not get covered under PSDF guidelines; hence, it is requested that NERPC forum may take a notice of it and explore funding from any other kind of Central Govt. scheme towards funding for building and other associated infrastructure so that Backup SLDC of Tripura can be established within time. Same scheme may be collectively implemented for all NER states.

TCC forum may like to deliberate.

ITEM NO. A.13	**:**	**REQUIREMENT OF 132/33KV, 2X25MVA SUBSTATION AT NONGPOH UNDER RI BHOI DISTRICT: MePTCL**

Explanatory note: Requirement of 132/33 kV, 2X25 MVA Sub Station at Nongpoh with LILO of 132 kV Stage-III - Umtru Line. This district has been declared as Aspirational District by NITI Aayog. It is also the most industrialized district of the State of Meghalaya contributing to the economy and development of the State and the region. It has the maximum number of Hydro stations in the state and also the

oldest Hydro Power Station in the region. Besides this district lies between Shillong and Guwahati. Although a number of Grid stations have been installed in the industrial area of the district but the head quarter is not having any 132KV substation to cater to the growing load demand and power supply reliability for the common public. Further, it may be stated that the power supply to Nongpoh and its adjoining areas at present is emanating from 33kV feeder at Stage-III power station which is a long line of about 30Km and passing through a thick and dense forest. Thus power interruption is frequent and affecting the public at large.

It is therefore proposed that following Grid substations and associated lines be set up in the interests of the general public.

i. 132/33KV Substation at Nongpoh with LILO of Stage III- Umtru line.
ii. 132/33kV Substation at the existing 400/220/132kV Killing Substation with LILO of 132 kV Umtru - Kahilipara D/C.

The same proposal was put up to CEA as part of 2030 Augmentation plan. After studies CEA has approved 132/33kV 2x25MVA Substation at Nongpoh with 132kV New Shillong-Nongpoh D/C line.

Tentative cost: Rs 90.00/- Crs

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4.1 Sl. No. 6 (A copy of the report is enclosed, **Annexure-A.13**).

ITEM NO. A.14	**:**	**CONSTRUCTION OF 132KV D/C LINE FROM 220/132KV NEW-SHILLONG S/S TO PONGTUNG ALONG WITH THE CONSTRUCTION OF 132/33KV, 2X25 MVA SUB STATION AT PONGTUNG: MePTCL**

Explanatory note: It is worthwhile mentioning that there was a steep increase in the load in Shillong city in recent years. Since there is no scope to augment the 132/33KV substation located in Shillong i.e. Mawlai & NEHU, new substation at Umiam & Mawphlang in the outside of Shillong were constructed to reduce the

overloading of inter connecting line and substation at Shillong. With increasing load at 132 KV Mawphlang substations, it is felt necessary to construct the Pongtung Sub Station is required in order to relief the loading at 132KV Mawphlang S/S and to ensure uninterrupted power supply to this area.

Tentative cost: Rs. 240.00/- Crs

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4.1 Sl. No. 11 (**Annexure A.13**).

ITEM NO. A.15 : CONSTRUCTION OF 132/33KV, 2x25MVA SUBSTATION AT AMLAREM: MePTCL

Explanatory note: Amlarem (near Dawki) being a tourist place with substantial load growth, a reliable power supply is required. The voltage profile in most of the areas under Amlarem Block is poor and the power supply to these areas gets disrupted whenever there is failure/shutdown of the 33kV bus at 132kV Mustem Grid Substation. To overcome this problem and to ensure quality power supply, it is felt necessary to construct a 132kV D/C line from Leshka Stage-I Power Station (with a 2x25MVA, 132/33kV Substation at Amlarem or its adjoining areas) to 132kV Mustem Substation and to be LILO at proposed Amlarem 132/33kV, 2x25MVA Substation.

Tentative cost: Rs. 200.00/- Crs

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4.1 Sl. No. 5 (**Annexure A.13**)

ITEM NO. A.16	:	MOCK BLACK START EXERCISE AS PER IEGC 2023 FOR NEEPCO GENERATING STATIONS: NERLDC

As per regulation 34.3 of operating code of IEGC 2023, Mock Black Start shall be carried out by all the Users/CTU/STUs at-least once in a year.
Mock black start exercise of AGBPP and Kameng HEP of NEEPCO has never been carried out.

During 207th OCCM held on 17th October 2023, AGBPP, NEEPCO mentioned that the same will be carried out after upgradation of DG set under R&M and that the Petition for R&M is pending in CERC. Also, during the same meeting, the forum requested NEEPCO to delink upgradation of DG set from R&M plan and complete the required work at the earliest. NEEPCO also informed that discussion is going on with BHEL to sort out the issues related to facilitation of Mock Black Start Exercise for Kameng HEP.

After brief deliberation, the OCC forum strongly urged NEEPCO to expedite the matter and conduct Mock Black Start exercise as per IEGC 2023.

NEEPCO is requested to intimate the time line for conducting the Mock Black Start Exercises for AGBPP and Kameng HEP.

ITEM NO. A.17	:	STATUS OF AUTOMATIC DEMAND MANAGEMENT SYSTEM: NERLDC

During 207th OCCM held on 17th October 2023, SLDC, Tripura informed that financial approval for ADMS installation at Takerjhala and Bishalgarh is still awaited. Further SLDC, Tripura stated that ADMS installation work has been initiated at Khayarpur substation.

During 207th OCCM held on 17th October 2023, DoP Arunachal Pradesh stated that work for shifting of ADMS installation to less important feeders is in the process. He further informed that feeders have been identified at three substations.

During 207th OCCM held on 17th October 2023, it was informed that ADMS and UFR feeder segregation to be done at Mongshangei substation for Stage-I. Status is still pending as informed by SLDC Manipur.

SLDC Tripura, SLDC Arunachal Pradesh and SLDC Manipur to expedite the work and submit the timeline for implementation of the ADMS for safe operation of the grid.

ITEM NO. A.18	**:**	**OPERATION OF 400 KV SWITCHYARD ON SIGNLE BUS MODE SINCE COMMISSIONING AT PANYOR LOWER HEP (PLHEP): NERLDC**

The existing 400 kV Bus scheme of Panyor Lower HEP is double main scheme, however 400 kV Bus-1 is not available since commissioning. This does not comply with clause no. 44.2(a) CEA Technical Standards for Construction of Electrical Plants and Electric Lines), 2022.

NEEPCO is requested to specify the timeline for availability of 400 kV Bus-1 at Panyor Lower HEP.

ITEM NO. A.19	**:**	**EARLY RESTORATION OF 132 KV RANGANADI – PARE LINE AND 132 KV RANGANADI – ITANAGAR LINE: NERLDC**

Temporary 132 kV Pare – Itanagar line has been formed in Mar'23 using 132 kV Ranganadi – Pare line and 132 kV Ranganadi – Itanagar line to prevent the collapse of endangered tower no 04. of 132 kV Ranganadi – Itanagar line.

The above condition has lead to increase in loading of 132 kV Ranganadi – Lekhi line well beyond the thermal rating, thereby requiring opening of the same when the generation of Ranganadi is available. 132 kV Ranganadi – lekhi line can be kept closed only when there is 1 unit at RHEP and 2 units at Pare HEP

DoP, Arunachal Pradesh is requested to update the status on the restoration of 132 kV Ranganadi – Pare line and 132 kV Ranganadi – Itanagar line.

ITEM NO. A.20	:	RESTORATION OF 220KV MARAINAI-SAMAGURI CKT 1 BY AEGCL ON PRIORITY TO ADDRESS REDUCTION/CURTAILMENT OF GENERATION IN UPPER ASSAM AREA: NERLDC

Upper Assam Gate flow is monitored and controlled in real time by backing down generation in Upper Assam System, under any shutdowns of tie lines connecting Upper Assam with the rest of the Grid.

Upper Assam Gate consists of:

- 220 kV Mariani (AS) –Samaguri II
- 220 kV AGBPP – New Mariani (PG)
- 220 kV Mariani – New Mariani (PG)
- 132 kV Mariani - Golaghat

Considering N-1 reliability gate flow limit is 320 MW

Name	**Installed Capacity**
AGBPP	291
LTPS	97.2
NTPS	64.5
LRPP	69.8
NRPP	98.5
Amguri (Jakson)	70
Total Installed Capacity	691 MW
Typical Generation	380-420 MW

Typical Load of Upper Assam System:

- 180 MW (Off-Peak)
- 357 MW (Peak)

In 24th TCC/RPC meeting, AEGCL representative updated that the survey is underway for rerouting the 1st circuit along the 2nd circuit to utilize the existing corridor of ckt2. The tentative commissioning schedule for the line will be within 2 years' time.

AEGCL/SLDC, Assam is requested to update the status/progress for commissioning of 220 kV Samaguri – Mariani 1.

ITEM NO. A.21 : ISSUES RELATED TO BYRNIHAT S/S: NERLDC

a) 400/220 kV ICT-3 at Byrnihat S/S is on long outage since 02-02-2023 due to SF6 gas pressure in Y-ph line chamber on the HV side reaches the stage-I alarm level.

b) 63MVAR Bus Reactor at Byrnihat to be replaced with 80MVAR Reactor.

SLDC, Meghalaya may update the present status and specify the timeline for bringing the above elements into service.

ITEM NO. A.22 : RE-CONDUCTORING OF 4 NOS OF 132 KV TRANSMISSION LINES IN TRIPURA POWER SYSTEM: NERLDC

At present, the power carry capability of the below 4 lines leads to requirement of reduction of Bangladesh and Tripura loads under the condition of outage of any of the below lines.

a) 132 kV Surajmaninagar (Sterlite) – Surajmaninagar (TSECL) line,

b) 132 kV Surajmaninagar (Sterlite) – Bodhjungnagar (TSECL) line,

c) 132 kV PK Bari (Sterlite) – PK Bari (TSECL) line,

d) 132 kV PK Bari (Sterlite) – Ambassa line

TSECL may update the status of re-conductoring of the 4 nos of above 132 kV Transmission lines.

ITEM NO. A.23 : EARLY COMMISSIONING OF 400/132 KV SURAJMANINAGAR (TSECL) S/S: NERLDC

The status of JV formation has been monitored in various subsequent meetings such as OCC, CMETS etc. However, the issue is still pending.

TSECL is requested to intimate the timeline for commissioning of 400/132 kV Surajmaninagar (TSECL) S/s.

ITEM NO. A.24	:	CONSTRUCTION OF 2ND TRANSMISSION LINE TO TUIRIAL POWER STATION OF NEEPCO: NEEPCO

NEEPCO is facing problem in operating 2x30 MW power station with only one power evacuation line i.e. 132 KV single Circuit Bawklang (Kolasib) - Tuirial line. The matter has been discussed with Power and Electricity Dept. Govt of Mizoram on various occasions in the past and the Govt. of Mizoram has agreed to construct the same. However, NEEPCO has observed that till date no progress on ground has been made for construction of the second circuit.

This may please be noted that a generating station which is based on reservoir operation cannot operate for long with a single evacuation transmission line and is also not fulfilling redundancy condition.

The matter was discussed in the 23rd TCC meeting and it was resolved that the issue will be resolved at RPC level. However, no further information/development in this regard has taken place till date.

Mizoram may kindly update the status and timeline.

ITEM NO. A.25	:	CONSTRUCTION OF 132KV MONARCHAK-SURJAMANINAGAR TRANSMISSION LINE: NEEPCO

The proposed evacuation system from 110 MW TGBPS to Suryamaninagar is yet to be commissioned. Due to poor existing evacuation system, frequent tripping of both the Units have been experienced by NEEPCO. Though the matter has time and again been discussed in several Operation Coordination Committee Meetings of NERPC, M/s TSECL has still not indicated the proposed commissioning date.

Due to frequent tripping of existing lines and subsequent tripping of Units, NEEPCO has already observed major damages in the critical components of machines which in turn will reduce the expected life of the Units of TGBPS.

The issue is presently under monitoring in the OCC forum of NERPC under the item "Status of commissioning for upcoming projects"

TSECL may please be requested to complete the construction work of the said line at the earliest.

ITEM NO. A.26	:	INFORMAL MANPOWER DEPUTATION TO NERPC SCRETARIAT: NERPC

NERPC has been given enhanced responsibilities under the IEGC 2023 and other various CERC Regulations and by the central government. NERPC Secretariat is facing shortage of manpower to cater to various tasks specially the introduction of Protection Code chapter in IEGC 2023 and timebound furnishing of compliance and protection audit (internal/external) by the stakeholder and review of protection protocol/philosophy.

Therefore, in order to tide over the manpower shortage specially in the protection related activities as per mandate of various clauses of IEGC, it is proposed that CPSUs may depute some officers informally to NERPC Secretariat.

Forum may like to deliberate.

ITEM NO. A.27	:	SYSTEM CONSTRAINTS IN THE UPSTREAM OF ROING-CHAPAKHUWA 132 KV D/C TRANSMISSION LINE – MITIGATIONS TO RESTRICTED POWER FLOW TO ARUNACHAL PRADESH: DOP ARUNACHAL PRADESH

After a prolonged wait and great deal of effort, the Roing-Chapakhowa 132 kV D/C transmission line was finally completed & commissioned in July 2023 to the much-expected redundancy relief to Central Arunachal Pradesh.

However, immediately after commissioning of the system, it is experienced that whenever any disruption occurs, or shutdown is taken at any element, in between Panyor (Ranganadi) Hydro-Electric Plant and Pasighat node, quantum of power to Arunachal Pradesh is restricted to mere 10-15 MW through the Roing-Chapakhowa corridor despite its adequate transmission capacity, thereby forcing unabated load-shedding in Arunachal Pradesh. The reason of this constraint is reported to system inadequacies in the upstream systems at Chapakhowa-Rupai-Tinsukia and Rupai-Margherita and Rupai-Tinsukia networks.

Above persistent situation nullifies the very purpose of the installation of much touted Roing-Chapakhowa 132 kV D/C line. Therefore, the above constraints need

to be discussed and remedies to the inadequacies be put in place and enforced at the earliest for benefit of all constituents.

The issue was deliberated in 204th OCCM, in which it was decided that -

i) Assam may consider HTLS reconductoring of Tinsukia-Ledo, Tinsukia-Rupai or any other associated lines in the area.

ii) Planning for new lines, for instance Tinsukia-Chapakhowa, may also be explored.

iii) As an immediate measure, devising an SPS to disconnect loads of Assam or Arunachal Pradesh on tripping of critical lines, may be considered.

The forum further referred the matter to CMETS for further discussion.

Consequently, the matter was deliberated in 24th CMETS and following was decided-

i. With taking into service, Kathalguri – Namsai line, the critical loading in Tinsukia area and ICTs at Tinsukia subsides. Thus, presently the system may be operated as per instructions of NERLDC and if required, some SPS can be planned

ii. Strengthening in Tinsukia area (reconductoring and ICT augmentation) may be reviewed after commissioning of Kathalguri – Namsai and Gogamukh – Gerukamukh links.

iii. Loading on Chapakhowa – Rupai, Rupai – Margherita, Tinsukia – Rupai & Tinsukia – Margherita 132kV S/c lines and Tinsukia ICTs would be reviewed after commissioning of Kathalguri – Namsai 220kV D/c line and Gogamukh – Gerukamukh 132kV D/c (Zebra) line.

Forum may like to deliberate.

ITEM NO. A.28	:	**VETTING AND RECOMMENDATION OF THE SCHEME "IMPLEMENTATION OF AUTOMATIC REACTIVE POWER SOLUTION ON 33/11 KV SUB STATIONS IN ARUNACHAL PRADESH, STUDY REPORT FOR THE REQUIREMENT OF THESE CAPACITOR BANKS.: DOP, ARUNACHAL PRADESH**

PSDF, TESG committee advised DoP, Arunachal Pradesh in its 80th TESG meeting for vetting of the Study Report on requirement of the Capacitor Banks. DoP,

Arunachal Pradesh has requested NERPC for recommendation of the above scheme to PSDF. (Request oletter of DoP, AP at **Annexure-A.28**).

Placed for consideration and approval of TCC/RPC.

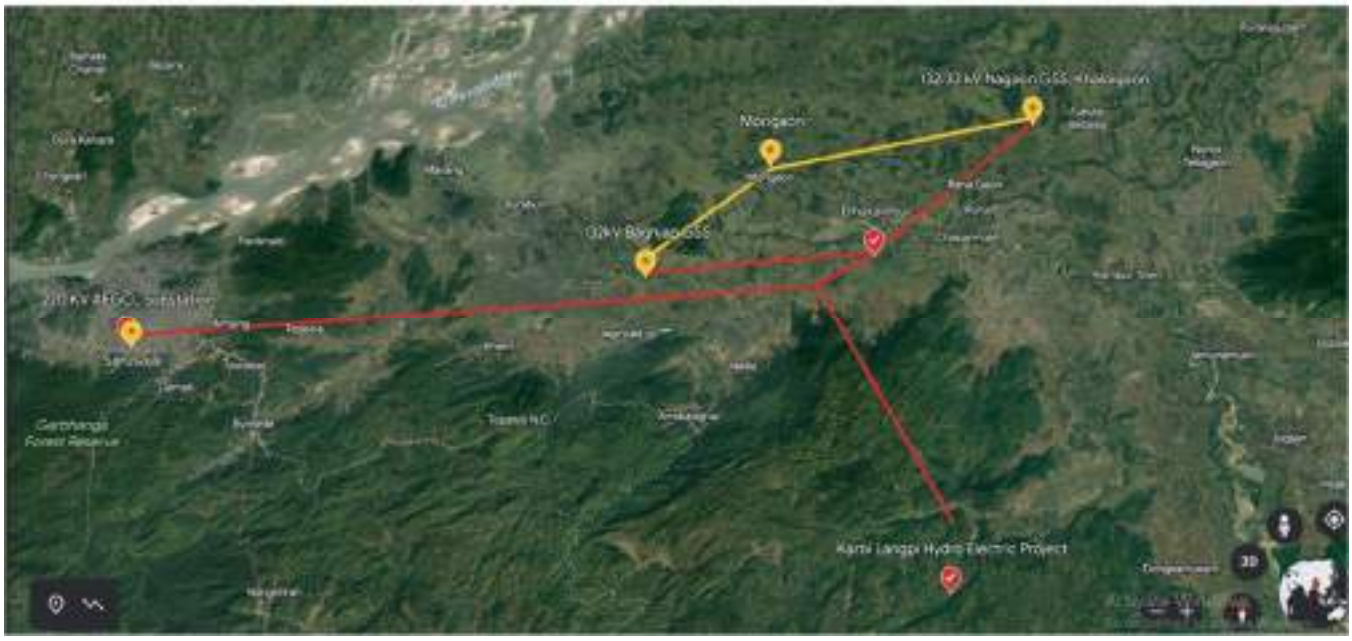
ITEM NO. A.29	ESTABLISHMENT OF 220 KV GRID SUBSTATION INSTEAD OF 132KV GRID SUBSTATION AT MARIGAON (PROPOSED NOW AT DHARAMTUL): AEGCL

Associated Lines: 220kV D/C LILO of 220kV Sarusajai-Langpi line, 132kV D/C Marigaon-Khaloigaon line and 132kV D/C Morigaon-Baghjap line

The proposed Grid Substation at Marigaon approved vide 1st NERSCT Meeting dated 29.11.2018 is now required to be constructed at 220kV level instead of 132kv level. The voltage upgradation proposal is on account of the fact that no land is available for the substation connectivity at 132kV level, and on the other hand, the requisite land has already been made available for the substation, and 220kV connectivity is easily accessible (220kV Sarusajai-Langpi line passes through the immediate vicinity of the site for the substation). Also, the load flow study has shown favorable results for establishment of 220kV Marigaon Substation instead of 132kV level.

The matter was placed before 24th TCC & 24th NERPC Meetings held on 27th & 28th June, 2023, for approval. However, in the meeting it was referred to subcommittee of NERPC.

In 206th OCCM, AEGCL stated that due to space constraint at Marigaon, a new substation at Dharamtul is proposed with connection at 220kV level and 132 KV level (figure below). AEGCL further updated that the load at the substation will increase significantly in the next 3 to 4 Years. After due deliberation, the forum decided that a joint load flow study will be conducted between NERLDC and SLDC Assam and a special meeting will be held among NERPC, NERLDC and AEGCL to examine the study results.



In the 208th OCCM, NERLDC stated that the study has been conducted for 2027 time-frame with 70MW load at Dharamtul (including load of upcoming industries). The study shows that connecting 220kV lines and 132 kV lines are lightly loaded, even in N-1 contingency. Thus, the requirement of 220kV lines and transformers is not justified. CGM AEGCL stated that additional industrial load is coming up in the area by 2030. He further intimated that the project is proposed to be funded under 2nd Phase of AIIB and it has to be finalized early to qualify for the same. He requested the forum that a joint study may be conducted with participation from NERPC, NERLDC and AEGCL at the earliest to further study the network in 2030 timeframe and finalize the project.

Subsequently, as requested by AEGCL, a special meeting was held online on 30th November 2023 among NERPC, NERLDC and AEGCL wherein it was agreed based on joint study by NERLDC and AEGCL that upgradation to 220kV level will lead to strengthening of Assam grid. It will also help cater to the high load projected to come up by 2030 timeframe. Therefore, it was agreed in-principle to the proposal of AEGCL and referred to TCC/RPC for consideration and approval.

2. CATEGORY - B : ITEMS FOR APPROVAL

ITEM NO. B.01 : RECONDUCTORING REQUIREMENT OF 132KV NEHU-NEIGHRIEMS -KHLIEHRIAT LINE: MEPTCL (205TH OCCM)

132KV NEHU-NEIGHRIMS – Khliehriat S/C line has been in service since 1991 and with ageing, the ACSR Panther conductor deployed has become very brittle along with insulation deterioration. This line, along with 132 KV NEHU-Mawlyndep-Mustem-Khliehriat S/C line, provides the only flow gate with NER 132 KV pocket.

Besides, this corridor caters to evacuation of the existing 126 MW generation of MyntduLeshka power station towards Shillong load center. In the event of outage of 132 KV NEHU-Mawlyndep-Mustem-Khliehriat S/C line, N-1 redundancy is almost violated and considering the ageing of 132KV NEHU-NEIGHRIMS – Khliehriat S/C line, reconductoring with a higher current carrying capacity conductor would be required to cater to the increased power flow and demand in the coming years.

The approval of the forum is, therefore, requested for reconductoring of 132KV NEHU-NEIGHRIMS – Khliehriat S/C line with a higher current carrying capacity conductor on the existing towers for which funding through PSDF can be sought.

In 205th OCCM, NERLDC stated that Meghalaya SLDC has done related system study and NERLDC concurs with the findings of the study. Further, NERLDC suggested that SLDC Meghalaya should also consider requirement of reconductoring of other circuit, i.e. 132kV NEHU-Mawlyndep-Mustem-Khliehriat S/C line.

After detailed deliberation, the forum recommended reconductoring of 132KV NEHU-NEIGHRIMS – Khliehriat S/C line along with end equipment with a higher current carrying capacity conductor on the existing towers and referred the matter to TCC/RPC meeting for approval.

ITEM NO. B.02 :	RECONDUCTORING OF INTRA-STATE LINES: MEPTCL (208TH OCCM)

MePTCL had sent Load flow studies to NERPC and NERLDC for vetting in respect of HTLS Reconductoring of the following lines to be funded under PSDF:

1.132kV Khliehriat(PG) – Khliehriat line II

2.132kV Umiam stg I -Mawlai line

3.132kV Umiam stg I – Umiam - NEHU line

4.132kV NEHU -Mawlai Line

In line with separate internal discussion between NERPC/NERLDC and Meghalaya SLDC, vetting by RPC forum is required. The forum may therefore approve HTLS reconductoring of the above lines.

In the 208th OCCM, NERLDC stated that the study report, as provided by MePTCL, has been vetted and the same supports the requirement of HTLS reconductoring of the mentioned lines. After due deliberation, the forum agreed for the requirement of HTLS reconductoring of the lines. System study report is attached as **Annexure B.2**.

The same is put up for approval of the TCC/NERPC.

ITEM NO. B.03 :	EMERGENCY RESTORATION SYSTEM (ERS) FOR INTRA-STATE EHV LINES: TPTL (208TH OCCM)

The most important aspect of a transmission line is to provide continuous and reliable power. In Tripura, it has been experienced that there are outages of substation/ Generating Station/ EHV element /s due to natural calamities. The high wind velocity during storm, cyclone and local phenomenon of whirlwind, etc., might have exceeded the wind speed for which the tower is designed. This type of wind is difficult to predict. These disasters cause extensive damage to transmission networks resulting in wide spread disruption of many important transmission links and substations affecting power supply for long periods due to the time taken in restoration.

Under such adverse situations, the availability of an effective mechanism for emergent restoration of transmission lines the shortest possible time is of utmost

importance. Immediate and temporary restoration of transmission networks is possible by deploying the "Emergency Restoration Systems (ERS)." Grid Standards notified by the Central Electricity Authority (CEA) stipulate that every Transmission Licensee shall have an arrangement for restoration of transmission lines through the use of ERS.

Emergency Restoration System a temporary structure are designed to bypass the existing transmission towers of any voltage in any terrain. It is a proven technique to deal with disaster management in the transmission sector.

The transmission network of Tripura is of 132 KV level. In view of above, to meet the exigencies in case of natural calamities for restoration in the existing transmission network, 1 (One) set of Emergency Restoration Systems (ERS) at 132 kV level is proposed for the state.

NERLDC & NERPC also stressed the need for Emergency Restoration Systems (ERS) in various forums. Cost Estimates along-with Detail Project Report (DPR) of the proposal will be submitted for exploring funding of the project.

The agenda was discussed in the 208th OCC meeting and the forum recommended for approval of the TCC/NERPC forum.

ITEM NO. B.04	**:**	**PREVENTIVE SHIFTING OF TOWERS IN PILE FOUNDATION DUE TO MASSIVE & WAYWARD EROSION OF RIVER IN NORTH EASTERN REGION: NERTS (205TH OCCM & 49TH CCM)**

Recently, in Northeastern Region, it is observed that some of river stretches suffering unpredictable and wayward erosion for which every year some of towers of different transmission lines become endangered and prone to collapse. It is to be mentioned that such situation is prevailing in Dikrong river for which every alternate year tower collapse was encountered for 400kV Ranganadi – Balipara D/C Line till 2015. To arrive in permanent solution, the issue was deliberated in 111th OCC Meeting for preventive shifting of 10 nos. of tower from open cast foundation to pile foundation, which was subsequently, approved in 15th NERPC Meeting with financial implication of Rs. 22.00 Crores on POC Mechanism. Accordingly, preventive shifting to pile

foundation was done and issue of tower collapse could be resolved permanently. The MOM of 111th OCCM and 15th NERPC is attached in **Annexure – B.4(a) & (b)** respectively for ready reference.

In accordance to above, POWERGRID, NERTS assessed vulnerability of some more towers in different river stretches of the Region detailed below where erosion is un-predictable and similar action is required for stable operation of Transmission Lines. The detailed photographs and brief are attached in **Annexure – B.4(c)**.

SN	LINE	RIVER	AREA	TOWER NO.
1	132 kV S/C Salakati - Gelephu TL.	Deosiri	Shantipur, Chirang, Assam	123 & 121
2	132 kV S/C Roing - Pashighat TL	Siang	Arunachal Pradesh	153, 154, 155 & 156
3	220 kV S/C Misa - Kopili TL	Kopili	Kopili, Dima-Hassao, Assam	002
4	400 kV D/C Balipara - Bongaigaon ckt 1&2 TL.	Nonoi	Tangla, Udalguri, Assam	305
5	400 kV D/C Balipara - Bongaigaon ckt 1&2 TL.	Mara pagladia	Barama, Baksa, Assam	458 & 459
6	400 kV D/C Binaguri - Bongaigaon TL.	Anthihara	Gorufella, Kokrajhar, Assam	90
7	400 kV D/C BNC-Ranganadi TL.	Chatrang	Gohpur, Assam	174
8	400 kV D/C Misa - Mariani TL	Manjha	Manjha, Karbi-Anglong, Assam	822 & 844
9	400kV D/C Alipurduar – Jigmilling Line	Hell	Dotma, Kokrajhar, Assam	260
10	400 kV D/C Balipara - Bongaigaon ckt 3&4 TL.	Belsiri	Upper Benchimari, Sonitpur, Assam	126
11	800KV HVDC BNC-Agra Line	Pasnoi	Gejenga-guri, Sonitpur, Assam	276
TOTAL NO. OF TOWERS =				17 NOS.

The tentative rate for different voltage class of tower will be approximately as below:

SN	Voltage	Cost of Pile Shifting (In Rs. Lakhs)			Total Cost (In Rs. Lakhs)	Remarks, If any
		Foundation	Tower Cost	Execution		
1	132 KV HVAC	200	11.08	21.25	232.33	
2	220 KV HVAC	250	16.68	26.28	293.36	
3	400 KV HVAC	300	40.63	47.99	388.62	
4	800 KV HVDC	325	43.00	50.00	418.00	
NOTE: Execution cost inclusive of Survey, Soil investigation, Dismantling and Erection, De-stringing, and re-stringing, ERS shifting etc. etc.						

Accordingly, approximate expenditure is calculated as below:

SN	VOLTAGE CLASS	NO. OF TOWERS (In Nos.)	RATE (In Rs. Lakh)	AMOUNT (In Rs. Lakh)	REMARKS
1	132 KV HVAC	6	232.33	1393.98	
2	220 KV HVAC	1	293.36	293.36	
3	400 KV HVAC	9	388.62	3497.58	
4	800 KV HVDC	1	418.00	418.00	
TOTAL =				5602.92 Lakhs (Say 57 Crores)	
RUPEES FIFTY-SEVEN CRORES ONLY					

Agenda was discussed in 205th OCC meeting wherein the forum accorded in-principle approval and referred to CCM.

Agenda was discussed in 49th CCM wherein the forum accorded the approval with cost booking in POC mechanism and forwarded the proposal for approval of TCC. [Item no. C.7 of 205th OCC and 6.5 of 49th CCM, Copy attached at **Annexure-B.4 (d)**].

ITEM NO. B.05 : STRINGING OF NEW 132KV S/C LINE ON D/C TOWERS FROM TAMENGLONG TO KARONG ALONG WITH THE ASSOCIATED LINE BAYS: MSPCL

The execution of the above work with possible funding from PSDF or other funding agencies was proposed in the 24th TCC and NERPC meetings held on the 27th & 28th of June 2023 respectively at Tawang, Arunachal Pradesh. However, the forum

deliberated that the item is to be first discussed in Sub-Committee meeting(s) for detailed study and was therefore referred to the Sub-Committee (s) of NERPC.
Hence the same agenda was discussed in several OCC meetings with NERLDC studying the effect of 132kV Karong-Tamenglong and 132kV Karong-Hundung lines on the Manipur grid. After due deliberation in the 207th OCC Meeting held on the 17th of October, 2023 at Guwahati (copy enclosed as **Annexure B.5**), the forum in-principal agreed to the proposal of stringing of 132kV Tamenglong- Karong and 132kV Karong-Hundung lines in 2030-31 timeframe. Also, the matter will be referred to CMETS for further discussion and approval.

Considering the above facts and circumstances, the committee may kindly approve the stringing of new 132kV line from Tamenglong to Karong.

TCC may kindly deliberate the request of MSPCL and approve the proposal for execution with possible funding from PSDF or other funding agencies, in the interest of NER Grid security and smooth supply management of Manipur.

CTU vide mail to NERPC dt. 24/11/2023 stated: quote *"Intra state transmission system strengthening requirement of North Eastern States and Sikkim by the year 2030" Report prepared by CEA (Feb 2023 version) inter alia has following lines for strengthening of transmission system in Tamenglong, Karong, and Hundung areas in Manipur:*

1. Tamenglong- Karong 132 kV S/c line-70 km
2. 2nd circuit stringing of Rengpang-Tamenglong 132 kV S/c on D/c lines-30 km
3. LILO of Imphal-Dimapur 132 kV line at 132 kV Karong S/s by HTLS-6 km
4. 132 kV Yaingangpokpi-Hundung 2nd circuit stringing-30 km

In view of the above, it is prudent that intra-state strengthening scheme proposed by MSPCL viz. Karong - Tamenglong and Karong - Hundung 132kV lines may be taken up with CEA for deliberation/approval. CTU can assist CEA & MSPCL for carrying out system studies for future time-frame, as per requirement.
Further, as the proposed Karong - Tamenglong and Karong - Hundung 132kV lines which are purely intra-state in nature and also not connected to ISTS would not be taken up in CMETS-NER for deliberations." unquote.

In view of above, put up to TCC/RPC for approval.

ITEM NO. B.06 :	STRINGING OF NEW 132KV SC LINE ON DC TOWER FROM KARONG TO HUNDUNG ALONG WITH ASSOCIATED BAYS: MSPCL

The execution of the above work with possible funding from PSDF or other funding agencies was proposed in the 24th TCC and NERPC meeting held on the 27th & 28th of June 2023 respectively at Tawang, Arunachal Pradesh. However, the forum deliberated that the item is to be first discussed in Sub-Committee meeting(s) for detailed study and was therefore referred to the Sub-Committee(s) of NERPC.

Hence the same agenda was discussed in several OCC meetings with NERLDC studying the effect of 132kV Karong-Tamenglong and 132kV Karong-Hundung lines on the Manipur grid. After due deliberation in the 207th OCC Meeting held on the 17th of October, 2023 at Guwahati (copy enclosed as **Annexure B.6**), the forum in-principal agreed to the proposal of stringing of 132kV Tamenglong- Karong and 132kV Karong-Hundung lines in 2030-31 timeframe. Also, the matter will be referred to CMETS for further discussion and approval.

Considering the above facts and circumstances, the committee may kindly approve the stringing of new 132kV line from Karong to Hundung.

TCC may kindly deliberate the request of MSPCL and approve the proposal for execution with possible funding from PSDF or other funding agencies, in the interest of NER Grid security and smooth supply management of Manipur.

CTU vide mail to NERPC dt. 24/11/2023 stated: quote "*Intra state transmission system strengthening requirement of North Eastern States and Sikkim by the year 2030" Report prepared by CEA (Feb 2023 version) inter alia has following lines for strengthening of transmission system in Tamenglong, Karong, and Hundung areas in Manipur:*

1. Tamenglong- Karong 132 kV S/c line-70 km

2. 2nd circuit stringing of Rengpang-Tamenglong 132 kV S/c on D/c lines-30 km

3. LILO of Imphal-Dimapur 132 kV line at 132 kV Karong S/s by HTLS-6 km

4. 132 kV Yaingangpokpi-Hundung 2nd circuit stringing-30 km

In view of the above, it is prudent that intra-state strengthening scheme proposed by MSPCL viz. Karong - Tamenglong and Karong - Hundung 132kV lines may be taken up with CEA for deliberation/approval. CTU can assist CEA & MSPCL for carrying out system studies for future time-frame, as per requirement.
Further, as the proposed Karong - Tamenglong and Karong - Hundung 132kV lines which are purely intra-state in nature and also not connected to ISTS would not be taken up in CMETS-NER for deliberations." unquote.

In view of above, put up to TCC/RPC for approval.

ITEM NO. B.07 : RE-CONDUCTORING OF 132KV TRANSMISSION LINE WITH HTLS CONDUCTOR: NAGALAND (208TH OCCM)

Re-conductoring of 132kv transmission line with HTLS conductor of:

1. Nagarjan DoPN (Dimapur) - PGCIL (Dimapur) ckt – I&II : 1.3 Km
2. PGCIL (Dimapur) – Kohima: 60 Km
3. Kohima – Karong (Nagaland Portion): 21 Km

The 132kV S/C transmission line Nagarjan DoPN (Dimapur) – PGCIL (Dimapur) Ckt-I & II, 132kV S/C transmission line PGCIL (Dimapur) – Kohima and 132kV S/C transmission line Kohima – Karong (Nagaland Portion) were constructed during the late 1970's.

These 132kV transmission corridor serves as major lifeline to the State capital area i.e. Kohima Load Centre and the state commercial hub i.e. Dimapur Load Centre.

The 132kV Kohima – Karong transmission line is the only 132kV interstate line connecting Nagaland and Manipur state, the line serves as an important alternative to both the state during exigency. The need for re-conductoring of the said transmission lines are as explained below:

i). 132kV S/C transmission line Nagarjan DoPN (Dimapur) – PGCIL (Dimapur) Ckt. – I & II:

The 132/66/33kV, 2x100MVA Nagarjan sub-station is fed through 2(two) nos. of 132kV S/C line from 220/132kV PGCIL (Dimapur) sub-station. The line length of

132kV Ckt. I & II are 0.75KM and 0.55KM respectively. Nagarjan sub-station is the only grid connected station catering power supply to Dimapur Load Centre feeding four districts vis. Dimapur, Niuland, Peren & Chumoukedima districts. Dimapur being the commercial hub of the state, the maximum demand of Nagarjan sub-station is about 125MW as of May'2023.

The conductors of both Circuit-I & II feeding Nagarjan sub-station is a single ACSR Panther and due to the old age of conductors, the line loading is restricted to 70MW on each circuit. Therefore, in the event of outage of one circuit, N-1 contingency criteria is not satisfied, and Dimapur Load Centre is constrained to impose load shedding.

ii). 132kV S/C transmission line PGCIL (Dimapur) – Kohima:

The 132kV S/C transmission line from PGCIL (Dimapur) sub-station to Kohima sub-station is one of the oldest Transmission Line in Nagaland, and has been in service for about 45 years. Kohima Load Centre caters power supply to the districts of Kohima, Wokha, Phek, Kiphire and Tseminyu. Kohima being the state capital, stability of power is a priority. The conductor of the 132kV PGCIL (Dimapur) – Kohima transmission line is single ACSR Panther with a line length of 60KM. Presently the installed capacity under Kohima Load Centre (Kohima, Meluri-Phek, Kiphire & Wokha) is about 95 MW. During exigency, additional load requirement of Manipur (Karong sub-station) is catered from Kohima restricting up to 40MW (due to transmission constraints).

Due to the old age of the transmission line the conductors, jumpers and insulators had deteriorated. Breakdown of jumpers and failure of disc insulators have become frequent which has resulted in grid disturbance in many occasions. The State has been warned on several occasions by NERLDC & CERC and only recently the Department was summoned by CERC vide Petition No. 259/MP/2020 and has directed DoPN to expedite the up-gradation of the said transmission line.

iii).132kV S/C transmission line Kohima – Karong (Nagaland Portion):

The 132kV Kohima – Karong (Manipur) line connecting Nagaland and Manipur is an important interstate line between the two states. During normal grid condition, the line provides stability for Kohima Load Centre. The conductor of transmission line in

Manipur side is already under process for upgradation with HTLS conductor, whereas, proposal for upgradation of the transmission line on Nagaland side has not been processed till date. It may be noted that, due to the present system constraint, requirement of Manipur is restricted to 40MW during Manipur exigency. Requirement for enhancement of this line transmission capability has been in demand for a long time.

In the 208th OCCM, NERLDC stated that the mentioned lines are critical for Nagaland power system and system study supports for the reconductoring requirement for these lines.

After detailed deliberation, the forum recommended the proposal and refer to TCC/RPC for approval.

3. CATEGORY - C : COMMERCIAL ISSUES

ITEM NO. C.01 : OUTSTANDING DUES OF MIZORAM TO TRIPURA: TSECL

As on date, an amount of Rs 9.36 crores is outstanding including the surcharge with Mizoram. It is to mention that TSECL is to make timely payment to Gail/ONGC regularly to avoid surcharge etc as well as to avoid regulation of Gas supply. Therefore, Mizoram is requested to ensure monthly payment to avail rebate as well as to avoid surcharge, regulation of power supply etc. LC of Mizoram is also expired. Mizoram is requested to kindly renew the LC at an early date.

ITEM NO. C.02 : OUTSTANDING DUES OF MANIPUR TO TRIPURA: TSECL

Outstanding with Manipur is only Rs 7.96 lacs as on date excluding surcharge. Manipur has discontinued drawing power from Baramura. Hence, it is requested kindly to make payment immediately so that all the codal formalities be maintained to avoid any audit observation. The matter was also discussed in the last CC meeting.

ITEM NO. C.03 : ALLOCATION OF MERCHANT POWER OF OTPC TO TRIPURA: TSECL

Tripura is managing increased power demand of the State including Cross Border commitment through IEX Purchase during any kind of outage of ISGS as well as State Generation. To mitigate the power management criticality considering further increase of State demand in near future, Tripura has already communicated to OTPC for allocation of their 40 MW Merchant power. Hence NERPC is requested kindly to look into the matter so that OTPC may expedite for allocation of their merchant power to Tripura as per CERC tariff. TSECL requested OTPC for consideration of allocation of merchant power. In the commercial forum the matter was discussed so many times. The matter was also discussed in the last TCC/NERPC meeting.

Hence NERPC is requested kindly to look into the matter so that TSECL can enjoy

the merchant power on long term basis at an early date.

ITEM NO. C.04	**:**	**DE-ALLOCATION OF SHARED POWER FOR THE STATE OF MIZORAM FROM FARAKKA SUPER THERMAL POWER STATION (STPS)-I&II, KAHALGAON STPS-I AND TALCHER STPS-I UNDER NTPC WITH IMMEDIATE EFFECT: P&ED, MIZORAM**

The proposal for deallocation is already conveyed to the Director (RCM), Ministry of Power (RCM Division), Government of India vide letter no. T 13016/01/15-EC(P)/Com/127 dt.03.10.2023. This proposal is based on Govt. of India, Ministry of Power, Director (RCM Division) letter no. F 23/23/2020-R&R/RCM Dt. 20.04.2023.

ITEM NO. C.05	**:**	**RLDC FEES & CHARGES OUTSTANDING: NERLDC**

MSPDCL and P&E, Mizoram are yet clear the dues against RLDC Fees & Charges.

MSPDCL Outstanding – ₹ 47,91,694.00 against monthly RLDC Charges Bill from June,2023 to October,2023 along with surcharge bill for Q2, FY2023-24.

P&E, Mizoram Outstanding – ₹ 26,54,553.00 against monthly RLDC Charges Bill from July,2023 to October,2023 along with surcharge bill for Q1 and Q2, FY2023-24.

NERLDC issued letter to MSPDCL and P&E, Mizoram on 17.11.2023 to MSPDCL and P&E, Mizoram requesting to clear the dues (Attached as **Annexure-C.05**).

MSPDCL and P&E, Mizoram are requested to take immediate necessary action in this regard.

ITEM NO. C.06	**:**	**DEVIATION POOL ACCOUNT OUTSTANDING: NERLDC**

Manipur is the consistently defaulting in payment of Deviation charges.

Manipur – Net O/s Payable to Pool is ₹ 4.09 Crores (till week no. 32) DSM Principal O/s greater than 90 days (13 Weeks) is ₹ 3.34 Crores Clearance of O/s payable had been regularly followed up.

Manipur is requested to take immediate necessary action in this regard.

ITEM NO. C.07 : REACTIVE CHARGES OUTSTANDING: NERLDC

For a long period, Reactive Charges Payable to Pool are pending for the following constituents:

O/s Payable to Reactive Pool by Manipur - ₹ 10.25 Lakhs (till week no. 32).

O/s Payable to Reactive Pool by Mizoram - ₹ 11.93 Lakhs (till week no. 32).

Manipur & Mizoram are requested to take necessary action in this regard

ITEM NO. C.08 : OUTSTANDING DUES OF NER BENEFICIARIES TOWARDS OTPC: OTPC

The current total outstanding dues of OTPC against the NER beneficiary states (as on 30.11.2023) are as under:

(Amount in Rs. Crores)

S. No.	Beneficiary	Outstanding Dues (>45 Days)	Total Outstanding
1	Manipur	9.21	18.17
2	Mizoram	6.94	13.93
3	Tripura	35.29	70.23
	Total	**51.44**	**102.33**

The forum is requested to impress upon Manipur, Mizoram and Tripura to clear their outstanding dues.

4. CATEGORY - D : ITEMS FOR INFORMATION

ITEM NO. D.01 : RECOVERY OF COST OF VSAT SCHEME IN ROING, TEZU, NAMSAI AND SHILLONG: NERPC (49TH CCM)

It was approved in 20th NERPC meeting that the project implementation cost for VSAT scheme for Telemetry data communication purpose at NERLDC, Shillong in Roing, Tezu, Namsai and Shillong station would be recovered one time from NER States. However, the modalities for recovery process and sharing with each constituent State of NER has not yet been decided. It may also be noted that the system has already been commissioned on 00:00hrs dtd 09.04.2021 and is functional. Total project cost for the said scheme as per LOA is INR 68,15,021(Excl. of GST). This agenda point was also deliberated in 25th NeTEST meeting held on 25.05.23 at Shillong and referred to the Commercial Committee (CC) forum for further deliberation.

In the 49th CCM, the forum decided that this cost would be shared by the NER DICs based on the proportion of Weighted Average Long-Term Agreement (LTA)/Medium-Term Open Access (MTOA) in Megawatts (MW) for April 2021, the month in which the project was commissioned.

In this context, the amount owed to each DIC was calculated and is provided in a table below. The DICs are kindly requested to make their respective payments at the earliest convenience.

Site	LTA / MTOA (MW)	Proposed One time recovery Rate iro VSAT system (Excl. of GST) in INR	Additional GST @ 18%	Total in INR
Ar. Pradesh	287.76	623677.13	112261.88	735939
Assam	1621.87	3515162.71	632729.29	4147892
Manipur	237.32	514355.91	92584.06	606940
Meghalaya	336.28	728837.03	131190.67	860028
Mizoram	136.41	295648.45	53216.72	348865
Nagaland	170.05	368558.16	66340.47	434899
Tripura	353.27	765660.34	137818.86	903479
Total	3142.96	6811899.72	1226141.95	8038042

Placed for information of the forum

ITEM NO. D.02	:	UPGRADATION ACTIVITIES OF SCADA-EMS SYSTEMS AT REGIONAL/STATE LEVEL IN NORTH-EASTERN REGION: NERLDC

The SCADA-EMS systems of NERLDC and SLDCs in NER were established under ULDC Phase-2 scheme during period of 2016-2018 with M/s GE T&D India Limited as the Contractor and all these systems at SLDCs & NERLDC are near to its life-cycle completion. Most of the hardware and software systems are obsolete and getting its support from OEMs is getting difficult with time. Most of the SLDCs have already completed seven (07) years AMC cycle and entered into extended AMC period of two (02) years with M/s GE T&D India Limited. Considering round-the-clock operations of SCADA-EMS systems at SLDCs and NERLDC, the associated systems need to be upgraded/replaced at the earliest.

As the SLDCs had applied for PSDF funding which got rejected in Techno-economic sub-group forum of PSDF Secretariat; subsequently the cognizance of the matter was taken by the Appraisal Committee of PSDF Secretariat on request made by Chairperson-NERPC vide letter dated 04th May 2023.

As per Minutes-of-meeting held on 19th June 2023 by Appraisal Committee, it has been mentioned that – *"The Appraisal committee discussed the SCADA upgradation proposals of entities of NER (DPR 375 to 381). The Appraisal Committee suggested that SCADA Upgradation proposal of NER states may be considered as a special case for PSDF funding due to their poor financial conditions. It was discussed that the SCADA projects may be coordinated/ monitored by NERLDC (GRID-INDIA) for all NER states. In this regard, NERLDC may prepare the technical document along with BOQ and a combined tender may be floated for all states of NER. As per PSDF guidelines, the funds will be sanctioned and released to the respective states of NER through TSA account. Accordingly, NLDC to get the revise DPR from NER states. NLDC was also requested to put the above decision to Monitoring Committee for concurrence."*

Accordingly, NERLDC shared draft Technical Specifications & BoQ with all SLDCs and requested for nomination of nodal-officer(s) to discuss and finalize upon the Technical Specifications & Bill-of-Quantity. Subsequently, in-person meetings were

held with all SLDCs (except Manipur SLDC which was done in online mode) and majority of the clarifications were given regarding the ULDC Phase-3 project. The present status in this regard is mentioned in *table* below.

Sl. No.	Description	Signing of MoU	Nomination of Nodal Officer(s)	Initial BoQ and other Appendices	Tentative Location(s) of Backup SLDC
1	Meghalaya	Signed on 28th October 2021.	Received on 28th September 2023.	Received.	Mawphlang
2	Mizoram	Signed on 01st November 2021.	Received on 10th July 2023.	Received.	Kolasib or Serchhip
3	Assam	Signed on 06th January 2022.	Received on 12th September 2023.	Received.	Samaguri
4	Tripura	Signed on 20th May 2022.	Received on 10th August 2023.	Received.	P.K. Bari
5	Arunachal Pradesh	Signed on 07th July 2022.	Received on 03rd August 2023.	Received.	Namsai, Roing or Pasighat.
6	Nagaland	Signed on 01st March 2022.	Received on 13th July 2023.	Received.	Zhadima
7	Manipur	Signed on 11th June 2022.	Received on 13th July 2023.	Received.	Thoubal

Moreover, as per letter ref. NLDC-PSDF/21st MoCo/2023-24/ dated 18th October 2023, the PSDF Secretariat at NLDC (Grid-India) informed that Monitoring Committee of PSDF has agreed for the funding of SCADA/EMS project (incl. AMC) for the seven (07) NER states and has directed TESG to examine these proposals.

Establishment of Backup SLDCs has been mandated in "Disaster Management Plan for Power Sector" by CEA released in December 2022 and available at web-link https://cea.nic.in/wp-content/uploads/ps__lf/2023/01/Disaster_Management_Plan_DMP_2022_for_power_sector.pdf which states that - *"Back up EOC/ Control room should also be set up preferably at remote location & kept ready to manage adverse situations if main control room dysfunctions or gets affected due to any disaster. Back up control room should be set up keeping all important features/functions of main control room with full access control so that officials can operate the entire system without any difficulty. Backup control room should be tested periodically for intended functionality by making it main control room."*

In 26th NETeST meeting, it was decided to include "Video conferencing system with LED displays" and "Maintenance of the existing RTUs" in aforementioned project.

Presently, signed BoQ has been received from all NER SLDCs and an initial meeting among nodal officers from SLDCs, NERLDC and Corporate-Engineering dept. of Grid-India had been conducted on 22-Nov-2023 at NERLDC, Guwahati premises. Major outcomes of the meeting had been as follows –

- Finalization of BoQ items
- Suggestions recorded for modifications in Technical Specifications as per observations
- Finalization of General/Special Conditions of Contract in sync with other regions without any changes
- Locations of Backup SLDCs and necessary infrastructure readiness (such as building, manpower deployment, basic amenities, security, earth pits, DG set platform, etc.) at cost of state-utilities itself prior to delivery of material at site.

After signing of MoM of aforesaid meeting along with BoQ/Appendices, the same will be used by Corporate-Engineering dept. of Grid-India for getting budgetary quotations from prospective bidders and subsequently DPR could be revised and re-submitted to PSDF Secretariat at NLDC through NERPC.

Placed for information of the forum

ITEM NO. D.03 : IMPLEMENTATION OF GUWAHATI ISLANDING SCHEME: NERLDC

In 24th TCC/RPC meeting, it was informed that a special review meeting on Guwahati Islanding scheme was held on 17th April, 2023 by the empowered committee. After detailed deliberation, it was decided that the communication part of this scheme shall be executed under State Reliable communication scheme and M/s GE is being consulted for simplification of the scheme & reduction of the cost. M/s GE has submitted the techno-commercial offer on e-mail dated 16.11.2023 with a price implication of ₹ 11.17 crores (excl. GST) considering major items. In addition to above, certain items such as Firewalls, power/control cabling, BCU, 42U racks, GPS devices at control centres, etc. will also be require and cost can further get escalated by around 20%.

In 26th NETeST meeting, NERLDC informed that subsequent to the meeting held on 29th September 2023, SLDC Assam has submitted details regarding priority of load, feeders to be disconnected during island formation, SLDs of 132 kV GMCH and 132 kV Paltan Bazar. POWERGRID has also provided the requirement of UFRs and heavy-duty relays for 400 kV Bongaigoan (PG).

SLDC Assam has also provided details for UFRs and heavy-duty relays for Assam owned stations.

Draft DPR has been prepared by NERLDC and the same has been shared with all concerned utilities for review and suggestions. A physical meeting is also being scheduled on 1st Dec'23 wherein logic of island formation and draft DPR will be discussed and finalized.

Placed for information of the forum

ITEM NO. D.04 : FORMATION OF NERPC WORKING GROUP FOR SMOOTH IMPLEMENTATION OF IEGC 2023 IN NORTH EAST REGION: NERPC

In the 206th OCCM, it was agreed to form a working group comprising members from Utilities of NERPC to facilitate smooth implementation of various clauses of IEGC 2023 in a comprehensive manner. It was decided that the working group will comprise members from the following:

NERPC Secretariat, NERLDC, SLDCs, STUs, PGCIL, NEEPCO, NTPC, OTPC, NHPC, DoPs/Discoms & coopted members (if necessary) by subgroup.

Accordingly, nominations have been received from almost all the above organizations except few States/Utilities.

Placed for information of the forum

ITEM NO. D.05 : EXPENDITURE STATUS OF NERPC SECRETARIAT (FY 2023-24): NERPC

The latest expenditure status (as on 30.11.2023) as below:

Sl. No.	Head	Budget Estimates FY 23-24	Expenditure from NERPC Secretariat Establishment Fund	Balance	Expenditure from Budget provided by CEA, to be reimbursed from Establishment Fund	Net Balance (FY 23-24)
		(1)	(2)	(3) = (1 - 2)	(4)	(5) = (3 - 4)
1	**Medical**	800	32.12	767.88	370.51	397.367
2	**Domestic Travelling Allowances**	2500	654.586	1845.414	841.63	1003.786
3	**Fuels and Lubricants**	400	120.32	279.68	39.88	239.8
4	**Printing Publication**	60	0	60	24.77	35.23

5	**Advertising and Publicity**	250	0	250	24.9	225.1
6	**Professinal Services**	10	0	10	3.388	6.612
7	**Office Expenditure**	10000	588.035	9411.965	2422	6989.927
8	**Minor Work**	14556.539	182	14374.539	947.73	13426.81
Total		**28576.54**	**1577.061**	**26999.478**	**4674.847**	22324.630

Placed for information of the forum

ITEM NO. D.06 : ADHERANCE TO TIMELINES AS PER IEGC 2023 FOR COMPUTATION OF STATE WISE TTC/ATC: NERLDC

The following is the timeline for submission of data and TTC/ATC declaration by the SLDCs as per the approved procedure for carrying out Inter-Connection studies of new Power System Elements prepared in compliance to Clause 10 (3) of Central Electricity Regulatory Commission, Indian Electricity Grid Code Regulations, 2023.

M-12:

Data Submission: 10th Day of M-12

TTC Declaration: 26th Day of M-12

M-6:

Data Submission: 8th Day of M-6

TTC Declaration: 21st Day of M-6

M-1

Data Submission: 8th Day of M-1

TTC Declaration: 22nd Day of M-1

(M is the month for which calculation is to be done)

It is requested to all the SLDCs to adhere to the timeline strictly and submit the data for TTC declaration and submit the TTC/ATC values to NERPC/NERLDC on regular basis.

Placed for information of the forum

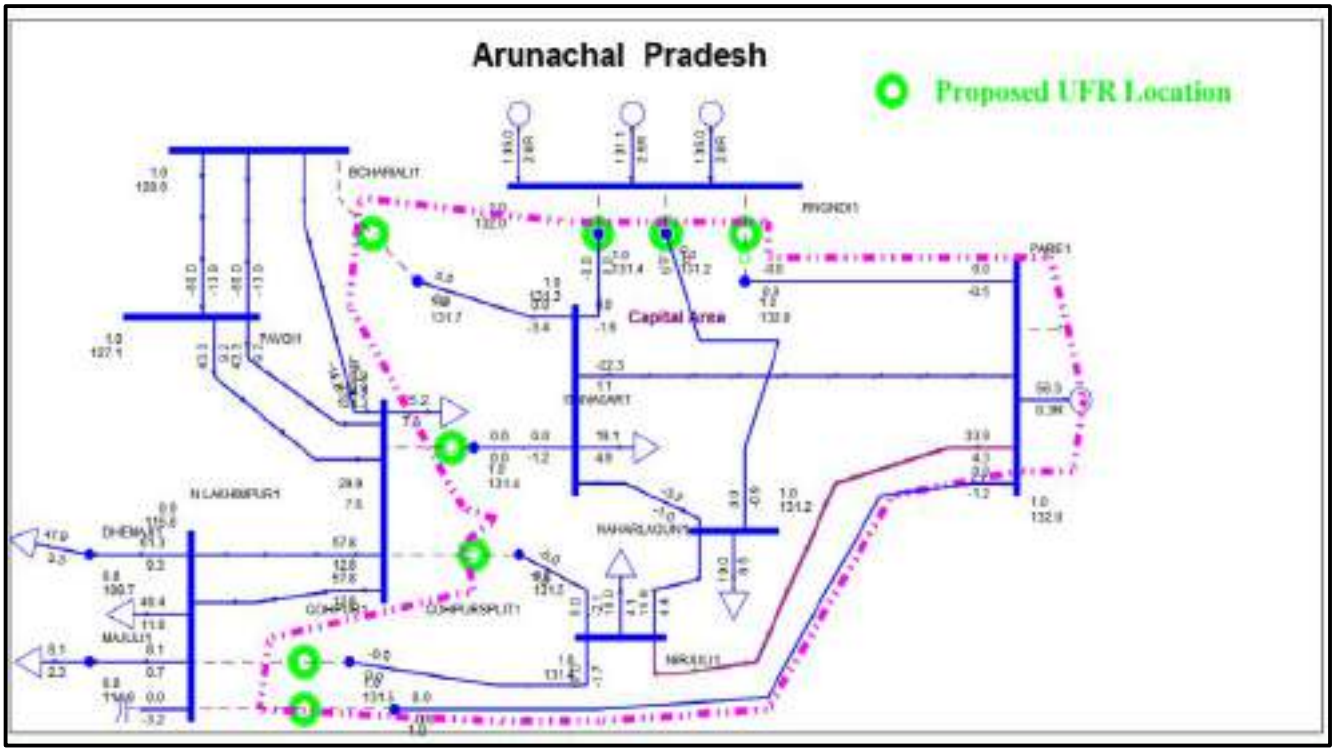
ITEM NO. D.07	:	IMPLEMENTATION/REVIEW OF ISLANDING SCHEMES OF NER: NERLDC

a) Proposal of Islanding Scheme for Itanagar area of Arunachal Pradesh Power System

On 27th July'2023, 132 kV BNC-Itanagar D/C and 132 kV Lekhi-Itanagar lines had tripped. Due to tripping of these elements, Itanagar area and Pare HEP of Arunachal Pradesh Power System got separated from rest of the NER Grid and subsequently collapsed due to load generation mismatch in these areas. Such blackouts of capital areas of Arunachal Pradesh is highly undesirable. In order to prevent such outages, it is required to design Islanding scheme to safeguard the capitals area and maintain the reliability and security of the grid.

A meeting was held on 09-11-23 through video conference (VC) with team compromising of NERLDC, NERPC, NEEPCO, PGCIL, Indi-Grid and SLDC Arunachal Pradesh for discussion on Proposed Islanding scheme for Capital area of Arunachal Pradesh Power System.

The scheme involves the utilization of one unit of Pare Machine and load at 132 kV Lekhi, 132 kV Chimpu and 132 kV Nirjuli substations.



The proposed Islanding Scheme has also been discussed in 208th OCCM held on 21st November 2023.

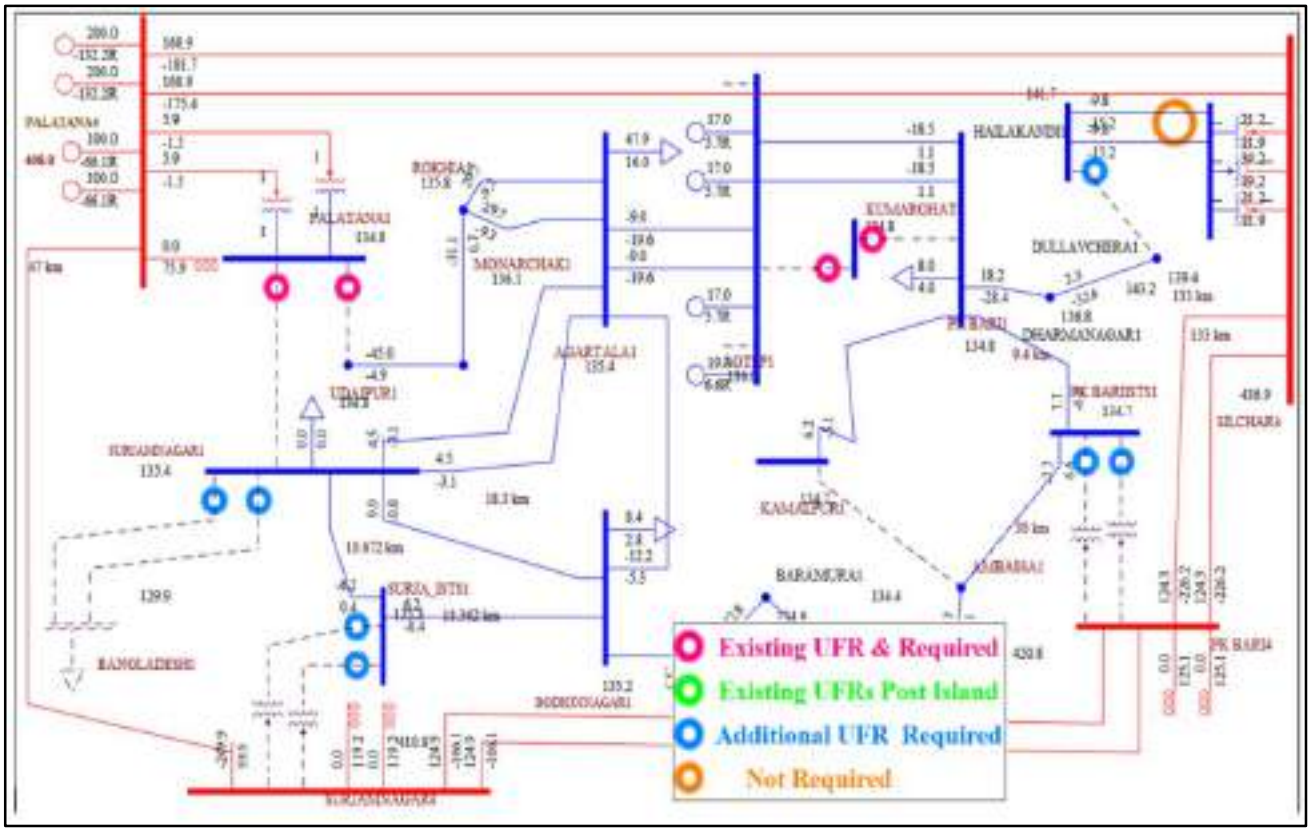
Placed for information of the forum

b) Modifications for Tripura Islanding Scheme

An Islanding Scheme for Tripura Power System is already existing but after few changes in the grid viz. commissioning of 400/132 kV PK Bari Substation (ISTS), 400/132 kV SM Nagar Substation (ISTS) and 132 kV PK Bari – AGTCCPP D/C, the islanding scheme requires revision.

ISLAND AT 48.80 Hz: Island comprising of generating units of AGTPP (Gas), generating units at Baramura (Gas), Rokhia (Gas) & Gumti (Hydro) and loads of Tripura system & Dullavcherra area (Assam). [Total Generation: 300MW and load: 163MW (off-peak)-240MW (peak)]

Sl. No	Existing	Comments on UFR
1	132 kV Palatana - Udaipur line at Palatana (OTPC)	Required
2	132 kV Palatana - Surajmaninagar line at Palatana (OTPC)	Required
3	132 kV Silchar - Dullavcherra line at Silchar (PG)	Not Required
4	132 kV AGTCCPP - Kumarghat line at Kumarghat (PG)	Required
5	132 kV P K Bari - Kumarghat line at Kumarghat (PG)	Required
6	**400/132 kV 2x315 MVA ICTs at Surajmaninagar (ISTS)**	**New Required**
7	**400/132 kV 2x315 MVA ICTs at P K Bari (ISTS)**	**New Required**
8	**132 kV Surajmaninagar (ISTS) – South Comilla D/C at Surajmaninagar (ISTS)**	**New Required**
9	**132 kV Hailakandi – Dullavcherra line at Hailakandi (TSECL)**	**New Required**



In 207th OCCM held on 17th October 2023, modification requirement for Tripura Islanding Scheme was discussed and requirement of extra UFRs was intimated to Tripura.

SLDC Tripura has been requested to specify the timeline for completion of the changes in the Tripura Island Scheme.

C. **Review of Upper Assam Islanding Scheme:**

The present existing Islanding Scheme at Upper Assam is under review in OCC as well as special meeting.

Placed for information of the forum

ITEM NO. D.08	**:**	**FORMATION OF SUB-COMMITTEE GO-NER-CSCF NORTH-EASTERN REGION (REGIONAL CYBER SECURITY CO-ORDINATION FORUM): NERLDC**

As per Regulation 53 of IEGC, a Regional Coordination Forum shall be formed at the regional level (with LDCs as per the definition of Regional Entity of IEGC, 2023) in order to ensure proper coordination, information sharing, sharing of best

practices, harmonizing the Cyber Security initiatives and preparedness of the Load Despatch Centres and to review the Cyber Security initiatives, incidences reported and actions taken to mitigate the risks. The representations required for sub-committee of GO-NER-CSCF in Regional Coordination Forum is given below –

a) Head of RLDC
b) CERT-GO Nodal or his authorised representative
c) Member Secretary RPC or his/her authorised representative
d) Heads of SLDCs or his/her authorised representative other than CISO.
e) Chief Information Security Officer of all SLDCs within the specific Region.
f) Cyber Security Nodal officer of RLDC
g) Representative of the NCIIPC
h) Any other member deemed necessary by the Forum for smooth coordination and monitoring

Accordingly, the members nominated by the respective organisations are listed in table below:

S. No.	Nomination as per IEGC procedure	Name	Designation	Contact	E-Mail
1	Head of NERLDC	Amaresh Mallick	CGM (I/c)	9436302720	amareshmallick@grid-india.in
2	CERT-GO Nodal or authorized representative	***Not yet officially communicated to NERLDC.***			
3	MS NERPC or authorized representative	Shaishav Ranjan	Deputy Director	8787892650	ranjan.shaishav@gmail.com
4	Head of Arunachal Pradesh SLDC or authorized representative	***Not yet received.***			

S. No.	Nomination as per IEGC procedure	Name	Designation	Contact	E-Mail
5	CISO Arunachal Pradesh SLDC	***Not yet received.***			
6	Head of Assam SLDC or authorized representative	Syed Md. Maswood Naser	Chief General Manager	9435233786	cgm.sldc@aegcl.co.in
7	CISO Assam SLDC	Mrs. Toushita Jigdung	DGM (logistics)	9707134351	dgmlogistic.sldc@sldc.co.in
8	Head of Manipur SLDC or authorized representative	N. Jasobanta Singh	General Manager	7085431282	gmsldcmanipur@gmail.com
9	CISO Manipur SLDC	Laishram Ritu	Deputy General Manager	9612 882984	ciso.sldc@mspcl.in
10	Head of Meghalaya SLDC or authorized representative	T. Gidon	Superintending Engineer	8974027950; 6009094044	se.sldc-meg@gov.in; sesldc.meptcl@gmail.com
11	CISO Meghalaya SLDC	T. Gidon	Superintending Engineer	8974027950; 6009094044	se.sldc-meg@gov.in; sesldc.meptcl@gmail.com
12	Head of Mizoram SLDC or authorized representative	Smt. Laltlanthangi	Superintending Engineer	9612100277	msldc.circle@gmail.com; sldc_mizoram@rediffmail.com

S. No.	Nomination as per IEGC procedure	Name	Designation	Contact	E-Mail
13	CISO Mizoram SLDC	Smt. Laltlanthangi	Superintending Engineer	9612100277	msldc.circle@gmail.com; sldc_mizoram@rediffmail.com
14	Head of Nagaland SLDC or authorized representative	Er. Rukongutuo Suohu	Superintending Engineer	8575000014	rokosuohu@gmail.com
15	CISO Nagaland SLDC	Smt. Pongmei Phom	SDO (IT/Comm)	8132862504	pongmeinew1@gmail.com; sldc.ngl@gmail.com
16	Head of Tripura SLDC or authorized representative	***Not yet received.***			
17	CISO Tripura SLDC	***Not yet received.***			
18	Cyber Security Nodal officer of NERLDC	S P Barnwal	Sr. GM (System Logistics), CISO-NERLDC	9433041812	spbarnwal@grid-india.in
19	Representative of the NCIIPC	***Not yet officially communicated to NERLDC.***			
20	Any other member	To be nominated by the committee members after formation of the committee.			

Placed for information of the forum with a request to all concern for necessary action

ITEM NO. D.09 : ACUTE ROW ISSUE PREVENTING REGULAR MAINTENANCE OF VARIOUS TRANSMISSION LINE SECTION OF POWERGRID IN NORTH EASTERN REGION: NERTS (205TH OCCM)

In North Eastern Region, there are various transmission line sections as listed below where acute ROW issue is persisting for which POWERGRID is not being able to carry out regular maintenance activity on transmission lines despite intermittent support from concerned administration. The vegetation growth in NER is very fast which demands frequent and regular vegetation clearance to avoid unwarranted trippings. Thus, due to the said situation which is beyond the control of POWERGRID some of the trippings in unresolved ROW stretches likely to occur on account of vegetation growth.

In view of above, it is requested to the forum to take up the issue at the highest level of concerned administration so that the ROW issues can be resolved permanently for better maintenance of Transmission Lines:

SN	NAME OF THE LINE	SPANS (IN NOS.)	STATE	NAME OF THE DISTRICT
1	800KV HVDC BNC -Agra	51	Assam	Udalguri, Baksa, Bijali, Barpeta, Chirang
2	132KV S/C Kumarghat-RC Nagar	2	Tripura	Dhalai
3	132KV S/C Kumarghat-Karimagnaj	14	Tripura	Unakoti, North Tripura
4	132KV S/C Kumarghat-Aizawl	14	Tripura	Unakoti, North Tripura
5	132KV S/C Jiribam-Loktak	23	Manipur	Tamenglong, Nungba
6	400KV D/C Silchar-PK Bari	29	Assam	Cachar, Hailakandi, Karimganj
7	132KV S/C Badarpur-Kolasib	9	Assam	Hailakandi

SN	NAME OF THE LINE	SPANS (IN NOS.)	STATE	NAME OF THE DISTRICT
8	132KV S/C Badarpur-Jiribam	6	Assam	Hailakandi, Cachar
9	132KV S/C Badarpur-Kumarghat	8	Assam	Karimganj
10	132KV S/C Haflong-Jiribam Line	10	Assam	Cachar
11	132KV S/C Badarpur-Khlierhiat	5	Assam	Cachar
12	400KV D/C Silchar-PK Bari	41	Assam	Hailakandi
13	220KV D/C Mariani-Kathalguri	59	Assam	Tinsukia, Dibrugarh, Sarideu, Sibsagar, Jorhat
14	132KVS/C Aizawl-Kolasib	8	Mizoram	Kolasib, Aizawl
15	132KV S/C Aizawl-Tipaimukh	9	Mizoram	Aizawl
16	132KV S/C Aizawl-Kumarghat	15	Mizoram	Mamit, West Phaileng
17	132KV S/C Roing-Tezu	5	Arunachal	Lower Dibang valley
18	132KV S/C Pasighat-Roing	2	Arunachal	Lower Dibang valley
	TOTAL =	**310**		

In the 205th OCCM, forum noted that regular vegetation clearance is critical to reliable and robust operation of transmission lines and commiserated with POWERGRID in facing challenges for vegetation clearance in unresolved RoW stretches.

The matter is placed for information to TCC/RPC forum for sensitization at the highest level of administration

ITEM NO. D.10 : INTER-REGIONAL TTC AND ISTS STRENGTHENING IN NER FOR 2029-30 TIME FRAMES: NERPC

Details of the intra-state transmission elements/ substations recommended by CEA for 2030 timeframe, may be provided to NERLDC/NERPC, so that study can be done to analyze TTC/ATC at intra-state level.

Placed for information of the forum with a request to all concern for necessary action.

ITEM NO. D.11 : REQUIREMENT OF PERIODIC TESTING AS PER IEGC 2023: NERLDC

As per clause no. 40 of IEGC 2023, periodic tests have to be carried out on power system elements for ascertaining the correctness of mathematical models used for simulation studies as well as ensuring desired performance during an event in the system.

The general features are as follows:

(a) The owner of the power system element shall be responsible for carrying out tests and for submitting reports to NLDC, RLDCs, CEA and CTU for all elements and to STUs and SLDCs for intra-State elements

(b) All equipment owners shall submit a testing plan for the next year to the concerned RPC by 31st October to ensure proper coordination during testing as per the schedule.

(c) The tests shall be performed once every five (5) years or whenever major retrofitting is done.

(d) The owners of the power system elements shall implement the recommendations, if any, suggested in the test reports in consultation with NLDC, RLDC, CEA, RPC and CTU

Power System Elements	Tests	Applicability
Synchronous Generator	(1) Real and Reactive Power Capability assessment. (2) Assessment of Reactive Power Control Capability as per CEA	Individual Unit of rating 100MW and above for Coal/lignite, 50MW and above

	Technical Standards for Connectivity (3) Model Validation and verification test for the complete Generator and Excitation System model including PSS. (4) Model Validation and verification of Turbine/Governor and Load Control or Active Power/ Frequency Control Functions. (5) Testing of Governor performance and Automatic Generation Control.	gas turbine and 25 MW and above for Hydro.
Non synchronous Generator (Solar/Wind)	(1) Real and Reactive Power Capability for Generator (2) Power Plant Controller Function Test (3) Frequency Response Test (4) Active Power Set Point change test. (5) Reactive Power (Voltage / Power Factor / Q) Set Point change test	Applicable as per CEA Technical Standards for Connectivity.
HVDC/FACTS Devices	(1) Reactive Power Controller (RPC) Capability for HVDC/FACTS (2) Filter bank adequacy assessment based on present grid condition, in consultation with NLDC.	To all ISTS HVDC as well as Intra State HVDC/FACTS, as applicable

	(3) Validation of response by FACTS devices as per settings.	

As per **Clause no. 29 (11) of IEGC 2023**, Mock drill of the islanding schemes shall be carried out annually by the respective RLDCs in coordination with the concerned SLDCs and other users involved in the islanding scheme. In case mock drill with field testing is not possible to be carried out for a particular scheme, simulation testing shall be carried out by the respective RLDC.

All the NER stakeholders are requested to carry out the tests as per mandate and provide the testing plan of the respective equipment to NERPC.

ITEM NO. D.12 : ISTS ELEMENTS AND INTRA-STS ELEMENTS INCIDENTAL TO ISTS AGREED UPON IN THE CMETS MEETING OF CTU: NERPC

Following ISTS and Intra-STS elements incidental to ISTS have been discussed and agreed upon in the CMETS meeting of CTU:

As approved in 24th CMETS (17.11.2023)

a. Strengthening of intra-state 132kV corridor from Gerukamukh – Likabali – Niglok – Pasighat (New) through 2nd circuit stringing. DoP, Arunachal Pradesh mentioned that they shall immediately take up 2nd circuit stringing of Gerukamukh – Likabali – Niglok – Pasighat (New) 132kV S/c on D/c line under an intra-state scheme so as to bring this system prior to Gogamukh – Gerukamukh 132kV D/c high capacity ISTS line.

b. 2nd circuit stringing of Pasighat (Arunachal Pradesh) – Roing (POWERGRID) 132kV S/c on D/c line was in-principally agreed. Additional studies shall be carried out to assess the requirement of 2nd circuit stringing of Roing – Tezu – Namsai 132kV S/c on D/c line. DoP, Arunachal Pradesh and AEGCL would provide requisite data for system studies.

c. Implementation of the Bornagar 400kV S/s in ISTS for reliable and secure power supply to NER grid. The SS will be connected with grid, at 400kV level, through

LILO of 440kV Bongaigaon -Balipara DC and 400kV Alipurduar after bypassing the Bonagaigaon SS.

d. Reconductoring of entire Khandong (NEEPCO) – Umrangshu (AEGCL) – Jiribam (POWERGRID) – Halflong (POWERGRID) 132kV ISTS corridor with HTLS of 600A.

e. Strengthening in Tinsukia area (reconductoring and ICT augmentation) may be reviewed after commissioning of Kathalguri – Namsai and Gogamukh – Gerukamukh links.

f. Loading on Chapakhowa – Rupai, Rupai – Margherita, Tinsukia – Rupai & Tinsukia – Margherita 132kV S/c lines and Tinsukia ICTs would be reviewed after commissioning of Kathalguri – Namsai 220kV D/c line and Gogamukh – Gerukamukh 132kV D/c (Zebra) line.

As approved in 21st CMETS (27.07.2023)

It was agreed that that AEGCL would construct the following scheme under intra-state -

(i) Establishment of 2x50MVA, 132/33kV Misamari substation

(ii) Balipara – Misamari 132kV D/c (ACSR Zebra) line (utilising the 132kV line bays vacated upon bypassing of Balipara – Sonabil and Balipara – Ghoramari 132kV lines at Balipara substation) alongwith associated line bays at Misamari substation.

(iii) LILO of Depota – Rowta 132kV S/c line at Misamari substation along with associated line bays

As approved in 20th CMETS (23.06.2023)

1. i. APDCL – Bokajan 400kV S/c line for evvacutaion of REGS in Karbi Anglong (APDCL)

   ii. Establishment of new 400kV switching station (to be upgraded to 400/220kV level in future) at Bokajan in Assam

   ii. ILO of both circuits of Misa (POWERGRID) – New Mariani (POWERGRID) 400kV D/c line at Bokajan

2. i. Upgradation of Single Main & Transfer Bus to Double Bus arrangement with GIS at 132kV Khliehriat

   ii. Upgradation of Single Main & Transfer Bus to Double Bus arrangement with Green GIS at 132kV Badarpur

Placed for information of the forum

ITEM NO. D.13 : PROTECTION PROTOCOL FOR NER REGION: NERPC

In compliance with clause 12(2) and clause 13 of IEGC 2023, NERPC secretariat had prepared draft protection protocol for NER and circulated to the constituents to invite comments and feedback. The protocol was further deliberated upon in 60th and 61st Protection sub-committee meetings. Subsequently, NERPC has finalized the protection protocol after incorporating comments as received from the constituents. The finalized report is attached as **Annexure D.13**.

Placed for information of the forum

ITEM NO. D.14 : OUTAGE PLANNING PROCEDURE FOR NER REGION: NERPC

As per regulation 32(4) of IEGC 2023, RPCs are to formulate a common outage planning procedure. In compliance with the regulation, NERPC secretariat had prepared a draft Outage planning procedure and circulated to the constituents for their perusal. Comments were received from various utilities. Comments were discussed in the 208th OCC meeting and procedure was finalized. The same is attached as **Annexure D.14**.

Placed for information of the forum

5. CATEGORY - E : ITEMS RECOMMENDED TO BE REFERRED TO THE SUBCOMMITTEES/CMETS/PSDF ITEMS

ITEM NO. E.01 : IMPLEMENTATION OF ADMS (ADVANCED DEMAND MANAGEMENT SYSTEM) IN MEPDCL THROUGH PSDF: MEPDCL

The rapidly expanding Indian Power system is becoming increasingly complex, dynamic and challenging in its operation. The intricate electricity market mechanism coupled with compliance of Regulatory provisions has also placed additional burden in maintaining a reliable, secure and economic power system. The transmission network notwithstanding the intricately woven distribution network has to be thoroughly equipped to cater first hand to the requirements of the consumers who are also becoming increasingly aware of the standards and power quality which are to be met. Moreover, there is the absence of the mechanisms whereby distribution losses can be monitored on real time basis. This is due to the real time visibility and assessment of the state of the network and determination of areas of losses which, as a consequence, has placed on the distribution utility the onerous task of being financially viable entity.

The overall power scenario of the State including scheduling and dispatch have to be monitored in cognizance with the MSERC State Grid Code 2012 along with the Indian Electricity Code 2010 and its subsequent amendments and related CERC Regulations with respect to real time availability of power to avoid Grid failures. Excessive overdraw may jeopardize the real time balance of load generation leading to Grid failure which may affect the balance of power in other regions too. This has necessitated real time monitoring of downstream 33KV Sub-Transmission System through which bulk of power are being transferred to consumers.

MePDCL intends to implement Advanced Distribution Management System for real

time monitoring of the distribution network, identification of loss-making areas, enhanced reactive power management, better operational reliability, improved fault analysis and faster clearance of faults etc. Installation of state-of-the-art SCADA-EMS system, Feeder RTUs coupled with capacitors and installation of Fault Location, Isolation and Service Restoration technologies etc are being envisaged to serve the intended objectives. Automatic Demand Management System (ADMS) is also being envisaged to help MePDCL maintain grid discipline and comply with relevant Orders of Hon'ble CERC. The list of Substations to be covered and telemetered is given in **Annexure-E.01**

Due to fund constrain it is requested that the above proposal may be approved to be funded from PSDF (100% grant).

ITEM NO. E.02	**:**	**RENOVATION AND MODERNIZATION (R&M) OF TRANSMISSION AND DISTRIBUTION SYSTEMS FOR RELIEVING CONGESTION: MEPDCL**

PROPOSAL:

(a) Construction of 33/11KV Substations with associated 33KV lines at Umden, Umling, Jorabad, Patharkhmah and Mawlasnai to relieve congestion and low voltage problems.

(b) Reconductoring and re-engineering of 33KV Stage-III-Zero Point-Umsning-Nongpoh line.(33Kms)

(c) Construction of 33KV Line from 220/132/33KV, 2x50MVA GIS Substation Saisiej,New Shillong (25Kms)

Explanatory Note:

About 85 % of the Power stations of MeECL are located within Ri Bhoi District. But the power supply in the District is supplied mostly through long 11KV Lines which results in huge voltage drop and ultimately resulting in low voltage problems at the consumer's end. Interconnection of a large number of villages Substations to the long 11KV lines results in frequent interruption of power supply.

Many industrial Units are also located within the District which account for huge power consumption and hence huge revenue return to the Corporation.

It may be mentioned that under MDoNER's Program "Fortnightly visits of Hon'ble Union Ministers to North Eastern Region", the Hon'ble Minister of State for Commerce and Industry, Sri Som Prakash visited Ri Bhoi District from 1-12-2022 to 2-12-2022 where he commented that "The District also faces problem in power supply as there is only Single Source of power. There is need to upgrade power infrastructure in the District" (Letter at Annexure-II, Sl.12)

For stability and reliability of power supply in the District, an alternative power supply from 220/132/33KV 2x50 MVA GIS Substation, Saisiej, New Shillong by construction of a 33KV S/C line on Wolf Conductor, is also proposed

Due to fund constrain it is requested that Renovation and Modernization (R&M) of transmission and distribution Systems for relieving congestion may be funded from PSDF (100% grant).

Tentative Cost: Rs 76 Cr.

ITEM NO. E.03 : RENOVATION OF PROTECTION SYSTEM IN 33/11KV SUBSTATIONS (EXISTING): MEPDCL

PROPOSAL: Replacement of Control & Relay Panels (of old relay system) with latest Control & Relay Panels, CTs and PTs of high sensitivity, improvement of earthing system, replacement of Battery Bank/Charger, old Circuit Breakers for both 33KV and 11KV

Explanatory Note:

132/33KV Substations are equipped mostly with latest protection system (Relays, Circuit Breakers, earthing system etc) but the connected 33/11KV Substations remain in the old system. This mismatching of protection equipment has led to undesired power interruptions, when the faults in the 33KV system are reflected to the 132KV SS. Hence for better coordination and matching and to reduce interruptions at Grid Substations, the protection system in 33/11KV Substations directly connected with 132/33KV Grid Substations need to be replaced and upgraded. Due to fund constrain it is requested that Renovation of Protection System for some of directly connected 33/11KV Substations may be funded from PSDF (100% grant).

Tentative Cost: Rs 20.0Cr.

ITEM NO. E.04 : RECONDUCTORING OF 132KV BUS BAR AT UMIAM STG III: MEPGCL

It is to be mentioned here that agenda note for Re-engineering of existing 132 KV Bus Bar from ACSR Panther to ACSR Zebra including terminal connectors at 132 KV Switchyard of Stage – III, Power Station, MePGCL, Kyrdemkulai was put up in the **21st TCC and 21st** NERPC meeting.

In line with the above agenda, it is proposed that Re-engineering of existing 132 KV Bus Bar from ACSR Panther will be carried out with HTLS conductor with higher current carrying capacity than ACSR Zebra conductor at 132 KV Switchyard of Stage – III, Power Station, MePGCL, Kyrdemkulai.

PROPOSAL: Re-engineering of existing 132 KV Bus Bar of 132 KV Switchyard of Stage – III, Power Station with HTLS conductor.

Explanatory Note: The loading of the existing 132 KV Switchyard Bus Bar of Stage-III Power Station, Kyrdemkulai with Panther conductor has exceeded the permissible loading capacity, it is also to be informed that Re-conductoring and Strengthening of the D/C line from Stage-I to Stage-III with HTLS conductor was completed in the month of December 2022. In connection with the above completed re-engineering work of the Transmission lines with HTLS conductor. Re-engineering of Bus Bar at Stage-III Switchyard is urgently required to be taken up with HTLS conductor equivalent to ACSR Zebra conductor or with much higher current carrying capacity than that of ACSR Zebra.

Tentative Cost: 2.0 Cr (Rupees Two Crore) only

ITEM NO. E.05	**:**	**5MW EACH SOLAR PARK AND BATTERY ENERGY STORAGE SYSTEM IN TWO LOCATION AT WEST AND EAST JAINTIA HILLS DISTRICT IN MEGHALAYA STATE, NAMELY IN THE VILLAGE OF THAMAR AND SUCHEN: MEPGCL**

Explanatory Note: Meghalaya Energy Power Generation Corporation Limited (MePGCL) has proposed to develop a Solar Park on Grid of 5 MW and Battery Energy Storage System each in the village of Thamar and Suchen West and East Jaintia Hills District in Meghalaya State. The objective of this Project it is not only because it is clean and environment friendly but also because it is abundantly available and is affordable, further to meet the load demand in the lean seasons. It is also to be mentioned that the land is already acquired by MePGCL, cost implication of the land will not be there.

Solar Park will be able to supply Power during day time only. To overcome the supply at night and to increase the Power System flexibility Batteries Energy Storage system is required. Batteries have already proven to be commercially viable energy storage Technology. BESSs are modular system that can be deployed in standard shipping container. The low cost and high efficiency of the Lithium-ionBatteries has been instrumental in the wave of BESS deployment in recent year. The Batteries are technically better suited to frequency regulation than the traditionally spinning reserves from Power Plant Batteries also provide a cost-effective alternative to network expansion for reducing curtailment of solar energy Generation. Similarly, batteries enable consumer'speak charge avoidant by supplying off Grid Energy during on peak consumption hours.

Due to fund constrain it is requested that the above project may be funded as 100% grant.

Tentative Cost: 156.00 Cr. (Rupees One hundred and Fifty Six Crore) only

ITEM NO. E.06	:	CONSTRUCTION OF ADDITIONAL LINK TUNNEL AT UMIAM-UMTRU STAGE III HYDRO-ELECTRIC PROJECT, KYRDEMKULAI: MEPGCL

Explanation Note: The Umiam-Umtru Stage III (Kyrdemkulai) Hydro-Electric Project, Kyrdemkulai (2 X 30 MW) is one of the cascading Projects of Umiam-Umtru basin commissioned in 1979.To generate to the present installed capacity of 60 MW (2 units of 30 MW) which will be 66MW (2x30 MW) later after implementation of RMU (Renovation Maintenance and Upgradation) required 50.97 cumecs against the maximum available discharge through link tunnel of only 20 cumecs. This has resulted in underperformance of the power station and spillage of water through the gates of Stage-III Dam especially during monsoon period. The present Renovation, Modernisation and Upgradation (RMU) of the Stage III Power Station will be more meaningful if an additional link tunnel is provided, since the water availability to the Power Station will not be restricted by the only existing Link Tunnel.

The Annual Design Energy of Umiam-Umtru Stage IV HEP is 207 MU and the Annual Design Energy Umiam-Umtru Stage III HEP is 139 MU though, the Design discharge and the rated head of the above projects are comparably more or less the same. However, there is a big difference of Annual design energy by 68 MU. This difference in Energy Generation of the two Projects can also be noted from the daily discharge during monsoon season. If we consider a conservative loss of annual energy by 50 MU (actual difference of 68 MU) the loss of revenue per year is about Rs. 22 (Twenty-Two) Crores annually @ Rs 4.33 per unit (as per the approved average tariff rate of the project of MePGCL for FY 2023-24).

Tentative Cost: Rs.87.29 Cr (Rupees Eighty Seven Twenty Nine) Crore

ITEM NO. E.07	:	UPGRADATION OF 132/33KV TRANSFORMER CAPACITY OF MePTCL GRID SUBSTATION TO 2X50MVA: MEPTCL

Explanatory Note: Power has become a vital infrastructure to be developed and improved upon to meet the demand for reliable and quality power supply and to meet the load demand.

In view of space constraint and right of way hurdles, it becomes difficult to develop new extra high voltage Substations. Hence, it becomes vital to augment the following existing Substations.

i. 132/33KV, 2X20 MVA NEHU S/S to 2X50 MVA
ii. 132/33KV, 2X20 MVA EPIP-I S/S to 2X50 MVA
iii. 132/33KV, 1X50 MVA EPIP_II S/S to 2X50 MVA
iv. 132/33KV, 1X20 MVA Nongstoin S/S to 2X25 MVA
v. 132/33KV, 2X20 MVA Umiam S/S to 2X50 MVA

The existing loading of the transformers in the above mentioned Substation has exceeded the optimum level. Due to overloading of the transformers, load shedding during peak hours has to be resorted frequently during winter.

The objective of the proposal is to meet the growing load demand and to ensure reliable and quality power supply for Shillong and its adjoining areas.

The Load demand projected by 2030 of the following Substations is as shown below:

i. 132/33KV NEHU S/S is 80MW
ii. 132/33KV EPIP-I S/S is 90MW
iii. 132/33KV EPIP-II S/S is 90MW
iv. 132/33KV Nongstoin S/S is 30MW
v. 132/33KV Umiam S/S is 80MW

Tentative Cost: Rs 80.00/-Crs

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4.4 Sl. No. 3, 7, 8, 9 & 11 (**Annexure A.13**).

ITEM NO. E.08	**:**	**ERECTION, PROCUREMENT AND COMMISSIONING OF 33KV BUS IN VARIOUS GRID SUB STATION: MEPTCL**

Explanatory note: Meghalaya Power Transmission Corporation Limited (MePTCL) proposed for construction of 33 KV Bus and outgoing 33 KV lines along with all terminal equipment where 33 KV bus are not available and all outgoing 33 KV feeders

does not have any protection due to non-existence of 33 KV terminal equipment. The following 132 KV Grid Sub Stations are therefore proposed for construction and erection including commissioning of the 33 KV bus and outgoing feeders

1. 132/33 KV Umiam Grid Sub Station- 33 KV bus with 2 outgoing 33 KV feeders
2. 132/33 KV EPIP-I Grid Sub Station- 33 KV bus with 2 outgoing 33 KV feeder
3. 132/33 KV Khliehriat Grid Sub Station- 33 KV bus with 3 outgoing 33 KV feeders
4. 132/33 KV Lumshnong Grid Sub Station- 33 KV bus with 2 outgoing 33 KV feeders

During the power interruption as a result of the recent Sitrang cyclone, our grid substation and transformers were subjected to severe stress due to frequent unabated tripping of the 33kV feeders impacting our terminal equipments and causing damage to power transformers. This has resulted in blackouts and load shedding and alternate arrangements of load causing hardship to paramilitary establishments and the common public.

The construction and renovation of new 33kV switchyards for grid substations will help in ensuring a more efficient operation in relay co-ordination and provide grid stability.

Separate 33 KV bus in the 132/33 KV Grid substation is very important for ease of operation and maintenance. It will give the flexibility in performing maintenance work and pin pointing the fault of the outgoing feeders and thus reduce the outage period.

As separate 33 KV bus in the above 4 (Four) sub stations are not available, the outgoing 33 KV feeders were directly connected from the 132/33 KV power transformer without any protection to the 33/11 KV Sub stations of the DISCOM. Thus whenever the aforesaid 33 KV outgoing feeders tripped due to earth fault or over current, the line fault reflected directly to the power transformer and as such if this occurs continuously, the insulation of the power transformer will not be able to withstand and thus lead to its failure.

Further, without the 33 KV bus not in place, maintenance of power transformer along with switchgear equipment become quite difficult.

Tentative Cost: The above proposal will include all terminal equipments viz. CT, PT, Isolators, CB, lightning arrester and bus coupler etc, with a tentative cost of Rs. 10,40,00,000.00 (Rupees Ten crores Forty Lakhs) only

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4.4 Sl. No. 5, 6, 7 & 11 (**Annexure A.13**).

ITEM NO. E.09	**:**	**CONSTRUCTION OF 132/33KV, 2X25 MVA SUB STATION AT EXISTING 400/220/132KV KILLING SUB STATION: MEPTCL**

Explanatory note: Killing being an industrial area with substantial load growth, a reliable power supply is required.

As the voltage profile in most of the Killing-Khanapara area is poor and there is a frequent interruption of power supply because of no alternative source in the event of failure of 33kV incoming line from Byrnihat Distribution Substation.

To overcome this problem and to ensure quality power supply, it is necessary to construct a 132/33kV Substation at the existing 400/220/132kV Grid Substation.

With the construction of the above 132/33kV, 2x25MVA Substation, the quality and reliability of power supply in the entire area will be improved. It also will provide alternative source of power supply to the Killing-Khanapara and its adjoining areas.

Tentative cost: Rs. 70.03 Crs

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4 Sl. No. 7 (**Annexure A.13).**

ITEM NO. E.10	**:**	**RE-CONDUCTORING OF 132KV NEHU-MAWLYNDEP-MUSTEM-KHLIEHRIAT LINE BY HTLS CONDUCTOR: MEPTCL**

Explanatory Note: In order that snapping of conductors due to overloading and de-capping can be avoided, it is proposed to re-conductor the 132NEHU-Maelyndep-Mustem-Khliehriat S/C line with HTLS conductor using the same towers. With this enhanced capacity the grid will be more flexible and this will lead to fewer disturbances in the grid**.** Power flow along the Khliehriat – Shillong corridor during high hydro season (with full MLHEP & NEEPCO generation) is at present along 132kV Khliehriat-Mustem-Mawlyndep-NEHU S/C line and 132kV Khliehriat-NEIGRIHMS-NEHU S/C line. Due to difference in line length and corresponding impedance, the flow is more pronounced along 132kV Khliehriat-Mustem line compared to 132kV Khliehriat-NEIGRIHMS line, approximately the ratio of 65:35.As such, tripping of 132kV Khliehriat-NEIGRIHMS line will cause loading of 132kV Khliehriat-Mustem line to approach close to thermal limit considering the projected increase in load at Mustem, Mawlyndep & NEHU substations. As such, it is proposed that Reconductoring of 132kV Khliehriat-Mustem-Mawlyndep-NEHU S/C line may be approved in principle.

Tentative cost: Rs **126.00/- Crores**

Recommendation: The CEA has recommended the above project in the 'Revised Report on Intra State Transmission System Strengthening requirement of North Eastern State and Sikkim by the year 2030 vide File No. CEA-PS-12-16/1/2022-PSPA-II Division 230 I/26432/2023 February 2023 at Item No. 8.4.3 Sl. No. 1 (**Annexure A.13**).

ITEM NO. E.11	:	ENERGY TRANSACTION OF ASSAM WITH ARUNACHAL PRADESH AND NAGALAND AND ITS COMMERCIAL SETTLEMENT WITH RESPECT TO OFFICE MEMORANDUM OF MINISTRY OF POWER, GOVT. OF INDIA DATED 15TH JUNE, 2023: APDCL

Assam has long relationship with the states of Arunachal Pradesh and Nagaland with respect to Power transaction. Presently, Assam supplies power to Arunachal Pradesh by 12 (twelve) nos. of Interstate points while Assam takes power from Arunachal Pradesh by 2 (two) nos. of Inter State points. Assam, at present, supplies power to Nagaland through 1 (one) no. of point.

The net power drawl between APDCL and DoP, GoAP is presently adjusted in Deviation Settlement Mechanism (DSM) in post-facto basis. Also, the state having net drawl pays the transmission charge for the quantum monthly to the net supplying state.

For the transaction between Assam and Nagaland also, the net drawal quantum is adjusted in the DSM Mechanism, but no transmission charge is being paid as Nagaland assured to have its own transmission system soon which is not done yet.

The NERPC Forum in earlier meetings had the view that this existing mechanism of adjustment of energy in DSM is incorrect as it is done only after the end of a month while the DSM is calculated in Real Time Basis. This mechanism has affected all the states Assam, Arunachal Pradesh and Nagaland in managing their deviation from the schedule as the adjusted quantum is not known beforehand. But, the system was continued for the sake of power supply to the people of border areas and also for not having clear guideline for adjusting the same.

In this respect, it may be noted that Ministry of Power, Govt. of India has now come up with a Protocol for providing Electricity to Border areas of one State from Grid of Neighbouring State on 15.06.2023. The Office Memorandum for the same is enclosed here with as **Annexure-E.11** for reference.

For the settlement of the energy transacted between two states, the Point No. (vii) to Point No. (xi) of the Office Memorandum may be seen where the tariff of power

supplied from one state to the other and the tariff of consumers and the payment mechanism are clearly explained.

As such, to have a proper settlement of energy transacted between the States and accordingly its payment mechanism by following the Office Memorandum of the Ministry of Power, Govt of India and to avoid any loss being faced by the states with respect to DSM, the forum is requested to discuss the matter and have a permanent solution.

ITEM NO. E.12 : IMPACT OF GNA: TSECL

General Network Access (GNA) has been implemented from 1st October, 2023. It has seen GNA for Tripura is 311MW based on the last three years average data. Earlier in POC regime, TSECL was paying around 3 Crores, but presently TSECL is paying around 11 to 12 crores.

Impact of GNA in the region may be discussed.

ITEM NO. E.13 : LIVE LINE WORK TECHNIQUES FOR INTRA-STATE EHV SYSTEM: TPTL

To avoid or minimize the need to shutdown electrical networks for maintenance services, it is mandatory to develop safe and practical techniques that would allow the continuous electrical power supply, reducing the risks and minimizing the costs forthe transmission companies.

In the current scenario of remarkable expansion within industrial, agriculture, tourism, service and commercial sectors of Tripura electricity demand is steadily increasing and inescapable tripping and breakdowns of transmission lines may generate serious concerns and threaten a very fundamental objective of reliable electrical power supply to consumers.

Live line maintenance is a comprehensive solution to restrict outages and breakdowns substantially by systematic implementation of condition monitoring and

preventive maintenance schedules with appropriate use of human resources and machinery.

Therefore, Tripura Power Transmission Limited (TPTL) looks forward to adopt the modern techniques of maintaining transmission lines and switchyards to position on par with global trend of maintenance techniques.

In view of above, TPTL propose to use Live Line maintenance technique of 132 KV Transmission Lines throughout the State to reduce the interruptions and increase the availability of transmission system which is vital for survival and to prevent regulatory penalties.

Cost Estimate along-with Detail Project Report (DPR) of the proposal will be submitted for exploring funding of the project.

ITEM NO. E.14 : DRONE SURVEILLANCE MECHANISM FOR MONITORING OF EHV TRANSMISSION LINES: TPTL

Transmission line safety is critical for maintaining an uninterrupted and reliable power supply. However, factors like environmental conditions, vegetation encroachment, and structural deterioration pose risks to the integrity of these lines, leading to power outages and often safety hazards. Proactive, or preventative, maintenance can help to mitigate these incidents.

Traditional manual inspections have limitations in terms of time, labor, and potential oversight of many hidden risks. To address these challenges drone technology can be used for transmission line maintenance inspections.

Drones equipped with advanced sensors and machine learning software can conduct efficient and thorough inspections, enabling the utility to detect and address potential risks promptly while ensuring the safety of personnel and the public.
Drone solutions automate inspections and provide accurate data on all parts of the power grid, enabling timely repairs, removing risk of accidents, and reducing downtime.

In view of the above, Tripura Power Transmission Limited (TPTL)propose to use Drone Surveillance Mechanism for all Intra-state Transmission Lines to detect hotspots, loose jumpers, faulty locations etc, and ensure reliable power supply throughout the State.

Cost Estimate along-with Detail Project Report (DPR) of the proposal will be submitted for exploring funding of the project.

ITEM NO. E.15	:	RELIABILITY ISSUES IN MIZORAM POWER SYSTEM: NERLDC

Mizoram Power System is connected to the rest of NER grid through 132 kV lines i.e Melriat (PG) – Zemabawk, Badarpur –Kolasib, Aizawl –Kolasib, Melriat-Shimui and Aizawl (PG) – Luangmual line.

Kolasib area is connected though 132 kV Aizwal-Kolasib line and 132 kV Badarpur-Kolasib line. Shimui area is connected through 132 kV Melriat-Shimui DC and Luangmual area is connected through 132 kV Aizwal-Luangmual. The rest of Mizoram is connected through 132 kV Aizwal-Luangmual and 132 kV Melriat (PG) – Zemabawk line.

132 kV Lunglei – Kawmzawl line is kept opened (shown by red arrow) with the aim of feeding max power via both the paths. This leads to breaking of the loop, thereby reducing the reliability of the Mizoram Power System.

Short term plan: SPS is proposed for reliable operation by keeping the loop in closed condition.

The SPS would reduce the load of Zemabawk and Luangmual area whenever there is tripping of 132 kV Melriat – Zemabawk line and 132 kV Aizawl – Luangmual line respectively.

Long term plan: For strengthening of Mizoram power system in 7th CMETS held on 31st May 2022, Reconductoring of the following line with HTLS conductor have been approved:

a) 132 kV Sihhmui (Mizoram) - Zuangtui (Mizoram) line.

b) 132 kV Zuangtui (Mizoram) - Serchip (Mizoram) line.

c) 132 kV Luangmual (Mizoram) - Melriat (Mizoram) line.

d) 132 kV Serchip (Mizoram) - Kawmzawl (Mizoram) line.

The same will help alleviate the constraints in Mizoram power system and the system can be kept in closed loop condition.

SLDC Mizoram may specify the time-line for completion of the Short Term and the Long-Term Plan.

ITEM NO. E.16 : RADIAL CONNECTIVITY OF RANGIA & BTPS AREA: NERLDC

At present the following ICTs are available at Rangia and BTPS (Assam) and N-1 critieria is not met in those two areas:

220/132 kV, 2 x 100 MVA ICTs at Rangia.

220/132 kV, 2 x 160 MVA ICTs at BTPS (Assam)

SLDC Assam may mention the implementation activities and timelines for improving the reliabilty of Rangia and BTPS Area of Assam Power System.

NEEPCO is requested to intimate the timeline and expedite the Installation of 420 kV, 80 MVAr bus reactor at Ranganadi HEP.

ITEM NO. E.17 : UPGRADATION OF END BAY EQUIPMENTS OF HTLS RE-CONDUCTORED LINES IN NER GRID: NERLDC

Following lines (table below) have been reconductored with HTLS conductor in the NER Grid with enhanced ampacity as per HTLS Conductoring.

However, the re-conductoring feature of the lines could not be utilized fully in present condition as it is being limited by the CT Ratio of the end equipments.

Line	**Owner**	**Upgraded Ampacity of Line**	**Present CT Ratio**	
132 kV Jiribam-Loktak line	POWERGRID	800 A	800/1	366/1
220 kV BTPS-Salakati 1 & 2	POWERGRID	1100 A	800/1	800/1
220 kV Sarusajai-Mirza 1 & 2	AEGCL	1200 A	800/1	800/1
132 kV Rokhia-Agartala I & II	TSECL	800 A	600/1	600/1
132 kV Umiam III-Umiam I D/C	MePGCL	875 A	600/1	600/1
132kV Aizawl-Luangmual line	P&ED Mizoram	800	600/1	600/1

The owners of the above Transmission lines may specify the timeline for upgradation of the CTs.

ITEM NO. E.18 : STATUS UPDATE OF GRID ELEMENTS UNDER LONG OUTAGE: NERLDC

The following elements are under long outage:

Sl. No	Name of line	Owner	Since
1	400 kV Imphal - Thoubal I	MSPCL	18-10-2021
2	132 kV Kakching - Churachandpur	MSPCL	08-06-2023
3	132 kV Elangkangpokpi - Churachandpur	MSPCL	08-06-2023

SLDC, Manipur may specify the timeline for restoration of the transmission elements.

ITEM NO. E.19 : UTILIZATION OF 400/220 KV ICTS AT NEW KOHIMA SUBSTATION: NERLDC

The New Kohima Substation, operating at 400/220 kV, was energized in November 2020. However, the downstream 220 kV New Kohima-Zhadima line remains unchanged. Consequently, the 400/220 kV ICTs at the New Kohima Substation are currently not being utilized.

SLDC, Nagaland may specify the timeline for commissioning of the downstream elements of New Kohima S/s.

ITEM NO. E.20 : REMOVAL OF T–CONNECTION OF 132 KV BALIPARA-KHUPI S/C AT BHALUKPONG (TIPPI): NERLDC

It is observed that the T-connection /Tapping of 132 kV Balipara –Khupi S/C at Bhalukpong (Tippi) Substation is under operation since long time. However, as per Cl. 46.4 of CEA Safety Regulation 2023, *"There shall not be tapping of another transmission line from the main line for 66 kV and above class of lines"*

In 207th OCCM dated 17th October 2023, after, due deliberation, the forum exhorted DoP Arunachal Pradesh to remove the T connection.

DoP, Arunachal Pradesh may specify the timeline for removal of the T-connection/Tapping and making some alternate arrangements for catering the load fed from Bhalukpong (Tippi) Substation.

ITEM NO. E.21	**:**	**STATUS OF STATE RELIABLE COMMUNICATION SCHEME: NERLDC**

State Reliable Communication Scheme consist of four (04) sections which are described below –

a) OPGW Links: States are requested to update the status of preparation of DPR for OPGW links.

b) Fiber Optics Terminal Equipment (FOTE): States are requested to update the status of preparation of DPR for all related FOTE (including DCPS, if required).

c) Remote Terminal Unit (RTU): The Detailed Project Reports (DPRs) for deployment of RTUs in selected stations under ownership of state-utilities in NER were submitted for PSDF funding. The cost-details in respective DPRs are – Arunachal Pradesh: ₹ 34.55 Crores; Assam: ₹ 9.104 Crores; Manipur: ₹ 0.828 Crores; Meghalaya: ₹ 5.517 Crores; Mizoram: ₹ 3.862 Crores; Nagaland: ₹ 12.139 Crores.

In 74th Techno-Economic Sub-Group Meeting held on 17th March 2023, various queries were raised on the DPRs and it was recorded in MoM that – ***"It was decided that the observations of TESG may be communicated to the entities for the proposals (382 to 387) and will be examined after receipt of the complete inputs. TESG also suggested entities not to include 33/11 kV substation and under construction Substation in the scope of work. Entities agreed for the same. NLDC is requested to communicate the above decision to the entities."***

The matter was deliberated on 26th NETeST meeting held on 10th October 2023 and it was decided with consent of all present state-utilities members that current DPRs will be taken back by SLDCs. Subsequently, SLDCs will review the list of stations again (66kV level and above) for RTUs deployment and merge respective DPR under its "State Reliable Communication Scheme" (which can include OPGW, End

Equipment, RTUs & Any other associated equipment required for communication) for 90% PSDF funding. Balance 10% funding will be from state-utility side.

d) Other items (VSAT Communication)

The Detailed Project Reports (DPRs) for establishment of VSAT Communication in selected stations under ownership of state-utilities in NER were submitted for PSDF funding. The cost-details in respective DPRs are – Arunachal Pradesh: ₹ 6.328 Crores; Assam: ₹ 0.951 Crores; Manipur: ₹ 0.422 Crores; Meghalaya: ₹ 0.317 Crores; Mizoram: ₹ 0.898 Crores; Nagaland: ₹ 2.696 Crores; Tripura: ₹ 0.792 Crores.

In 74th Meeting of Techno-Economic Sub-Group (TESG) meeting held on 17th March 2023, it was deliberated and recorded in MoM that – ***"TESG recommended these proposals (Proposal nos. 388 to 394) as deemed returned and suggested entities to submit a comprehensive DPR consist of installation OPGW, FOTE after assessing the proper requirement and consider VSAT communication (up to 66kV) for only in exceptional terrains where OPGW laying is not feasible. Entities agreed for the same. NLDC is requested to communicate the above decision to the entities."***

The same matter was put up in Appraisal Committee meeting held on 19th June 2023 and it was recorded in MoM that – ***"Regarding NER proposals of VSAT (DPR 382 to 388), Appraisal Committee accepted the suggestion of TESG that instead of installation of VSAT communication having low bandwidth, the entities may submit a comprehensive DPR consisting of the implementation of reliable communication network through the installation of OPGW based fiber optic network. VSAT communication (up to 66kV) may only be considered for only in exceptional terrains where OPGW laying is not feasible. The Appraisal committee returned the present proposal for the installation of VSAT communication network (i.e. DPR 382 to 388)."***

The DPRs were rejected by TESG on the grounds of low bandwidth, exploring OPGW as the primary option, some 33kV stations were also included in DPRs, etc. It seems that the urgent need of VSAT communication in NER due to difficult terrain and long execution period (of the order of several years) has not been put up with clarity in front of TESG and Appraisal Committee leading to rejection of the associated DPRs.

Moreover, the bandwidth of 128kbps is sufficient to cater real-time power system operational data transfer requirements of SLDCs. SLDCs are dependent upon establishment of VSAT to meet various deadlines given to CERC in reply to petitions Petition No. 197/MP/2020 (Arunachal Pradesh), Petition No. 201/MP/2020 (Tripura), Petition No. 263/MP/2020 (Nagaland) and Petition No. 556/MP/2020 (Mizoram) against which an Order has also been issued by CERC on 04th August 2023 available on web-link https://cercind.gov.in/2023/orders/197_MP_2020-Ors.pdf.

The matter was deliberated on 26th NETeST meeting held on 10th October 2023 and the forum noted that the DPRs had been deemed returned by TESG/ PSDF Appraisal Committee. SLDCs stated that all stations upto 66kV level are being monitored for ensuring reliable operation of the electricity grid. However, improvement of real-time data availability is a big challenge due to issues in laying of OPGW in hilly terrains and remote stations. The NETeST forum noted that VSAT for NER electricity grid can act as a critical technology for faster installation at places as per following criteria –

- Locations with no OPGW planned.
- Locations with OPGW planned but will take several years to get commissioned.
- Locations where feasibility of alternate physical redundant OPGW is difficult.
- Station with hilly terrain or remote stations (66 kV level and above) where laying OPGW is not economically viable for state.

POWERGRID-NERTS has also informed the NETeST forum that VSAT technology had been put into its three (03) nos. of stations in Arunachal Pradesh i.e., Roing, Tezu and Namsai considering the long planning and implementation period of OPGW projects in NER.

The NETeST forum also deliberated that 128kbps bandwidth shall be sufficient for each station to transfer its data to respective SLDC and Extended-C band technology need to be used in order to avoid data interruption during bad weather conditions as tested during earlier demo-pilot projects at Killing and Tezu stations of NER. The NETeST forum unanimously agreed to the deployment of VSAT technology as it is very critical to improve the availability of real-time power system operational data at

SLDCs in NER. Currently, the OPGW projects are being planned in discrete manner and also taking several years for getting completed and operational. SLDCs agreed to review the list of stations again (66kV level and above) for VSAT deployment and merge respective DPR under its "State Reliable Communication Scheme" (which can include OPGW, End Equipment, RTUs & Any other associated equipment required for communication) for 90% PSDF funding. Balance 10% funding will be from state-utility side.

States are requested to update the status of DPR for reliable communication scheme incl. OPGW, End-equipment based on SDH technology, VSAT Communication and RTUs.

ITEM NO. E.22 : ISSUES RELATED TO GAS BASED ISGS POWER STATIONS: NEEPCO

Assam Gas Based Power Station (AGBPS) is a 291MW combined cycle Gas thermal power station of North Eastern Electric Power Corporation (NEEPCO), having 100% PPA with seven states of NE, India. AGPBS gets its fuel gas from the local network of gas wells of M/s Oil India Limited in the Dibrugarh and Tinsukia districts of Assam, India.

AGBPS is facing various generation related issues after implementation of CERC (IEGC) Regulations, 2023.

- **Ramping rate.:** Earlier, AGBPS was considered for only 20 MW Ramp up or Ramp down. Now, after implementation of the Regulation, anything up to 45% of ex-bus capacity is imposed as schedule variation.
- **Disturbance in Gas drawal:** While ramping up the generation at very high rate, as the gas network is a very small-isolated one, the gas pressure falls down and destabilizes the Gas network. As a result, AGBPS again needs to lower the generation causing penalty through DSM.

  Similarly, sudden reduction in gas drawal due to steep fall in schedule causes high flaring of gas at the gas field resulting closure of the gas-well valves by Gas supplier or diversion of the gas quantum to other potential customers. Eventually, when a higher schedule is given afterwards, gas supplier denies to increase their gas. This leads to loss.

Gas supplier has requested to intimate them well in advance before change in gas drawal and to keep the gas drawal steady as much as possible. In the present scenario, both are not possible for a gas thermal generator due to Ancillary Services imposition in the just previous block.

In this regard, it may be noteworthy to mention here that in the CERC (Ancillary Services) Regulations, 2022, it has been written in 18(3) that, "The schedule for TRAS shall become effective from the time block starting 15 minutes after issue of the despatch instruction by the Nodal Agency". However, since implementation of this regulation, we are getting AS up /down effective in the schedule from very next block, i.e. practically we get only 12 minutes lead time. This is really very small time to get the gas supplier ready to increase the gas availability.

- **Difficulty in maintaining time block average MW:** As the Gas Turbine Generators have a certain ramping rate, it is not possible to increase the generation instantly. Furthermore, Combined cycle Gas Thermal stations have Steam Turbine Generators- which need some time to generate at the increased generation schedule, after increasing the GTG load. When the ramps are huge, it takes considerable time to increase the generation up to schedule level. Due to this delay, it is not possible to achieve the block average generation at the schedule level.

  Similarly, when a steep fall in schedule occurs, generation again cannot be reduced instantly and it needs some time. During this period, block average generation remains above the schedule, thereby causing loss by penalty imposition and excess gas feed too. The situation becomes more adverse when these ups and downs are repeated at very short interval of time.
- **Increase no of DC Revision:** Only 2 nos. of DC revision have caused a lot of trouble. Capacity may change within a day many a times considering various factors e.g. outage of machines, change in the gas network parameter- which are not predictable in advance of around a day. Therefore, it is requested to allow More DC revision
- **Interlink between RTM power exchange and RLDCs:** Sometimes, it so happens that the blocks with RTM sale gets URS or increased demand too. In such blocks due to implementation of both RTM and URS, schedule becomes more than the DC. It is requested hereby to kindly arrange so that both are not triggered at the same time by some mechanism between RLDC and the power exchanges.

- **Adverse effect on the Gas Turbines:** Frequent ups and downs of load on Gas Turbine generators and Steam Turbine Generators are causing adverse effect on the hot parts of the units (that are mainly designed to run as base load at maximum load.
- **Difficulties in achieving MOU Target and Heat Rate:** Partial loading of the Gas Turbines due to very low schedule is becoming the hindrance in achieving the Heat Rate as well as MoU target.
- **Review of implementation TRAS in Gas Turbine Generators:** In comparison to the size of the national grid, Gas based Combined cycle Thermal generation under ISGS Category is very negligible. Considering the difficulties presently facing by Gas based Thermal Power plants, it may be reconsidered for implementation of TRAS and allow to run Gas Turbine Generator as a base load machine.

On 22.10.2023,	Total Generation	: 1,87,055 MW
	Gas Generation	: 3,291 MW (1.76%)
On 08.11.2023,	Total Generation	: 1,91,183 MW
	Gas Generation	: 3,199 MW (1.67%)
On 08.11.2023,	Total Generation	: 1,94,226 MW
	Gas Generation	: 2,554 MW (1.31%)

Similar issues are being faced by AgGBPS. It is therefore, requested discuss the above matter in the 25th TCC meeting.

ITEM NO. E.23 : ISSUE PRETAINING TO CBIS-NERPSIP: POWERGRID

The following documents were drafted for the beneficiary utilities of NERPSIP which includes 16 nos. for transmission utilities and 3 nos. for distribution utilities. The details are as mentioned below:

List of documents (draft) submitted to the transmission utilities for system improvement:

1. Dissolved Gas Analysis Interpretation
2. Erection manual of ERS (Disaster Management)
3. Guidelines for Learning & Development
4. Guidelines for Preservation Procedure and Condition Monitoring of Spares
5. Guidelines for Prevention of Sexual Harassment Against Women at Workplace

6. Guidelines for Testing Instruments for EHV Substation
7. Guidelines for Testing Instruments for EHV Transmission Lines
8. Guidelines for VRLA Battery Bank And Battery Charger
9. Maintenance Guidelines for EHV Transformers and Reactors
10. Oil Sampling Procedure for Transformer and Reactors
11. Permissible Limit for Sub Station Equipment
12. Pre-Commissioning Procedure and Formats for Transmission Lines
13. Preventive Maintenance Formats and Schedules
14. Procedure for oil replacement in Transformer and Reactor at Site
15. Procedure for patrolling and maintenance of EHV transmission lines
16. Safety-Guidelines and Instructions

List of documents (draft) submitted to the distribution utilities for system improvement:

1. Guidelines for Learning & Development,
2. Guidelines for Prevention of Sexual Harassment Against Women at Workplace,
3. Procedure for Patrolling and Maintenance of Distribution Lines

Any suggestions on draft documents may be reviewed by utilities so that same may be finalized.

ITEM NO. E.24 : REQUIREMENT OF NODAL PERSON of UTILITIES FOR PROPER COMMUNICATION UNDER CBIS: POWERGRID

Currently POWERGRID does not have an updated list of assigned representatives/nodal persons who shall be looking after the CBIS-NERPSIP (9 utilities) or CBIS-CTDS (2 utilites).

It will really be helpful if we have a main and standby nodal person for each of the 11 utilities. It will help for proper tracking and record keeping.

ITEM NO. E.25 : COMPLETION OF LINE UNDER NERPSIP- MIZORAM: POWERGRID

Under the NERPSIP Scope in Mizoram, 132/33kV West Phaileng Substation, 132/33kV Marpara Substation along with 132kV West Phaileng Marpara Transmission line are being constructed.

As per the original plan, 132/33kV West Phaileng Sub-station is to be connected from existing Sihhmui substation via existing 132kV Zemabawk-Sihhmiu-West Phaileng line. Presently the line is charged at 33kV level supported by poles at few locations and as gathered, there will be delays in rectification of the line.

Meanwhile, 132kV Bairabi – Mamit – W.Phaileng line and 132/33kV Sub-station at Mamit is also under construction by P&E Department which is expected to be ready prior to Zemabawk -Sihhmui – W.Phaileng line restoration.

P&E Department may expedite the completion of the line to energize the system being constructed under NERPSIP at rated voltage.

ITEM NO. E.26 : ISSUE PERTAINING TO NERPSIP – NAGALAND: POWERGRID

66/33kV Tuensang SS of DOPN is being upgraded to 132/33kV level under NERPSIP as an additional scope and the same is targeted for completion by December 2024. The existing lines connected to Tuensang from 132/66kV Mokokchung and 132/66kV Kiphire is presently charged at 66kV. DoP Nagaland may ensure that the associated system at Mokokchung and Khiphire for Tuensang is upgraded to 132kV level in commensuration with Tuensang upgradation for its gainful utilization.

Certain elements which are already commissioned, and few elements which are expected to be ready shortly under NERPSIP in Nagaland are likely to remain unutilized due to absence of downstream feeders. DOPN may expedite construction of downstream feeders to the following substations for gainful utilization:

a. 132/33 kV Longnak substation
b. 132/33 kV New Kohima (Secretariat) substation
c. 33/11 kV Longtho substation

d. 33/11 kV Chipobouzhou substation

ITEM NO. E.27 : ISSUE PERTAINING TO NERPSIP – TRIPURA: POWERGRID

132/33 kV Gokulnagar S/S under NERPSIP Tripura shall be connected by LILO of 132 kV Surajmaninagar- Rokhia line. Construction works for the LILO portion under NERPSIP has been completed and construction of 132 kV Surajmaninagar- Rokhia line is being done by TSECL. Construction works by TSECL needs to be expedited for energization of the system under NERPSIP. In case of further delays with regards to completion of the line, TSECL may take over the Gokulnagar substation along with the completed LILO portion.

132kV Rabindranagar – Belonia line being constructed under NERPSIP Tripura. The line has already been completed except for around 200 meters which is being held up due to pending diversion of existing 132kV Monarchak – Rabindranagar by TSECL **(Bay shifting)**. The line diversion works by TSECL may be expedited for energization and gainful utilization of 132kV Rabindranagar – Belonia line.

Infringement free land for Township / Colony construction may be provided by TSECL for the following substations:

a. 132/33kV Satchand SS
b. 132/33kV Rabindranagar SS

If there is no immediate visibility towards availability of land, deletion of the above scope may be considered from NERPSIP.

ITEM NO. E.28 : ISSUE PERTAINING TO NERPSIP – MANIPUR: POWERGRID

RTU augmentation for data reporting to SLDC (MANIPUR) for obtaining "First Time Charging Clearance":

MSPCL needs to make necessary arrangements for RTU augmentation for data reporting to SLDC (Manipur) to obtain "First Time Charging Clearance for the following substations:

i. 132/33 kV Ningthoukhong (MSPCL) S/s.
ii. 132/33 kV Jiribam (MSPCL) S/s.
iii. 132/33 kV Rengpang (MSPCL) S/s.

As per the original scope, only renovation of 132 kV Yurembam Karong Mao line was to be done under NERPSIP Manipur. However as per the request of MSPCL, diversion portion of the said line in Senapati area **(27 towers to be shifted)** was included in the scope of NERPSIP. However, works have been stopped by villagers since first week of Oct' 21 due to demand of compensation, which was to be borne by ADC (Autonomous District Council) Senapati. Material against the additional scope has already been supplied. As the matter is long pending and no further development is visible, it proposed to drop the implementation of the additional scope and the supplied materials shall be handed over to MSPCL.

ITEM NO. E.29 : HANDING OVER OF ASSETS COMMISSIONED UNDER NERPSIP: POWERGRID

All state utilities are requested to Take Over the assets which are already energized or under operation. Due to contractual obligations with executing agencies, Handing over procedures may be prioritized for commissioned assets under NERPSIP.

ITEM NO. E.30 : RESOURCE ADEQUACY AND TRANSMISSION ADEQUACY: NERLDC

Resource Adequacy Assessment

As per Guidelines for Resource Adequacy Planning Framework for India (Framed under the Rule 16 of Electricity (Amendments) Rules, 2022), NLDC shall annually publish a one-year look-ahead Short-term National Adequacy Plan. Hence, planning studies in future includes studies for short term resource adequacy assessment for national level.

NERLDC has carried out a probabilistic resource adequacy study (considering10000 Monte Carlo) for all the NER region constituents from January 2024 to June 2024 in an open-source software.

Shortfall (MU) denoted in output signifies the additional procurement required to meet demand.

Several Data assumptions for the study have been considered

The STUs/SLDC shall prepare one-year look ahead ST-DRAP (Short term Distribution Resource Adequacy Plan) on an annual basis for operational planning, at the state level and shall review the ST-DRAP on a daily, monthly and quarterly basis based on actual availability of generation resources to ensure sufficient electricity to power the growing economy of country.

The study results of Resource Adequacy will be presented by NERLDC

STUs/SLDCs are requested to conduct one-year look-ahead Short-term state Resource Adequacy Plan.

Transmission Adequacy

The anticipated peak demand of NER region to be met in 2024-25 would be 4284 MW (approx.) based on the demand projection.

NERLDC will present a study highlighting the system constraints including issues related to overloading of network, low voltages, ISTS drawl of respective control area of NER Region.

All constituents are requested to inform the action plan to alleviate the observed over-loading, and also the status of commissioning of planned network elements for relieving the constraints.

Annexure A.2

Quarterly Report on Mock Drill conducted for Crisis/Disaster Situations

1. Name of the Organization:

2. Period (Quarter of the year to be specified e.g. Apr to June, July to Sep etc.):

3. Mock Drill Details:

S No.	Name of Project/Station	Crisis/ Disaster situation	Brief description of the mock drill conducted	Key learnings/outcomes	Participation of Local Administration/NDRF/ SDRF

4. Tentative Schedule of Mock drill exercises to be conducted in next quarter:

S No.	Name of Project/Station	Crisis/ Disaster situation for which mock drill will be conducted

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Annexure A.5

एसजेवीएन लिमिटेड
SJVN Limited
(भारत सरकार एवं हिमाचल प्रदेश सरकार का संयुक्त उपक्रम)
(A Joint Venture of Govt. of India & Govt. of Himachal Pradesh)
मिनी रत्न एवं अनुसूची 'ए' सी. एस. पी.
A 'Mini Ratna' & Schedule 'A' PSU
CIN: L40101HP1988GOI008409

संदर्भ: एसजेवीएन: सीएचक्यू:सीएवंएसओ/04101.1905 दिनाँक: 02/11/2023

संलग्न सूची के अनुसार
As Per Distribution List

Subject: Consent for Purchase of power from 60 MW Naitwar Mori Hydro Electric Power Projects (NMHEP) of SJVN Ltd. and Signing of PPA- regarding

महोदय,

SJVN Limited, a joint venture of Govt. of India and Govt. of Himachal Pradesh, is presently executing the works of 60 MW Naitwar Mori HEP on River Tons in Uttarkashi District of Uttarakhand. It is our sincere endeavor to commission both the units (30 MW each) of NMHEP during November 2023.

Naitwar Mori is a run of the river scheme and is designed as per approved DPR to generate Annually 265.50 MUs in 90% dependable year. The energy generated from NMHEP will be evacuated through dedicated transmission line of approx.38 km upto HPPTCL network (through single circuit LILO of 220 kV Sawara Kuddu HEP- Hatkoti Line) which is further connected to ISTS network at 400kV/ 220 kV Substation at Gumma, Himachal Pradesh.

It is submitted that the levelized tariff of Naitwar Mori HEP (60 MW) is around Rs 9.51 per unit as per capital cost submitted before Hon'ble CERC (Cost to completion of Rs 1368.86 Cr), considering ROE @ 10 %, first year O&M expenses @ 5% and Design Energy as 265.50 MU) which are far below the CERC Norms and by following CERC tariff Regulation, 2019.

Efforts have been made to reduce to the tariff by lowering down the RoE, Loan restructuring, reduction in O&M expenses and reworking the Annual Expected Energy. Accordingly, levellised tariff of NMHEP is worked out at **Rs. 6.85/kWh** by considering Rate of interest on loan @ 5%, Return on Equity @10%, first year O&M expenses @ 4% which are far below the CERC Norms and Average Annual Energy as 337.54 MU (based on the actual site discharge data available from 2010-11 onwards).

It is to bring to your notice that MoP, GoI has issued order dtd. 29.01.2021 regarding Renewable Purchase Obligation (RPO) wherein Large Hydro Power Projects (>25 MW) are declared as Renewable Energy Source and Hydro Purchase Obligation (HPO) as a separate entity within Non – Solar RPO. As per MoP, GoI notification dtd. 29.01.21, HPO benefits may be met only from the power procured from eligible Large Hydro Projects commissioned on and after 08.03.2019. Hence, NMHEP is eligible for HPO benefits as per the guidelines of MoP.

During the meeting with Member (Planning) on 02.11.2023, it was advised to seek fresh consent from State DISCOMs/ RPCs to purchase power from Naitwar Mori HEP with HPO benefits. It is, therefore, requested to give consent of your organization by 09.11.2023 to SJVN with a copy to CEA (IRP Division) at ceirpcea@nic.in for purchase of power, so that Long term Power Purchase Agreement (PPA) can be initiated.

In case of any query, you may contact on gmcsosjvn@gmail.com, sjvn.cso@sjvn.nic.in or IRP Division of CEA.

सधन्यवाद,

एसजेवीएन लिमिटेड की ओर से,

भवदीय,

02.11.2023

(अशोक कुमार)
महाप्रबंधक (सीएवंएसओ)

Mobile no.- 9810162559/ 9418023559

Annexure A.13

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

विषय/Subject: Revised Report on 'Intra state transmission system strengthening requirement of North Eastern States and Sikkim by the year 2030'- regarding.

CEA vide letter dated 27th September, 2022 submitted report on 'Intra state transmission system strengthening requirement of North Eastern States and Sikkim by the year 2030' to MoP.

To discuss the report, a meeting was held under the chairmanship of Secretary (Power) on 17.11.2022. In the meeting, it was decided that CEA shall revise the report.

Accordingly, the report has been revised and the same is enclosed herewith.

Encl.: As above.

25.2.2023

(**बी.एस. बैरवा /B.S. Bairwa**)
निदेशक/ Director

निदेशक (पारेषण), विदयुत मंत्रालय, नई दिल्ली

सेवाभवन, आर.के.पुरम-I, नईदिल्ली-110066 **टेलीफोन**: 011-26732347 **ईमेल**: cea-pspa2@gov.in वेबसाइट: www.cea.nic.in
SewaBhawan, R.K Puram-I, New Delhi-110066 **Telephone**: 011-26732347 Email: cea-pspa2@gov.in **Website**: www.cea.nic.in

सत्यमेव जयते

Intra State Transmission System strengthening requirement of North Eastern states & Sikkim by the year 2030

February 2023





CENTRAL ELECTRICITY AUTHORITY

NEW DELHI

INTRA STATE TRANSMISSION SYSTEM STRENGTHENING REQUIREMENT OF NORTH EASTERN STATES & SIKKIM BY THE YEAR 2030

February, 2023

Central Electricity Authority

PSPA-II Division

Executive Summary

1.1. MoP vide letter dated 16.02.2022 had requested CEA to ascertain further requirements of North Eastern States to augment their transmission systems.

1.2. Accordingly, CEA had taken up the exercise of planning the transmission system strengthening requirement in NER and Sikkim upto the year 2030. Summary of proposals of transmission system augmentation as submitted by the North Eastern States is given below:

State	**Circuit km of proposed lines (in km)**	**Transformation Capacity proposed (in MVA)**	**Estimated costs of Transmission /distribution lines (in Rs. Crores)**	**Estimated costs of substations proposed (in Rs. Crores)**	**Total Costs (in Rs. Crores)**
Arunachal Pradesh	144	165	348	265	613
Assam	4268	7460	3761	2562	6323
Manipur	1573	280	1441	364	1805
Meghalaya	4304	4475	4744	2390	7134
Mizoram	1873	2745	2171	1081	3252
Nagaland	505	980	440	427	867
Tripura	1592	2113	1064	889	1953
Total Costs			**13,969**	**7,978**	**21,947**

1.3. After several round of discussions held with NER states & Sikkim, system study of each proposal and cost estimation were done by CEA.

1.4. The peak electricity demand for the year 2029-30 as per 20th EPS Report is given below. Some states requested to consider revised demand figures and accordingly the same has been considered for transmission planning studies. The demand projections as per 20th EPS Report and the demand figures considered for the study/analysis is given below:

States	**Actual Peak Electricity Demand 2021-22 (MW)**	**Projected Peak Electricity Demand in 2029-30 as per 20th EPS Report (MW)**	**Estimated demand in 2030 as per the States (MW)**
Arunachal Pradesh	197	259	378

States	Actual Peak Electricity Demand 2021-22 (MW)	Projected Peak Electricity Demand in 2029-30 as per 20th EPS Report (MW)	Estimated demand in 2030 as per the States (MW)
Assam	2126	3683	3300
Manipur	258	404	550
Meghalaya	408	546	699
Mizoram	169	289	285
Nagaland	173	221	316
Tripura	328	645	703
Sikkim	133	214	211

1.5. Based on the analysis, recommendation on the proposals of respective States has been made and chapter of each state along with intra-state transmission system recommended by 2030 was finalized.

1.6. Summary of state-wise transmission system augmentation required by 2030 and tentative expenditure required for implementation of the transmission schemes is given below:

Sl.No.	State	Peak Electricity Demand 2029-30 (MW)	MVA Capacity Addition / Augmentation (MVA)	Transmission Line addition / Reconductoring (ckm)	Tentative expenditure (Rs. Crs.)
1.	Arunachal Pradesh	378	150	152.5	**533.3**
2.	Assam	3300	2120	1701	**2405.54**
3.	Manipur	550	0	534	**869.12**
4.	Meghalaya	699	1340	830	**1069.53**
5.	Mizoram	285	25	467.5	**427.5**
6.	Nagaland	316	190	258	**310**
7.	Tripura	703	1100	432	**995.22**
8.	Sikkim	211	50	0	**31.82**
Total			**4975**	**4375**	**6642**

1.7. A total of **4,975 MVA** capacity addition/augmentation and **4,375 ckm** of new transmission lines/reconductoring of old lines, at an estimated cost of **Rs. 6,642 Crs** would be required for implementing the intra-state transmission proposals for meeting the electricity demand of states of NER and Sikkim by the year 2030.

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Contents

8. Meghalaya

8.1. Demographics

- Meghalaya was previously part of Assam, but on 21st January 1972, the districts of Khasi, Garo and Jaintia Hills became the new state of Meghalaya. The population of Meghalaya as of 2014 was estimated to be 3,211,474. Meghalaya covers an area of approximately 22,430 square kilometres.

8.2. Electricity profile of state

8.2.1. Power generation-demand scenario of state:

- In the FY 2021-22, Meghalaya had peak electricity demand of 408 MW and total electrical energy requirement of 2,256 MU. As on 31.03.2022, state has installed capacity of 248.56 MW in central sector which includes hydro plants (87.27 MW) and thermal plants (161.29 MW). In addition, installed capacity in state sector is 354.53 MW and installed capacity in private sector is 17.95 MW. Per capita consumption of the state was 751 kWh in the year 2021-22.
- The projected peak electricity demand as per 20th EPS report will be 546 MW in the year 2029-30.
- Peak electricity demand (MW) of Meghalaya for the year 2030 as per the 20th EPS Report and demand estimated for the year 2029-30 as per the state is given below:

Year	Actual peak electricity demand (2021-22)	Peak electricity demand as per 20th EPS Report for the year 2029-30	Estimated Peak electricity demand for the year 2029-30
Peak electricity demand (MW)	408	546	699

- Installed capacity (MW) of generating stations in Meghalaya is given below:

SECTOR	HYDRO		THERMAL				NUCL-EAR	R.E.S. (MNRE)	TOTAL
		COAL	LIGNITE	GAS	DIESEL	TOTAL			
State	322	0	0	0	0	0	0	33	355
Private	0	0	0	0	0	0	0	18	18
Central	87	52	0	110	0	161	0	0	249
Total	**409**	**52**	**0**	**110**	**0**	**161**	**0**	**50**	**621**
%	**65.90**	**8.31**	**0**	**17.66**	**0**	**25.97**	**0**	**8.13**	**100.00**

8.2.2. Inter State Transmission system in the state:

- The state has one No. 400 kV S/s at Byrnihat and a 132 kV ISTS switching substation at Khleihriat. Further, a 220/132 kV, 320 MVA ISTS substation at Nangalbibra is under implementation.

- State has total 585 ckm of existing ISTS network and 282 ckm of planned /under construction ISTS network. Brief details of the ISTS network are given in the table below:

Voltage level	Existing	Under Construction/ Planned
132 kV 400 kV	168 ckm 417 ckm	37 ckm 245 ckm*
Total	585 ckm	282 ckm

*Initially operated at 220 kV

- Detailed progress of under implementation/planned ISTS system in Meghalaya by POWERGRID and under TBCB (as on April, 2022) are as given below:

  Under Construction & Planned ISTS under ISTS

  A. Under Construction

  i) Establishment of new 220/132 kV substation at Nangalbibra (by Sterlite):

  - Establishment of new 2x160 MVA, 220/132 kV ICTs at Nangalbibra alongwith associated bays
  - Bongaigaon – Nangalbibra 400 kV D/c line (initially operated at 220 kV) alongwith associated bays – 245 ckm
  - Hatsinghmari (Assam) – Ampati (Meghalaya) 132 kV D/c line alongwith associated bays – 37 ckm

8.2.3. Intra State Transmission assets (as on 31.10.2022):

Voltage (kV)	Transmission lines (in ckm)			Substations (in MVA)		
	Existing	Under construction	Planned	Existing	Under construction	Planned
132	900	150	395	527	300	450
220	-	130	-	-	640	640
400	-	-	-	-	-	-

8.2.4. Under implementation intra-state transmission/distribution schemes:

A total of 7 Nos. of packages which consists of 2 packages of substations, 3 packages of distribution system, 2 package of transmission lines have been considered under North Eastern Region Power System Improvement Project. All the packages have been awarded.

8.3. Transmission proposals submitted:

- The brief of the proposals submitted by state are given in table below:

400 kV Transmission system

Sl. No.		No.	Length (km)	Capacity (MVA)	Estimated Cost (Rs. Cr.)
1	New substation	2	-	1580	650
2	Augmentation of existing substation	-	-	-	-
3	New transmission line including LILO and 2nd Ckt Stringing	4	561	-	1964
4	Reconductoring of transmission line	-	-	-	-

220 kV Transmission system

Sl. No.		No.	Length (km)	Capacity (MVA)	Estimated outlay (Rs. Cr.)
1	New substation	2	-	740	400
2	Augmentation of existing substation	-	-	-	-
3	New transmission line including LILO and 2nd Ckt Stringing	6	280	-	920
4	Reconductoring of transmission line	-	-	-	-

132 kV Transmission system

		No.	Length(km)	Capacity(MVA)	Estimated Cost (Rs. Cr.)
1	New substation	15	-	775	1050
2	Augmentation of existing substation	13	-	1750	655
3	New transmission line including LILO and 2nd Ckt Stringing	23	1393	-	4074
4	Reconductoring of transmission line	11	184.3	-	417

8.4. ANALYSIS OF PROPOSALS:

8.4.1. Proposed new substations alongwith their associated transmission lines:

Sl.No.	Name of the Substation	Projected demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by State	CEA remarks
1.	**Mynkre 400/220, 2x315 MVA and 220/132 kV, 2x160 MVA Sub station**	150	400	Evacuation of ISTS power and 210 MW New Leshka II HEP	Considering the projected load, requirement of 400/220 kV S/s at Mynkre, is not justified. However, 220/132 kV, 2x160 MVA S/s at Mynkre is recommended with 220 kV connectivity as given below: LILO of both the circuits of under construction Nangalbibra-New Shillong 220 kV D/c line at Mynkre (2x80 km).
	LILO of both circuits of Silchar-Azara 400 kV D/c line at Mynkre – (6 km)		21		
	Nangalbibra (ISTS)-Mynkre (via Ichamati) 400 kV D/c line (charged at 220 kV) – (295 km)		1032		
	Mynkre -Mustem 220 kV D/c Line – (60 km)		210		
	MLHEP-II - Mynkre 220 kV D/c line – (30 km)		105		
2.	**New Shillong, 400/220 kV, 2x315 MVA Sub station**	350	250	Evacuation of ISTS power and Ring main of NERPSIP 220 kV	Considering the projected load, in the load flow studies, the 400 kV lines proposed was observed to be very lightly loaded. Therefore, the proposal is not justified. However, for disbursal of power from Leshka-II HEP, connectivity from Sohra at 220 kV level have been considered and Sohra 220/132 kV, 2x160 MVA S/s is recommended with following connectivity: LILO of both the circuits of Nangalbibra-New Shillong at Sohra (2x30km).
	LILO of one circuit of Silchar- Byrnihat 400 kV D/c line at New Shillong – (10km)		35		
	LILO of both the circuits of Nangalbibra(ISTS) - New Shillong 220 kV D/c line on Multi Circuit towers at Mustem – (10km)		45		
	LILO of both the circuits of Nangalbibra (ISTS) - New Shillong 220 kV D/c line on Multi Circuit towers at Sohra – (30km)		105		
3.	**Ichamati 220/132 kV, 2x160 MVA S/s and 132/33 kV, 2x50 MVA S/s**	45	200	Govt of Meghalaya sanctioned Survey, DPR completed	Considering the load of 45 MW by 2030, the establishment of 220/132 kV S/s is not justified. However, 132/33 kV, 2x50 MVA Ichamati S/s may be implemented. As informed by Meghalaya, Ichamati being a border area with BSF
	Mawphlang - Ichamati 220 kV D/c line including LILO of both the circuits at Sohra – (45 km)		158		

Sl.No.	Name of the Substation	Projected demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by State	CEA remarks
	Ichamati –Sohra 132 kV D/c line – (40 km)		120		establishment and therefore, needs quality reliable power. For better reliability, 132 kV D/c line from Ichamati to Sohra is recommended.
4.	**Nongstoin 220/132 kV 2x160 MVA Substation**	200	200	Evacuation from Nangalbibra ISTS	Considering the projected load as per EPS data, the requirement of 220/132 kV S/s at Nongstoin doesn't get justified. However, to keep the system N-1 reliable, one additional 132 kV connectivity may be explored. Therefore, the proposal is not recommended.
	LILO of one circuit of proposed Killing - Nongalbibra (ISTS) 400 kV D/c Line (charged at 220 kV) at Nongstoin – (250km)		875		
5.	**Amlarem (near Dawki) 132/33 kV, 2x25 MVA Substation**	30	50	No 132/33 kV Substation in highly urbanised area	Amlarem (near Dawki) is a tourist place with substantial load growth. Therefore, to provide reliable power, the proposal of establishing Amlarem (near Dawki) 132/33 kV, 2x25 MVA S/s is recommended with the following connectivity: LILO of both the circuits of proposed Mustem - Leshka (MLHEP) 132 kV D/c line at Amlarem (near Dawki) – (50 km)
	LILO of both the circuits of proposed Mustem - Leshka (MLHEP) 132 kV D/c line at Amlarem (near Dawki) – (50 km)		150		
6.	**Nongpoh 132/33 kV, 2x25 MVA S/s**	40	60	District Headquarter of most industrialised District	To meet the load and provide relibale power supply, the proposal of Nongpoh 132/33 kV, 2x25 MVA S/s is recommended with the following connectivity: LILO of both the circuits of Stage-III Power House- Umtru Power House 132 kV D/c line on Multi circuit towers at Nongpoh – (10 km)
	LILO of both the circuits of Stage-III Power House- Umtru Power House 132 kV D/c line on Multi circuit towers at Nongpoh – (10 km)		30		
7.	**132/33 kV, 2x25 MVA GIS S/s at the existing Killing 400/220/132 kV S/s**	30	50	No 132/33 kV Substation in highly urbanised area	To meet the load and provide reliabile downstream connectivity, the proposal of Killing (New) 132/33 kV, 2x25 MVA GIS S/s at/nearby existing Killing 400/220/132 kV S/s is recommended with the following connectivity: Killing(existing)-Killing(New) 132 kV D/c line (2x2.5 km)
8.	**Baghmara 132/33 kV, 2x25 MVA S/s**	35	175	Power evacuation from Nangalbibra ISTS	As discussed with MePTCL, the substation is required beyond 2030. As such, the proposal is not considered.
	Nangalbibra - Baghmara 132 kV S/c line on D/c towers – (65 km)		195		

Sl.No.	Name of the Substation	Projected demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by State	CEA remarks
9.	**Bhoilymbong (near Umroi Airport) 132/33 kV, 2x25 MVA Sub station**	25	60	Evacuation of power from New Shillong S/s	Considering the load as per 20th EPS, requirement of 132 kV S/s is not justified. Therefore, the proposal is not recommended.
	New Shillong - Bhoilymbong 132 kV D/c line and Bhoilymbong –Nongpoh 132 kV D/c line –(60 km)				
10.	**Balat 132/33 kV, 2x25 MVA S/s and Bay extension at Sohra S/s**	30	65	For reliable power supply in Balat area presently fed through long 33 kV lines.	Considering the projected demand as per 20th EPS, the requirement of 132/33 kV S/s is not justified. Therefore, the proposal is not recommended.
	Sohra - Balat 132 kV D/c line – (50 km)		150		
	Ichamati- Balat 132 kV D/c line – (116 km)		348		
11.	**Pongtung (near Mawlynnong) 132/33 kV, 2x25 MVA Sub station**	30	60	For reliable power supply in Pongtung area presently fed through long 33 kV lines.	Pongtung (near Mawlynnong) is a toursit destination as well as border area and needs reliable power supply. As such, to resolve the issue of long 33 kV lines, the proposal of Pongtung (near Mawlynnong) 132/33 kV, 2x 25 MVA Sub station is recommended with the following connectivity: Sohra-Pongtung 132 kV D/c line (25 km)
	LILO of one circuit of Sohra- New Shillong (Approved during the 22nd NERPC meeting on 28.03.2022.) 132 kV D/c line at Pongtung & Umiew – (60 km)		180		
12.	**132/33 kV, 2x25 MVA Sub station at Umiew Upper Shillong**	30	60	Power supply reliablity in Upper Shillong area and suburb .	Radial distance measured from Google maps, shows Umiew to N.Shillong distance of around 6 km. As per the projected demand, 33 kV n/w is sufficient enough to meet the load. Therefore, the proposal is not recommended.
13.	**Mawlynrei 132/33 kV, 3x25 MVA GIS Substation**	50	100	Meeting load demand of Old Shillong, NERPC & PGCIL Complex and evacuation of power from New Shillong (NERPSIP)	Radial distance measured from Google maps, shows Mawlynrei to N.Shillong distance of around 7 km. The projected load can be easily met with downstream network of 33 kV network. Therefore, the proposal is not recommended.
	NEIGRIHMS - Mawlynrei 132 kV D/c (with HTLS) – (10 km)		30		

Sl.No.	Name of the Substation	Projected demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by State	CEA remarks
14.	**Nongkhlaw 132/33 kV, 2x25 MVA Substation**	25	60	Evacuation from Stage-III Power Station, Ring main power supply to new District Hq of Mairang	As discussed with MePTCL, the substation is required beyond 2030. As such, the proposal is not considered.
	Stage III Power House - Nongkhlaw (near Mairang) 132 kV D/c line and Nongkhlaw – Nongstoin 132 kV D/c line – (95 km)		285		
15.	**Shangpung 132/33 kV, 2x25 MVA Substation**	25	60	Load demand growth of Laskein block and N-1 relief of Khliehriat	Radial distance of Shangung to Khlieriahriat is around 14 km. As per the projected demand, the proposal may not be required. System was observed to be N-1 compliant. Hence the proposal is not recommended.
	LILO of both the circuits of proposed New Shillong –Khliehriat(PG) 132 kV D/c at Shangpung – (70km)		105		
16.	**Riangdo 132/33 kV, 2x25 MVA Sub station**	30	60	For reliable power supply in Riangdo area presently fed through long 33 kV lines.	Considering the projected demand as per 20th EPS, 33 kV n/w is sufficient enough to meet the load. Therefore, the proposal is not recommended.
	Nongstoin – Riangdo 132 kV S/c line on D/c towers – (50 km)		150		
17.	**Pilangkata 132/33 kV, 2x25 MVA Sub station**	40	60	For reliable power supply in Pilangkata area presently fed through long 33 kV lines.	Considering the projected demand as per 20th EPS, 33 kV n/w is sufficient enough to meet the load. Therefore, the proposal is not recommended.
	LILO of one circuit of Killing -Kahilipara 132 kV D/c at Pilangkata (with HTLS) – (10 km)		30		
18.	**Patharkhmah 132/33 kV, 2x25 MVA Sub station**	30	60	Meeting demand of Aspirational District and power supply reliability	As discussed with MePTCL, the substation is required beyond 2030. As such, the proposal is not considered.
	Nongpoh – Patharkhmah 132 kV D/c line – (30 km)		90		
19.	**Mawkyrwat 132/33 kV, 2x25 MVA Substation**	25	60	For reliable power supply in Mawkyrwat area presently fed through long 33 kV lines.	Considering the projected demand as per 20th EPS, 33 kV n/w is sufficient enough to meet the load. Therefore, the proposal is not recommended.
	Balat – Mawkyrwat 132 kV D/c line – (76.1 km)		228.3		

8.4.2. New Transmission lines:

Sl. No.	Name of the transmission line	Estimated Cost (Rs Cr)	Brief Justification/remarks by States	CEA Remarks
1.	MLHEP-II - Sohra 220 kV D/c line – (85 km)	297.50	N-1 Evacuation of power from Leshka II Hydro Project of 210 MW	Due to uncertainty in commissioning schedule of Generating stations, intra-state transmission proposals for evacuation of power have not been considered.
2.	New Shillong- IIM 132 kV D/c line (8 km)	24.00	Power Evacuation from New Shillong S/s (NERPSIP)	Load details, present connectivity at IIM not provided. The proposal could not be studied and hence is not recommended.
3.	Mendipathar – Phulbari 132 kV D/c line (78 km)	234.00	Presently 132 kV Mendipathar-Ronkhon-Ampati-Phulbari is radial line. With the proposed line, N-1 will be fulfilled for Ronkhon, Ampati, Phulbari areas.	Projected load can be met with the transmission system already in place/under construction. As such, the proposal is not recommended.
4.	Ampati-Dalu-Baghmara 132 kV D/c line (100 km)	300.00	Ring Main Power supply to Baghmar and southern Garo Hills and power corridor to Bangladesh.	Baghmara 132/33 kV S/s has been agreed for implementation with connectivity from Ampati and Nangalbibra 132 kV D/c lines. As such, the proposal is not recommended.
5.	Stringing of 2nd Circuit of Ganol - Ampati 132 kV S/c line on existing Towers (45 km)	135.00	Providing alternate N-1 for Ganol Hydro project and Ampati region	Based on the power flow studies, the proposal is not recommended.
6.	Wah Umiam Stage-III – Ichamati 132 kV D/c line (170 km)	510.00	Power evacuation of the proposed 85 MW, Wam Umiam-III HEP under NEEPCO	Due to uncertainty in commissioning schedule of Generating stations, intra-state transmission proposals for evacuation of power have not been considered.
7.	Wah Umiam Stage-I - Sohra S/S 132 kV D/c line (70 km)	210.00	Power evacuation of the proposed 50 MW, Wam Umiam-I HEP	
8.	Wah Umiam Stage-II - Balat 132 kV D/c line (110 km)	330.00	Power evacuation of the proposed 100 MW, Wam Umiam-II HEP	
9.	Mynkre (NERSIP) – Lumshnong 132 kV D/c line (20 km)	60.00	Power evacuation from Mynkre S/S (NERPSIP)	Power flow on the lines is observed to be very less. Therefore, the proposal is not recommended.

8.4.3. Reconductoring of Existing Transmission lines:

S. No.	Name of the line	Estimated Cost (Rs Cr)	Excsisting Conductor	COD	Justification/ remarks by State	CEA Remarks
1.	NEHU-Mawlyndep-Mustem-Khliehriat 132 kV S/c line – (56 km)	126	ACSR Panther	1996	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Hence, the proposal is not recommended.
2.	Stage 1 - Umiam 132 kV S/c line – (6 km)	14	ACSR Panther	1991	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Hence, the proposal is not recommended.
3.	Umiam-NEHU S/c line – (14 km)	32	ACSR Panther	1991	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.
4.	Stage 1-Mawlai 132 kV S/c line (12.35 km)	28	ACSR Panther	1964	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.
5.	Stage 1- Stage 2 132 kV S/c line – (3.1 km)	7	ACSR Panther	1969	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.
6.	Umtru-Stage-III 132 kV D/c line – (42.1 km)	95	ACSR Panther	1964	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.
7.	Umtru-Kahilipara 132 kV D/c line – (11.6 km)	26	ACSR Panther	1964	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.
8.	NEHU- Mawlai 132 kV S/c line – (6 km)	14	ACSR Panther	1996	Increase in current carrying capacity	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.
9.	UPS-Sarusajai 132 kV D/c line – (20 km)	45	ACSR Panther	1996	Increase in current carrying capacity	Sarusajai (Assam)-UPS (Megalaya) is an ISTS line and not recommended under intra-state.
10.	132 kV Khliehriat-Khliehriat (PG) – circuit- 1 (7.8 km)	18	ACSR Panther	1997	To cater to the increase in ISTS power flow due to increase in demand	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.

S. No.	Name of the line	Estimated Cost (Rs Cr)	Excsisting Conductor	COD	Justification/ remarks by State	CEA Remarks
11.	132 kV Khliehriat-Khliehriat (PG) – circuit- 2 (5.35 km)	12	ACSR Panther	2006	To cater to the increase in ISTS power flow due to increase in demand	Loading observed on the lines are well within the thermal capacity. Proposal is not recommended.

8.4.4. Augmentation of Substations:

S.No.	Name of substation	Proposed capacity (MVA)	Load demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by state	CEA Remarks
1.	Upgradation of Sohra 1x12.5 MVA, 132/33 kV Substation to 220/132 kV, 2x160 MVA and 132/33 kV, 2x50 MVA with 6 (six) 220 kV Bays and 8(eight) 132 kV Bays (includes upgradation and modernisation of the existing 132/33 kV Sohra Substation)	2x160, 2x50	120	200	a) Evacuation to feeders: 220 kV, Mawphlang, Ichamati, Nangalbibra, Leshka-II, 132 kV New Shillong . 132 kV Ichamati, 132 kV Pongtung (Leshka-I) , 132 kV Mawlai b) NIT Meghalaya; c) mTourist resorts; Potential for 5 Star Hotels	Based on the projected load, the proposal of upgradation of Sohra is recommended. Connectivity shall be LILO of both the circuits of Nangalbibra-Mynkre 220 kV D/c line at Sohra.
2.	Upgradation of Mustem 132/33 kV, 2x20 MVA substation to 220/132 kV, 2x160 MVA and 132/33, 2x50 MVA.	2x160 2x50	336	160	Downstream Evacuation of Nongalbibra ISTS, New Shillong NERPSIP and Leshka-II	In view of recommending Sohra 220/132 kV, 2x160 MVA S/s, the proposal of upgradation of Mustem to 220 kV level is not recommended.
3.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Nehu S/s	2x50	80	20	Acute Load demand in Shillong	Based on load flow, the proposal is recommended.
4.	Replacement of 132/33 kV 45 (2x20+1x5) MVA ICTs with (3x20) i.e. 60 MVA ICTs at Rongkhon S/s	3x20	50	15	Acute Load demand in Tura	Based on the projected load, the proposal is recommended. 01 No. 20 MVA ICT to be utilized from other substations.
5.	Replacement & Modernisation of 132/33 kV, 2x5 MVA, AIS to 2x25 MVA	2x25	45	60	Lack of space at Lumshnong	As discussed with MePTCL, the substation augmentation is required beyond

S.No.	Name of substation	Proposed capacity (MVA)	Load demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by state	CEA Remarks
	GIS S/s at Lumshnong					2030. As such, the proposal is not considered.
6.	Upgradation and modernisation of Khliehriat 132/33 kV SubStation including providing 33 kV Switchyard	2x25	40	60	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	Present configuration of the substation was not provided. Therefore, the proposal have not been considered.
7.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Rajabagan EPIP-I S/s	2x50	90	15	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	As discussed with MePTCL, the substation augmentation is required beyond 2030. As such, the proposal is not considered.
8.	Replacement of 132/33 kV 1x50 MVA ICT with 2x50 MVA ICTs at EPIP-II Norbong S/s	2x50	90	10	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	Based on the projected load, the proposal is recommended.
9.	Replacement of 132/33 kV, 1x20 MVA ICT with 2x25 MVA ICTs at Nongstoin S/s.	2x25	30	10	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	Based on the projected load, the proposal is recommended. 01 No. 20 MVA ICT to be utilized from other substations
10.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Mawphlang S/s	2x50	80	60	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	As discussed with MePTCL, the substation augmentation from sl.no. 10 to 13 is required beyond 2030. As such, the proposal is not considered.
11.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Umiam S/s alongwith new 33 kV AIS Switchyard	2x50	80	25	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	
12.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Mawlyndep S/s	2x50	70	15	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	

S.No.	Name of substation	Proposed capacity (MVA)	Load demand by 2030 (MW)	Estimated Cost (Rs. Crs)	Brief Justification/remarks by state	CEA Remarks
13.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Mendipathar S/s	2x50	70	15	Augment, Upgrade, Modernise old substations to ensure reliability , and extend life span	

8.5. Recommendations on proposals of states:

8.6.1. Based on load flow and technical analysis, the following proposals are recommended as intra-state transmission system requirement of Meghalaya by 2030:

6.6.1.1 New Substations along with their associated transmission system:

S.No.	Details of the substations / Associated Transmission system	Details of Downstream network	Estimated Cost as per Meghalaya SoR (Rs. Crs)
i)	Mynkre 220/132 kV, 2x160 MVA	Mynkre 220/132 kV S/s shall be upgradation of existing Mynkre 132/33 kV S/s.	70
	LILO of both the circuits of under construction Nangalbibra-New Shillong 220 kV D/c line at Mynkre- (2x80 km)		280
ii)	Sohra 220/132 kV, 2x160 MVA	Sohra 220/132 kV S/s shall be upgradation of existing Sohra 132/33 kV S/s	70
	LILO of both the circuits of Nangalbibra-New Shillong 220 kV D/c line at Sohra (2x30km)		105
iii)	Ichamati, 132/33 kV, 2x50 MVA	33/11 kV S/S: (a) Ichamati 1x2.5 MVA (b) Border Lighting 2x1.6 MVA (c) 33 kV Industrial Consumers	40
	Ichamati –Sohra 132 kV D/c line – (40 km)		91
iv)	Amlarem 132/33 kV, 2x25 MVA	33/11 kV S/S (a) Amlarem 1x2.5 MVA (b) Sohkha 1x2.5 MVA (c) Syndai 1x1.6 MVA to 5 MVA	30
	Mustem - Leshka (MLHEP) 132 kV D/c line with LILO of both the circuits of proposed line at Amlarem (near Dawki) – (2x50 km)		136

S.No.	Details of the substations Associated Transmission system	Details of Downstream network	Estimated Cost as per Meghalaya SoR (Rs. Crs)
v)	Killing (New) 132/33 kV, 2x25 MVA GIS	33/11 kV S/S (a) Killing 1x5 MVA (b) Khanapara 2x2.5 MVA (c) Mawsmai 2x2.5 MVA (d) USTM Medical College 1x2.5 MVA (e) 33 kV Industrial load	58.63
	Killing-Killing(New) 132 kV D/c line (2.5 km)		11.4
vi)	Nongpoh 132/33 kV, 2x25 MVA	33/11 kV S/S (a) Nongpoh 2x5 MVA (b) Jyntru 1x5 MVA (c) Umsohlait 1x2.5 MVA (d) Umsning 1x2.5 MVA (e) Umden 1x2.5 MVA (f) Umlaper 1x2.5 MVA	30
	LILO of both the circuits of Stage-III Power House- Umtru Power House 132 kV D/c line on Multi circuit towers at Nongpoh – (2x10 km)		23
vii)	Pongtung* (near Mawlynnong) 132/33 kV, 2x25 MVA	33/11 kV S/S (a) Pongtung 2x2.5 MVA (b) Jaklon (Pynursla) 2x5 MVA (c) Umsyiem Dawki 2x2.5 MVA (d) Prospective Tourism load 10 MVA.	30
	Sohra-Pongtung 132 kV D/c line (30 km)		57
Total			**1032.03**

*2x20 MVA ICTs to be utilized from ICTs being replaced from other substations as mentioned under 6.6.1.3

6.6.1.2 Augmentation of substations:

S.No.	Name of substation	Utilization of ICTs from other substations	Estimated Cost as per Meghalaya SoR (Rs. Crs)
1.	Replacement of 132/33 kV 2x20 MVA ICTs with 2x50 MVA ICTs at Nehu S/s	-NA-	15
2.	Replacement of 132/33 kV 45 (2x20+1x5) MVA ICTs with (3x20) i.e. 60 MVA ICTs at Rongkhon S/s	01 No. 20 MVA ICT to be utilized from other substations	0
3.	Replacement of 132/33 kV 1x50 MVA ICT with	-NA-	7.5

S.No.	Name of substation	Utilization of ICTs from other substations	Estimated Cost as per Meghalaya SoR (Rs. Crs)
	2x50 MVA ICTs at EPIP-II Norbong S/s		
4.	Replacement of 132/33 kV, 1x20 MVA ICT with 2x25 MVA ICTs at Nongstoin S/s.	01 No. 20 MVA ICT to be utilized from other substations	0
5.	Replacement of 132/33 kV 1x12.5 MVA ICTs with 2x50 MVA ICTs at Sohra S/s		15
Total			**37.5**

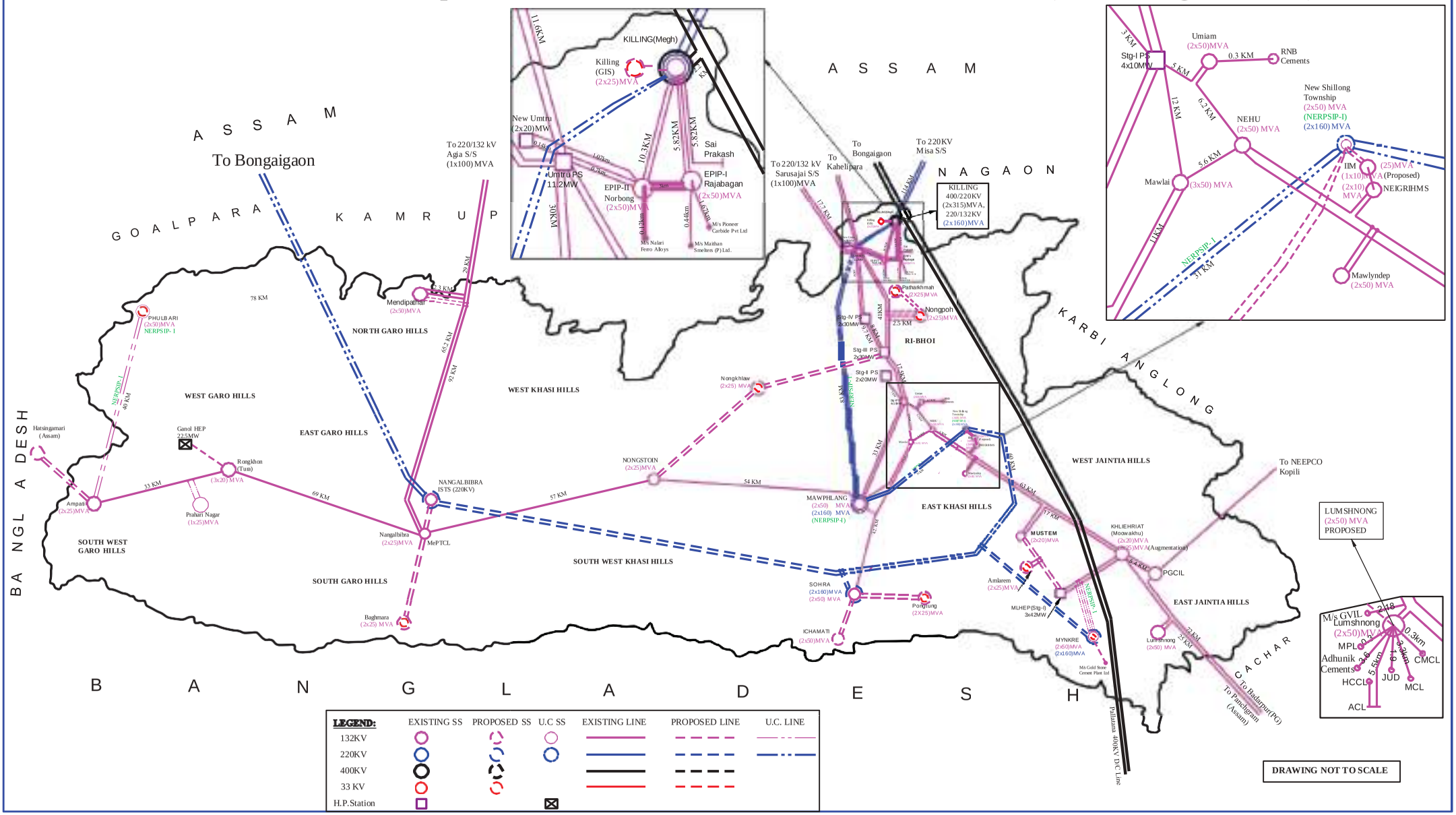
Note: Upgradation of 33 kV Switchyard shall not be included in the scope of this scheme. State may get it included in other distribution schemes such as RDSS**.**

6.6.1.3 Details of utilization of replaced 2x20 MVA transformers:

S.No.	Replaced from 132/33 kV Substation	Shifted to 132/33 kV substation
i)	Nehu*	-Store-
ii)	EPIP-II Norbong*	-Store-
iii)	Sohra	-Store-

*Out of 05 nos. 20 MVA ICTs replaced from these substations, 4 nos. 20 MVA ICTs to be utilized at Pongtung, Rongkhon and Nongstoin 132/33 kV S/s.

Power Map of Meghalaya (Existing, Ongoing and Proposed Projects) Transmission Lines & Sub-Stations of 400/220/132 KV Proposed Draft Recommendation of CEA for 2030 (As on August, 2022).



Annexure A.28

GOVERNMENT OF ARUNACHAL PRADESH
OFFICE OF THE CHIEF ENGINEER (P) : CENTRAL ELECTRICAL ZONE
DEPARTMENT OF POWER, VIDYUT BHAWAN, ITANAGAR – 791111
chiefengineercez@gmail.com

NO.CE(P)/CEZ/T&D/PSDF/2016-17/2213-24 Dated : 17/11/2023

To

The Member Secretary,
North Eastern Regional Power Committee Complex,
Dong Parmaw, Lapalang,
Shillong – 793006.

Sub : - Submission of revised DPR for vetting and recommendation of the scheme "**Implementation of Automatic Reactive Power Solution on 33/11 kV Sub Stations in Arunachal Pradesh (Proposal No: 412)**".

Ref : - No.NLDC-PSDF/80TH TESG/2023-24 dated 21-09-2023.

Sir,

Enclosed please find herewith revised DPR of the scheme "**Implementation of Automatic Reactive Power Solution on 33/11 kV Sub Stations in Arunachal Pradesh (Proposal No: 412)**" with an estimated cost of Rs. 110.56 Crore for vetting and recommendation of North Eastern Regional Power Committee (NERPC) secretariat, as observed in the 80th meeting of TESG held oin 25th August' 2023 at Annexure – I, Clause 1.3 (6). A Copy of the observation is enclosed for your ready reference please.

Therefore, you are requested kindly to recommend the proposal to the Convener of Techno Economic Sub Group, Grid Controller of India Ltd. National Load Despatch Centre, PSDF – Secretariat, B – (, 1st Floor, Qutub Institutional Area, Katwaria Sarai, New Delhi – 110016 for consideration of the project under PSDF.

Yours sincerely,

Enclo: As stated above.

(Ginko Lingi)
Chief Engineer (Power)
Central Electrical Zone,
DoP, Vidyut Bhawan,
Itanagar - 791111

N.E.R.P.C. 277 30/11/23 Shillong

for n.a as discussed.
30/11/2023

DY

Copy to :-

1) US to HDCM for kind information of the Hon'ble DCM please.
2) PS to Hon'ble Advisor (Power) for kind information of the Hon'ble Advisor please.
3) **Shri Suhas Dambhare**, Convener of Techno Economic Sub Group, Grid Controller of India Ltd. National Load Despatch Centre, B-9, 1st Floor, Qutub Institutional Area, Katwaria Sarai, New Delhi – 110016 for information please.
4) PS to the Commissioner (Power), A. P. Civil Secretariat, Block-2, 3rd Floor, Itanagar for information please.
5) The Chief Engineer (NPC), CEA, New Delhi for information please.
6) The Executive Director, NLDC-Grid Controller of India Ltd., B-9, 1st Floor, Qutub Institutional Area, Katwaria Sarai, New Delhi – 110016 for information please.
7) PA to Secretary (Power), A. P. Civil Secretariat, Block-1, 4th Floor, Itanagar for information please.
8) The Director (Planning), A. P. Civil Secretariat, Block-1, 4th Floor, Itanagar for information please.
9) The Chief Engineer (Power), WEZ / EEZ / TP&MZ, DoP, Vidyut Bhawan, Itanagar for information.

Chief Engineer (Power)

Annexure - I

Points wise reply of observations

1.3 Techno Economic Sub Group Observation / Requirements:

Sl. No.	Observations	Clarifications
TESG		
1	Proposal is for installation of Capacitor Banks [114 Nos]	Yes, 114 Nos.
2	Estimated cost is ₹ 55.87 Cr. However, AMC will not be funded from PSDF.	Revised Estimated Cost of DPR is now Rs. 110.56 crore, after deletion of AMC part.
3	AMC is not eligible under PSDF, hence the same may be deleted from the BoQ.	AMC part is removed from the proposed DPR now.
4	Grant requested for 100%.	Yes, I Requested for 100% grant.
5	Board / Govt of Arunachal Pradesh approval is required for PSDF funding.	No. PWRS/2023/E-148719 dated 16th Nov'2023 enclosed as Annexure-A
6	Study report with NERPC vetting to be submitted.	**No. dated enclosed as Annexure-B**
7	BoQ in Excel sheet to be submitted.	BoQ is enclosed herewith in Excel Sheet also.
8	Basis of cost estimates along with previous LOA copies is required.	**Refer Page No. 67 to 87 & LoA Page 1 to 32 after page 87**
PSETD	NIL	
NPC		
9	The total estimated cost of the project is Rs. 55.87 Cr which is requested for 100% grant under 5.1(b) and 6.3(iv) of PSDF guidelines. The duration of the project is 36 months which shall start from the disbursement of the first installment of the sanctioned cost.	Revised estimated cost DPR enclosed for Rs. ₹ 110.56 Crore for 100 % grant and duration of the project is 36 months
10	Entity has requested for 114 No. of Automatic Type Capacitors Banks, each of 1800 kVAR capacity for 63 No. of 33/11 kV Substations. Entity submitted that presently No Capacitor Banks are installed at these 63 No. of 33/11 kV Sub Stations.	Yes, Total of 114 Nos. Capacitor Banks Ratings are changed based on the capacity of Power Transformer and outgoing feeder voltage profile.

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		Ratings 2200 kVAr, 1800 kVAr, 1500 kVAr, 1200 kVAr, 1000 kVAr, 800 kVAr & 400 kVAr for different Sub Stations have been proposed. At present no Capacitor Banks are installed in any of the 63 No. of 33/11 kV Sub Stations.
11	Entity submitted details of voltage profile of proposed location (substations) which is found to be equal or below than 0.9 p.u. (i.e. 10kV).	Yes, as Annexure – Revised voltage profile duly vetted NERPC
12	Entity need to submit Board / Department Approval seeking percentage grant from PSDF.	No. PWRS/2023/E-148719 dated 16th Nov'2023 enclosed as Annexure-A
13	Entity is requested to provide the study report for the requirement of these capacitor banks along with locations and get it vetted by the NERPC.	**No. dated enclosed as Annexure-B**
14	It was observed that transformer installed at the proposed substations are of 1 MVA, 1.6 MVA, 2.5 MVA, 3.15 MVA and 5 MVA. However, entity requested for 1.8 MVAR Capacitor banks for all transformer capacity even for 1MVA also. Entity is requested to justify it.	Revised Capacitor bank ratings suitable for various rated Sub Stations have been proposed as per the enclosed annexure.
15	Entity is requested to provide supporting documents of previous LOAs to justify your cost estimate / BoQ. Entity is also requested to clarify whether price escalation is taken and justify the same also?	**Page 87 Onwards**
16	Entity has requested 11 kV Vacuum Circuit Breakers along with C&R relay panel. Entity is requested to justify the need of the same.	Flexible Capacitor Bank with APFC panel has been proposed. VCB with C&R panel has been proposed for protection, safe and smooth operation of the capacitor banks.
17	AMC (5+1 years) for Rs 3.36 Cr has been also included under this proposal. Entity need to exclude the cost of AMC from this proposal and bear the cost of AMC through its own funds.	Yes, Now AMC has been removed from the estimate and revised estimate enclosed. AMC cost will be borne by the Department
18	Entity is requested to clarify the rating of Lighting Arrestor (25kA or 10kA for 11 kV).	Lighting Arrestor of 25 kA for 11 kV to be installed in the

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		Sub Station has been proposed.
19	Entity is also requested to clarify the size of Heat Shrinkable Jointing kit for XLPE cable indoor termination kit (3x185 sq mm for 33 kV or 3x4185 sq. mm for 11kV).	Heat Shrinkable Termination kit of size 3X185 sqmm for 11 KV has been considered as standard.
20	Entity need to submit soft copy of BoQ (including all the costs) in Excel sheet.	Soft copy of BoQ is enclosed in Excel sheet.
21	Entity need to provide undertaking for availability of sufficient space at substations for installation of proposed Capacitor Banks.	Yes, it will be made available
22	Entity ensured that No Duplicity of works under this proposal to any other previously sanctioned schemes under PSDF.	The proposed work is original and new. We confirm non-Duplicity of the proposed work.
23	Entity needs to be ensured that guidelines of GFR and CVC are not be violated.	Yes, all the guidelines will be followed as per out Govt Norms
PGCIL Cost Engineering		
24	Basis of cost estimate given by DoP, AP	Offer from Hitachi Energy for Capacitor Banks & LOA of MSPCL for other equipment.
25	The costs for installation of 1800kVAr and their associated equipment are based on the rate of recent LOAs awarded by NERLDC and approved by PSDF in year 2022 The prices have been escalated @42% (Price Variation clause applicable only on capacitor cell but in NERLDC considered same PV escalation factor on complete panels) on in allied equipment and in automatic capacitor panels due to inflation in raw material cost since the last order placed to the vendor in FY 22-23.	Offer from Hitachi Energy for Capacitor Banks & LOA of MSPCL for other equipments
26	The price inflation in raw materials that is Aluminum and Copper since 2023 has been considered. Also, the drastically increased terrain factor has been inculcated for supply and commissioning of equipment in the state.	Yes, price inflation is considered on the basis of WPI upto March 2024.
	a. LOA to be shared for checking the data considered in estimate	Yes, Enclosed as Annexure - (Page 67 onward)
	b. Order of FY22-23 as mentioned may be shared.	Copy of LoA placed by MSPCL is enclosed as Annexure - (Page 87 onward
	c. PV of 42% to be justified with statistical data	Offer from Hitachi Energy for Capacitor Banks & LOA for other equipments
	d. What is the drastically increased terrain factor?	Analysis based on WPI is

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		enclosed as Annexure -
CTU Engineering		
CTU Planning		
27	Present load is about 170 to 180 MW And by 2030 it would be about 280 MW, as per the EPS report. As against this shunt capacitor proposed is about 170 MVAR (114*1497) of capacitors at 11kv with each bank of size 114 nos. Entity may clarify.	As per the revised annexure please note the following: 1. **Present Load: 156.84 MW** 2. **Load as Installed Capacity: 293.95 MVA** 3. **No. of Capacitor Banks**: 114 Nos 4. **Proposed MVAR as per installed Capacity: 108.10 MVAR which is less than 40% of the present installed capacity (294 MVA)** 4. **Ratings of Capacitor Bank**: Various ratings as per the annexure attached.
28	These have to be installed on 11kV side. AP has totally about 89 33/11kV stations, the proposal is to install on 63 stations. Some stations have multiple modules, probably because they are to be installed on 11kv feeder. Arunachal Pradesh may indicate the length of 11kv feeders and possibility of installing at remote end.	All the proposed Capacitor Banks shall be installed in the 33/11KV Sub Stations as the length of all feeders are less than 15km.

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Annexure - A

GOVERNMENT OF ARUNACHAL PRADESH
DEPARTMENT OF POWER
A.P. CIVIL SECRETARIAT: BLOCK-3: ITANAGAR.

No. PWRS/2023/E-148719/ Dated, Itanagar the 16th November 2023

ORDER

I am directed to convey the approval of the **Panning & Investment Division, Department of Finance**, Government of Arunachal Pradesh vide **E-12136** for submission and processing of DPR for the work "***Implementation of 114 Nos. of Automatic Reactive Power Solution on 33/11 kV Sub-Stations of Arunachal Pradesh***" at an estimated cost of **Rs. 110.56 Crore** to the **Convener of Techno Economic Sub Group, National Load Dispatch Centre, PSDF-Secretariat**, for 100% grant under Power System Development Fund (PSDF) funding of Government of India.

(Miyom Gamlin)
Under Secretary (Power)
Govt. of Arunachal Pradesh
Itanagar

Memo No. PWRS/2023/E-148719/8497-99 Dated, Itanagar the 16th November 2023.

1. All Chief Engineers (Power), Department of Power, Itnagar.
2. All SE(E)s under Department of Power.
3. All EEs (E) under Department of Power.
4. Office Copy.

(Miyom Gamlin)
Under Secretary (Power)
Govt. of Arunachal Pradesh
Itanagar

3.	400/132/33 kV, 200 MVA, 3-Phase Transformer	2	1	2 Nos units at Silchar SS. Spare shall be positioned at Silchar SS.
4.	400/220/33 kV, 315 MVA, 3-Phase Transformer	1 no in Service & 2 nos. to be installed	1	1 no. in service at Misa. 1 no each will be installed at Balipara & Bongaigaon
5.	400 kV 80 MVAR Reactor	3	1	2 Nos units at Bongaigaon & 1 No unit at Balipara SS. Spare shall be positioned at Bongaigaon SS.
6.	400 kV 63 MVAR Reactor	18	1	1 no. Spare already available

Deliberation in the meeting

All constituents agreed to the above proposal and requested NERPC to put up the above proposal in the next TCC/RPC for approval.

Meanwhile, Assam requested NERPC to take the matter to RPC meeting for proving 100MVA 220/132kV Regional spare transformer at Dimpur SS for necessary installation at Samaguri SS on returnable basis.

The Sub-committee noted as above.

Action: NERPC

D.13 Preventive shifting of 400kV towers of 400kV Balipara-Ranganadi #1&2 line along the river Dikrong with pile foundation to avoid threat of collapse of line in every year:

During 110th OCC Meeting DGM (AM), NERTS informed that the river course of Dikrong River where the discharge of Ranganadi Generation is done changes frequently due to lower bed depth and higher scouring depth. As a result, every year one to two towers become endangered due to erosion of soil on account of wayward river course change. Action is required to be taken for preventive shifting of balance 10 nos. of 400kV towers along the river to pile and book the same under PoC Mechanism.

After detailed deliberation, the sub-committee agreed and asked POWERGRID to provide details for necessary approval of RPC. Accordingly the detail provided is given below:

1. Recently, the Tower Loc. No. 41 (DA+0) of the 400kV D/C Ranganadi - Balipara Transmission line became vulnerable due to erosion of river Dikrong as a result of sudden flash flood. Initially, prior to flash flood the tower was at a distance of about 250 Mtrs from Dikrong river bank until the first week of June'15. However, sudden flash flood in the river Dikrong started eroding the bank towards the tower location and by 10th of June'15, the river had eroded approx. 200 meters of the river bank near Loc. No. 41 reducing the clearance w.r.t. river to 50 meter approx. It was at this stage that temporary bank protection measures in the form of bamboo porcupine packed with sand filled gunny bags has been taken up by site. The river has been found to have changed its course substantially towards the tower Loc. No. 41 with siltation on the opposite bank. As a result of high current & rapid pace of erosion the clearance between the river & the tower has been reduced to 25 Mtr only as on date. Considering this criticality, one of the circuits has already been shifted on ERS as immediate preventive measure. Now, in order to prevent collapse of tower the location is to be shifted to Pile Foundation as a permanent measure.

2. It is to be mentioned that the course of Dikrong River where discharge of Ranganadi Generation is done, changes every year during Monsoon due to Lower River bed depth and higher scouring depth. In fact, every year / alternate year one or two towers become vulnerable and till now, we have already shifted Location No. 42, 43 and 44 to pile. Further, at present, Location No. 45, 58 & 66 is under shifting to pile.

3. Considering unpredictable river course change of Dikrong and importance of 400kV D/C Ranganadi - Balipara Transmission line being sole evacuation path of Ranganadi Generation as well as power supply path to Arunachal Pradesh, it is essential to shift all the balance 10 nos. of 400kV towers along the River Dikrong to Pile foundation as preventive measure. The balance Locations are 39B, 40, 41, 46, 47, 48, 49, 59, 65 & 67. This is in addition to locations 45, 58 & 66 for which construction of pile foundation is in progress.

Deliberation in the meeting

All constituents agreed to the above proposal of POWERGRID and requested them to prepare the consolidated list of endangered towers so that the same can be placed in the next TCC/RPC for approval.

Action: NERTS, POWERGRID.

D.14 Approval of Transmission tariff for ATS "Asset –I: HVDC portion and combined Asset-II, AC portion under North East-Northern/Western Inter connector Project in NE-Western/Northern Region:

Assam informed that all members are aware that the transmission system associated with North East-Northern/Western Interconnector-I Project was conceived connecting the NE Region directly through HVDC network with Northern and Western Region with the aim of evacuation of surplus power from Subansiri Lower HEP and Kameng HEP. Already power from these two projects has been allocated by MOP to NER, North and Western regions. So far need of the NER is concerned the region does not have the requirement of such costly HVDC network. As per original arrangement the investment cost of NER portion transmission network up to Bishwanath Chariali is to be shared by all Beneficiaries of NER as well as outside NER who avails share from these Generating projects and that for the rest portion from Bishwanath Chariali to Agra is to be shared by Northern and Western Regions on 50:50 basis.

Of late the hearing of transmission tariff petition of Power grid on this network is over and the tariff under POC mechanism is to be finalized by CERC. AS per original

A.9 : PREVENTIVE SHIFTING OF 400KV BALIPARA-RANGANADI #1&2 LINE ALONG THE RIVER DIKRONG WITH PILE FOUNDATION TO AVOID THREAT OF COLLAPSE OF LINE EVERY YEAR - AGENDA REF. IYEM NO. B.6

The river course of Dikrong River where the discharge of Ranganadi Generation is done changes frequently due to lower bed depth and higher scouring depth. As a result, every year one to two towers become endangered due to erosion of soil on account of wayward river course change. Meanwhile, 3 nos. of 400kV towers has already been shifted to pile and 3 nos. are under shifting. Considering the critically of 400kV Balipara-Ranganadi D/C Line for evacuation of 405MW Ranganadi HEP Generation and extending power supply to Arunachal Pradesh, the requirement of preventive shifting of balance 11 nos. of 400kV towers along the river to pile was discussed in OCC & PCC meetings of NERPC and the members agreed for preventive shifting of balance (11 Nos) 400 kV towers under PoC Mechanism. The tentative expenditure for shifting of 11 nos. of 400kV Towers will be around Rs. 22.00 Crores.

Placed for approval of TCC/NERPC.

Deliberation of the TCC

TCC recommended for approval of NERPC

Deliberation of the RPC

The RPC noted and approved the recommendation of TCC.

A.10 : UP-GRADATION OF 132 KV HALFLONG, 132 KV JIRIBAM, 132 KV KUMARGHAT AND 132 KV AIZAWL SUB-STATION ON COMPLETION OF 25 YEARS AGE AND CAPITALIZATION DURING TARIFF BLOCK (2014-19) - AGRENDA REF. ITEM NO. B.7

The up-gradation of Haflong, Jiribam, Kumarghat and Aizawl sub stations on completion of 25 Years from AIS to GIS/Hybrid was discussed during 96th OCC & 20th PCC meeting with incorporation of Double Bus Bar Arrangement, Bus Bar Protection and LBB Scheme in SAS configuration to enhance reliability / continuity of power supply. The job is proposed to be carried out by POWERGRID and capitalize the same. The Sub-committee agreed to the proposal and requested POWERGRID to approach CERC for necessary Capitalization. The tentative expenditure will be around Rs. 30.00 Crores.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

1. PREVENTIVE SHIFTING OF LOCATION NO 305 AT 400KV TOWER OF 400KV BALIPARA - BONGAIGAON #1&2 [TWIN MOOSE] ALONG THE RIVER NONOI TO PILE FOUNDATION TO AVOID THREAT OF COLLAPSE OF LINE:

The tower Loc. No. **305** of the **400kV D/C Balipara-Bongaigaon ckt 1&2** Transmission line became vulnerable due to erosion of river **Nonoi** due to change of river coarse.

Initially, prior to change of river coarse the tower was at about **40-45 M** from **Nonoi** riverbank until the **May'2021**. However, sudden flash flood in the river **Nonoi** eroding the bank towards the tower location and by **June'2021,** the river had eroded approx. **20 m** of the riverbank near Loc. No. 305 reducing the clearance w.r.t. river to **20 m** approx.

It was at this stage that bank protection measures in the form of boulder netting with gabion wall has been taken up by site. However, during flash flood in **June 2022**, the boulder gabion wall was washed away completely, and river came at distance of **16 m** away from tower.

Then on emergency basis some PCC porcupine arranged by site. Again, during flash flood in the month of **May 2023** the riverbank started to erode. **Presently the location is around 13 m away from the riverbank**.

The river has been found to have changed its course substantially towards the tower Loc. No. 305 with siltation on the opposite bank. As a result of high current & rapid pace of erosion the clearance between the river & the tower has been reduced to **13 m** only as on date.

It is to be mentioned that the course of **Nonoi** River, changes every year during Monsoon due to lower riverbed depth and higher scouring depth.
It is pertinent to mention that the line is very important link to evacuate power from the generation plant of Kameng, Ranganadi, lower subhansiri project and to maintain the stability of the grid through Bongaigaon and Eastern region.

Considering unpredictable river course change of Nonoi and importance of 400kV D/C Balipara - Bongaigaon ckt 1 &2 it is essential to shift the tower along the river Nonoi to pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

2. PREVENTIVE SHIFTING OF LOCATION NO 458 AND 459 OF 400KV TOWER OF 400KV BALIPARA - BONGAIGAON #1&2 ALONG THE RIVER MARA-PAGLADIA WITH PILE FOUNDATION TO AVOID THREAT OF COLLAPSE OF LINE:

The tower Loc. No. 458 of the 400kV D/C Balipara-Bongaigaon ckt 1&2 Transmission line became vulnerable due to erosion of river **Marapagladia** due to change of river coarse.

Initially, prior to change of river coarse the tower was at about **50 m** from **Mara-pagladia** riverbank until the **May'2022**. However, sudden flash flood in the river **Marapagladia** eroding the bank towards the tower location and by **June'2022**, the river had eroded approx. 32 m of the riverbank near Loc. No. 458 reducing the clearance w.r.t. river to **18 m** approx.

It was at this stage that bank protection measures in the form of bamboo porcupine wall have been taken up by site.

Also, during April'23, PSC porcupine protection given by site.But during flash flood in **May'23**, the protection was washed away completely, and river came at distance of **13 m** away from tower. Then on emergency basis some bamboo palisading arranged by site. Presently the location is around 13 meters away from the riverbank.

The river has been found to have changed its course substantially towards the tower Loc. No. 458 with siltation on the opposite bank.

It is to be mentioned that the course of **Mara-pagladia** River, changes every year during Monsoon due to Lower Riverbed depth and higher scouring depth.

It is pertinent to mention that the line is very important link to evacuate power from the generation plant of Kameng, Ranganadi, lower subhansiri project and to maintain the stability of the grid through Bongaigaon and Eastern region.

Considering unpredictable river course change of Mara-pagladia and importance of 400kV D/C Balipara - Bongaigaon ckt 1 &2 it is essential to shift the tower location no 458 and 459 crossing the river Mara-pagladia to Pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

3. PREVENTIVE SHIFTING OF LOCATION NO 90 OF 400 KV D/C BINAGURI – BONGAIGAON TRANSMISSION LINE ALONG THE ANTHIHARA RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

The Tower Loc. No. 90 of 400 kV D/C Binaguri - Bongaigaon Transmission line became vulnerable due to erosion of river Anthihara due to change of river coarse and back erosion.

On sudden flash flood in the river in **July'21**, eroding the bank towards the tower location. The distance was around **20 m**.

At this stage that bank protection measures in the form of bamboo palisading with gunny bag and boulder spur have been taken up by site in the month of **July'23.** Presently, the location is **17 m** away from the river**.**

The river has been found to have changed its course towards the tower. Now, to prevent collapse of tower the location is to be shifted to Pile Foundation as a permanent measure.

It is pertinent to mention that the line is very important inter-regional link to maintain the stability of the grid through Bongaigaon and Eastern region.

Considering unpredictable river course change of Anthihara river and importance of 400 kV D/C Binaguri - Bongaigaon Transmission Line, it is essential to shift the tower location no 90 along the river to Pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

4. PREVENTIVE SHIFTING OF LOCATION NO 123 AND 121 OF 132 KV S/C SALAKATI-GELEPHU LINE ALONG THE RIVER DEOSIRI WITH PILE FOUNDATION TO AVOID THE THREAT OF FURTHER COLLAPSE OF LINE:

The Tower Loc. No. 123 (DA+0) of 132 kV S/C Salakati-Gelephu line became vulnerable due to erosion of river Deosiri due to change of river coarse and bank erosion.

Initially, prior to change of river coarse the tower was at about **60 m** from **Deosiri** riverbank until the J**une'2022**. However, sudden flash flood in the river **Deosiri** eroding the bank towards the tower location and by **July'2023,** the river had eroded approx. 57 m of the riverbank near Loc. No. 123, reducing the clearance w.r.t. river to **3 m** approx.

It was at this stage that bank protection measures in the form of bamboo palisading with gunny bag, river diversion through JCB have been taken up by site.

But again, during flash flood at **12.07.2023**, all the protection was washed away completely, and the **tower collapsed on 13.07.2023**. Then on emergency basis, the line was charged through ERS on 18.07.2023.

It is pertinent to mention here that the course of **Deosiri** River, changes every year during Monsoon due to Lower Riverbed depth and higher scouring depth. Also, considering the rate of bank erosion and the nature of the soil, **the location no 121 can also become vulnerable in near future**.

Considering unpredictable river course change of Deosiri and importance of 132 kV S/C Salakati-Gelephu Transmission line being very important international link between NER and Bhutan to evacuate power from the generation plant of Bhutan (during monsoon) and to supply power to Gelephu town (during dry season) it is essential to shift the tower locations 123 and 121 along the river Deosiri to Pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

5. PREVENTIVE SHIFTING OF LOCATION NO 174(DD+0) OF 400 KV D/C BNC-RANGANADI LINE ALONG THE CHATRANG RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

The Tower Loc. No. 174 (DD+0) of 400 kV D/C BNC-Ranganadi line became vulnerable due to change of river coarse and bank erosion.

On sudden flash flood in the river **Chatrang** on **10.08.2022**, eroding the bank towards the tower location, **two legs of the tower got exposed**.

At this stage, immediate bank protection measures in the form of bamboo palisading with gunny bag have been taken up by site. The river has been found to have changed its course substantially towards the tower.

Considering unpredictable river course change of Chatrang and importance of 400 kV D/C BNC-Ranganadi line being sole evacuation path of Ranganadi Generation as well as power supply path to Arunachal Pradesh, it is essential to shift the tower location 176 to Pile foundation as preventive measure

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

6. PREVENTIVE SHIFTING OF LOCATION NO 153,154, 155, 156 OF 132KV PASIGHAT - ROING LINE ALONG THE SIANG RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

During construction time i.e in the year 2016, the above tower locations were at the distance of more than **1km (approx)** from Siang riverbank. Now, the distance is rapidly reducing during monsoon season year after another due to erosion in riverbank. At present, the measured distance in between line to riverbank **300 mtrs only.**

Since the river were at far away, distance from above mentioned tower location and there were villages like Seram, Kongkul and Namsing between our line and the river. The villagers had tried their level best to control the erosion of the riverbank with the help of local administration and concern department of the state. But all their efforts had gone to vein and many people from those villages have been shifted/displaced to the safer place.

The river has been found to have changed its course substantially towards the towers. Now, to prevent collapse of tower those locations are to be shifted to Pile Foundation as a permanent measure.

It is to be mentioned here that the Siang River is the main tributary/ stream of mighty Brahmaputra River. Controlling riverbank erosion during flash flood would be challenging one.

Considering unpredictable river course change of Siang and importance of the said line it is essential to shift the tower locations 153, 154, 155, 156, 157 along the river to Pile foundation as preventive measure. The 132KV Pasighat - Roing Line is feeding power to at least 06 (Six) districts of Arunachal Pradesh and became paramount important and bloodline for the people residing at its downstream. Earlier the line was on the radial supply from Ranganadi Generation Station of NEEPCO via Ziro, Daporijo and Along.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

7. PREVENTIVE SHIFTING OF LOCATION NO 824, 844 OF 400 KV D/C MISA- MARIANI TL ALONG THE MANJHA RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

During continuous heavy rain prevailing since May 2022 in Assam and Arunachal Pradesh, there have been erosion in river bank both front and back side of the tower. Presently, the river bank is minimum **20 m** far from towers.
The river was at far away, distance from above mentioned tower locations. But due to change of the river during the flood in the month of July'22, the tower became vulnerable. In that stage temporary protection given by site.

The river has changed its course towards the tower locations. Now, to prevent collapse of tower those locations may be shifted to Pile Foundation as a permanent measure.

Considering unpredictable river course change of Manjha and importance of the said line it is essential to shift the tower locations 824 and 844 along the river to Pile foundation as preventive measure. This line connects 400 KV Misa Substation to 400 KV Mariani Substation feeding power to NER states.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

8. PREVENTIVE SHIFTING OF LOCATION NO 002 OF 220 KV S/C MISA-KOPILI TRANSMISSION LINE ALONG THE KOPILI RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

The tower No 002 of 220 KV S/C Misa Kopli TL is in the Bank of Kopli River just outside premises of Kopli Hydro Electric Power Project of NEEPCO. Earlier the location (002) was protected with boulder sausage work all around the tower and the boulder bed was provided at almost **70-100 m** toward upstream side to protect the bank. It has also been observed that Boulder sausage wall protection exists along the riverbank to the NEEPCO DAM site.

It has been observed that boulder sausage near the tower got damaged by the huge water flow in the Kopli river during the flash flood in the month of April-May'22.

It is also seen that the Kopili river was flowing about 5 meters above the ground level at the tower base during the flash flood and clear evidence of floating rubbish stuck in the tower bracing members could be seen. The bracing of the bottom section of all 4 legs of the towers was found to be bent/deformed which might be caused by hitting high speed floating objects in the river. Besides, the soil at Leg A, C & D are also found to be washed out leaving the chimneys exposed up to 2 m height. The bank protection work provided by NEEPCO also got damaged.

The immediate measure to protect the tower has been taken and some boulder repairing works been carried out departmentally but after 2-3 days the volume of water flowing in river suddenly increased and damaged the protection work. The temporary protection works again started after 1 month. Presently, the tower base has been filled with soil and damaged bracing has also been replaced. Since, the earlier provided boulder-netting wall is completely damaged; repairing of the same will be not effective.

Considering unpredictable river course of Kopili and importance of 220 kV S/C Misa-Kopili Transmission line being the evacuation path of Kopili Generation as well as power supply path to different parts of Assam and Meghalaya, it is essential to shift the tower location 002 to Pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

9. PREVENTIVE SHIFTING OF LOCATION NO 260 OF 400 KV D/C JIGMELING-ALIPURDUAR TRANSMISSION LINE ALONG THE HELL RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

The tower No 260 of 400 KV D/C Jigmeling-Alipurduar TL became vulnerable due to erosion of Hell river due to change of river coarse and bank erosion. On sudden flash flood in the river in **July'22**, the river bank eroded towards the tower location. The distance was around **44 m**. Bank protection measures in the form of bamboo porcupine with tree branches, gunny bag has been taken up by site**.** Presently, the location is **41 m** away from the river**.**

The river has been found to have changed its course towards the tower. Now, to prevent collapse of tower the location is to be shifted to Pile Foundation as a permanent measure.

Considering unpredictable river course change of Hell and importance of 400 kV D/C Jigmeling - Alipurduar Transmission line being very important international link between India and Bhutan to evacuate power from the generation plant of Bhutan (during monsoon) and to supply power to Bhutan (during dry season) it is essential to shift the tower locations 260 along the river Hell to Pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

10. PREVENTIVE SHIFTING OF LOCATION NO 126 OF 400 KV D/C BALIPARA-BONGAIGAON CKT 3&4 (QUAD) TRANSMISSION LINE ALONG THE BELSIRI RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

The tower No. 126 of 400 KV D/C Balipara-Bongaigaon Quad TL became vulnerable due to erosion of Belsiri due to change of river coarse and bank erosion. On sudden flash flood in the river in **2019**, the riverbank eroded towards the tower location. In 2019, Bank protection measures in the form of boulder spur protection has been taken up by site**.** Also, in 2020 and 2021**,** bamboo porcupine and bamboo cage protection are given by site**.** Presently, the location is **40 m** away from the river**.**

The river has been found to have changed its course towards the tower. Now, to prevent collapse of tower the location is to be shifted to Pile Foundation as a permanent measure.

It is pertinent to mention that the line is very important link to evacuate power from the generation plant of Kameng, Ranganadi, lower subhansiri project and to maintain the stability of the grid through Bongaigaon and Eastern region.

Considering unpredictable river course change of Belsiri and importance of 400kV D/C Balipara - Bongaigaon ckt 3&4 it is essential to shift the tower location no 126 to pile foundation as preventive measure.

BRIEF ON JUSTIFICATION FOR PREVENTIVE SHIFTING

11. PREVENTIVE SHIFTING OF LOCATION NO 276 OF 800 KV BISWANATH CHARIALI-AGRA HVDC TRANSMISSION LINE ALONG THE PASNOI RIVER WITH PILE FOUNDATION TO AVOID THREAT OF FURTHER COLLAPSE OF LINE:

The tower No. 276 of 800 kV BNC-Agra HVDC TL became vulnerable due to erosion of Pasnoi river due to change of river coarse and bank erosion. On sudden flash flood in the river in **2020**, the riverbank eroded towards the tower location. In 2020, Bank protection measures in the form of bamboo porcupine protection has been taken up by site**. I**n 2021 and 2022 **boulder spur and bamboo palisading with gunny bag protection is given by site.** Presently, the location is **30 m** away from the river**.**

The river has been found to have changed its course towards the tower. Now, to prevent collapse of tower the location is to be shifted to Pile Foundation as a permanent measure.

It is pertinent to mention that the line is very important link to evacuate power from the generation plant of Kameng, Ranganadi, lower subhansiri project and to maintain the stability of the grid through connecting Eastern region and Northern Region.

Considering unpredictable river course change of Pasnoi and importance of 800 kV Bipolar BNC-Agra HVDC TL, it is essential to shift the tower location no 276 to pile foundation as preventive measure.

5.	Mizoram (not present in the meeting)	Under discussion. They will put up to Management soon.
6.	Nagaland	Put up for government's approval
7.	Tripura	Under discussion. Will update soon.

Sub-committee noted as above

B.14. Stringing of new 132kV SC line on DC tower from Tamenglong to Karong along with associated bays

Over the years, power consumption in and around Tamenglong and Noney district (erstwhile Tamenglong district and bifurcated in 2016) has increased considerably. Power to the area is supplied from 33/11kV substations at Touscm, Tamenglong, Khoupum, Rengpang and Oinamlong which is fed from 1x12.5 MVA, 132/33 kV sub-station at Rengpang. Considering the vastness of the area, few 33/11 kV sub- stations are also being proposed. For a steady and regular power supply and to meet the ever-increasing demand, 132/33 kV substation at Tamenglong is being constructed under NERPSIP by PowerGrid Corporation. The construction of the substation is expected to be completed by July, 2023. However, in order to enhance the reliability of the power supply system in Tamenglong district and to help in completing the vision of MSPCL to form a ring structure of its 132kV substations, an alternate source of supply from 132/33kV Karong which is also connected to the NER Grid is proposed.

Considering the above facts and circumstances, the committee may kindly approve the stringing of new 132kV line from Tamenglong to Karong. The forum may kindly deliberate the request of MSPCL and approve the proposal for execution with possible funding from PSDF or other funding agencies, in the interest of NER Grid security and smooth supply management of Manipur. The matter was put up for discussion in 24th TCC/RPC meeting, in which it was referred to NERPC sub-committee.

In 204th OCCM, the forum requested NERLDC to conduct system studies on the requirement of the 132kV Karong-Tamenglong line as requested by Manipur. Manipur will furnish to NERLDC all related data including future load growth projection etc.

In 205th OCCM, NERPC intimated the forum that 132kV Karong-Tamenglong line is already included in the CEA 2030 Augmentation scheme. NERLDC asked Manipur to

provide generation and load data for last five years at the earliest based on which preliminary system study will be conducted.

In 206th OCCM, NERLDC informed that Manipur has not yet provided the Load and Generation data as requested in the last OCC meeting. The forum strongly requested Manipur to provide necessary data to NERLDC at the earliest.

Deliberation of the sub-committee

NERLDC stated that they have studied the effect of 132kV Karong-Tamenglong and 132kV Karong -Hundung lines on the Manipur grid in 2030-31 timeframe and presented the report (**Annexure B.14**).

After due deliberation, the forum in-principle agreed to the proposal of stringing of 132kV Karong-Tamenglong and 132kV Karong -Hundung lines in 2030-31 timeframes. Also, the forum referred the matter to CMETS for further discussion and approval.

B.15. Stringing of new 132kV SC line on DC tower from Karong to Hundung along with associated bays.

To supply and distribute the rapid increase in demand of power with the electrification of more and more villages in the state, a number of 132kV sub- stations were installed all over the state. In the past few years, the power scenario of Manipur has developed significantly. However, to further improve the power scenario and meet the ever-increasing power demand, MSPCL plans to form a ring structure of its 132kV substations.

132/33kV substations at Karong and Hundung are two existing substations of MSPCL. Hundung is being fed from 132/33kV substations at Yaingangpokpi and Karong is connected to the NER grid via the 132kV Imphal-Kohima line. To help in completing the vision of MSPCL to form a ring structure of its 132kV substations, stringing of new 132kV SC line on DC tower from Karong to Hundung along with associated bays is proposed.

Considering the above facts and circumstances, the committee may kindly approve the stringing of new 132kV line from Karong to Hundung.

The forum may kindly deliberate the request of MSPCL and approve the proposal for execution with possible funding from PSDF or other funding agencies, in the interest of NER Grid security and smooth supply management of Manipur.

The matter was put up for discussion in 24th TCC/RPC meeting, in which it was referred to NERPC sub-committee.

In 204th OCCM, the forum requested NERLDC to conduct system studies on the requirement of the 132kV Karong-Hundung line as requested by Manipur and put up in next OCCM. Manipur will furnish to NERLDC all related data including future load growth projection etc.

In 205th OCCM, NERLDC asked Manipur to provide generation and load data for last five years at the earliest based on which preliminary system study will be conducted.

In 206th OCCM NERLDC informed that Manipur has not yet provided the Load and Generation data as requested in the last OCC meeting.

The forum strongly requested Manipur to provide necessary data to NERLDC at the earliest.

Deliberation of the sub-committee

Refer to the discussion of item B.14

B.16. Non-compliance of N-1 criteria in 220 kV Balipara-Sonabil D/C

During peak hours, the combined loading of 220 kV Balipara-Sonabil D/C exceeds 250 MW. The maximum flow recorded in 220kV Balipara-Sonabil D/C after commissioning of 2nd circuit of 220 kV Balipara-Sonabil line is 268 MW (combined). Study indicates that outage of one circuit of 220 kV Balipara-Sonabil D/C can result in a 90% load shift to the other circuit of 220 kV Balipara-Sonabil D/C. Low generation availability in Assam power system may further increase the loading of 220 kV Balipara-Sonabil D/C.

In 205th OCCM, NERLDC apprised that an SPS entailing load curtailment of around 130MW in Sonabil area is required to maintain N-1 reliability of Balipara-Sonabil D/C line. Assam agreed to the proposal and stated that the matter will be discussed with higher authorities.

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
{Formerly Power System Operation Corporation Ltd. (POSOCO)}
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केंद्र/North Eastern Regional Load Despatch Centre
कार्यालय : पावर हाउस, काहिलीपारा, गुवाहाटी-781019(असम) /Office : Power House, Kahilipara, Guwahati-781019 (Assam)
CIN : U40105DL2009GOI188682, वेबसाइट/Website: www.nerldc.in, ई-मेल/E-mail: nerldcmo1@posoco.in

सन्दर्भ/Ref : NERLDC/MO/F&C/279 *दिनांक/Date: 17.11.2023*

सेवा में/To ,

Engineer-In-Chief,
P & E Dept., MIZORAM
Power & Electricity Department,
New Capital Complex,
Aizawl, Mizoram, PIN-796001

विषय/ Sub: *Outstanding against NERLDC Fees & Charges – Reg.*

महोदय / Sir,

Your kind attention is invited to the outstanding of P&E Dept., Mizoram against NERLDC Fees & Charges. As on date payable by P & E Dept., Mizoram against NERLDC Fees & Charges billing is **₹26,54,553/-** (Rupees Twenty Six Lakhs Fifty Four Thousand Five Hundred Fifty Three Only) including the monthly bill for October'2023 which was raised on 01/11/2023. The detailed break-up of payable amount is tabled below: -

Sl.	Bill Description	Bill Date	Bill No	Amount (₹)
1	Previous outstanding			-6,931.86
2	Monthly bill for July' 23	1.8.2023	NER/2023-24/0096	6,65,631.00
3	Monthly bill for Aug' 23	1.9.2023	NER/2023-24/0121	6,65,631.00
4	Monthly bill for Sept' 23	3.10.2023	NER/2023-24/0147	6,65,631.00
5	Monthly bill for Oct' 23	1.11.2023	NER/2023-24/0175	5,82,112.00
6	Surcharge bill for Q1, FY 23-24	24.7.2023	NER/2023-24/0077	37,276.00
7	Surcharge bill for Q2, FY 23-24	26.10.2023	NER/2023-24/0173	45,204.00
			Total :	**26,54,553.00**

Copies of the bills are available in RLDC Fees & Charges portal and the same have been sent by e-mail also.

The payments against RLDC Fees & charges bill from users/states are generally received within stipulated timeline and these users also avail the benefit of rebate on regular basis. P& E Dept., Mizoram can also avail the benefit of rebate and avoid late payment surcharge by making payment of bill within stipulated time. Due to delay beyond the allowable payment timeline, almost all the payments against the bills mentioned above have already attracted late payment surcharge as per RLDC Fees & Charges regulations. The matter has also been raised/discussed in various RPC for a number of times.

As you may be aware that the operation and functioning of RLDCs/NLDC are dependent on the funds received from the registered users of respective region as per CERC Fees & Charges regulation, delayed payment from any of user/state hinder the smooth functioning of RLDCs.

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम)
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
{Formerly Power System Operation Corporation Ltd. (POSOCO)}
उत्तर पूर्वी क्षेत्रीय भार प्रेषण केंद्र/North Eastern Regional Load Despatch Centre
कार्यालय : पावर हाउस, काहिलीपारा, गुवाहाटी-781019(असम) /Office : Power House, Kahilipara, Guwahati-781019 (Assam)
CIN : U40105DL2009GOI188682, वेबसाइट/Website: www.nerldc.in, ई-मेल/E-mail: nerldcmo1@posoco.in

We therefore once again request your kind attention to the aforementioned matter and solicit your intervention to expedite the release of all outstanding payments and avoid further accumulation of late payment of surcharge due to delay in payment.

धन्यवाद के साथ/ Thanking you.

भवदीय /Yours faithfully

BISWAJIT SAHU
Digitally signed by BISWAJIT SAHU
Date: 2023.11.17 15:11:26 +05'30'

(Biswajit Sahu)
Sr. General Manager
NERLDC

CC: CGM (I/c), NERLDC

ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
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सन्दर्भ/Ref: NERLDC/MO/F&C/278 *दिनांक/Date: 17.11.2023*

सेवा में/To ,

The Managing Director,
Manipur State Power Distribution Company Limited,
3rd Floor, New Directorate Building,
Near 2nd M. R. Gate, Imphal-Dimapur Road,
Imphal, 795001, Manipur**.**

विषय/ Sub: *Outstanding against NERLDC Fees & Charges – Reg.*

महोदय / Sir,

Your kind attention is invited to the outstanding of MSPDCL, Manipur against NERLDC Fees & Charges. As on date payable by MSPDCL, Manipur against NERLDC Fees & Charges billing is **₹47,91,694/-** (Rupees Forty Seven Lakhs Ninety One Thousand Six Hundred Ninety Four Only) including the monthly bill for October'2023 which was raised on 01/11/2023. The detailed break-up of payable amount is tabled below: -

Sl.	Bill Description	Bill Date	Bill No	Amount (₹)
1	Monthly bill for June' 23	3.7.2023	NER/2023-24/0066	5,49,186.00
2	Monthly bill for July' 23	1.8.2023	NER/2023-24/0093	10,40,727.00
3	Monthly bill for Aug' 23	1.9.2023	NER/2023-24/0118	10,40,727.00
4	Monthly bill for Sept' 23	3.10.2023	NER/2023-24/0143	10,40,727.00
5	Monthly bill for Oct' 23	1.11.2023	NER/2023-24/0169	10,05,645.00
6	Surcharge bill for Q2, FY 23-24	26.10.2023	NER/2023-24/0172	1,14,682.00
			Total :	**47,91,694.00**

Copies of the bills are available in RLDC Fees & Charges portal and the same have been sent by e-mail also.

The payments against RLDC Fees & charges bill from users/states are generally received within stipulated timeline and these users also avail the benefit of rebate on regular basis. MSPDCL, Manipur can also avail the benefit of rebate and avoid late payment surcharge by making payment of bill within stipulated time. Due to delay beyond the allowable payment timeline, almost all the payments against the bills mentioned above have already attracted late payment surcharge as per RLDC Fees & Charges regulations. The matter has also been raised/discussed in various RPC for a number of times.

As you may be aware that the operation and functioning of RLDCs/NLDC are dependent on the funds received from the registered users of respective region as per CERC Fees & Charges regulation, delayed payment from any of user/state hinder the smooth functioning of RLDCs.

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भारत सरकार का उद्यम)
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We ,therefore, once again request your kind attention to the aforementioned matter and solicit your intervention to expedite the release of all outstanding payments and avoid further accumulation of late payment of surcharge due to delay in payment.

धन्यवाद के साथ/ Thanking you.

भवदीय /Yours faithfully

BISWAJIT SAHU
Digitally signed by BISWAJIT SAHU
Date: 2023.11.17 15:10:41 +05'30'

(Biswajit Sahu)
Sr. General Manager
NERLDC

CC: CGM (I/c), NERLDC

North East Regional Power Committee

PROTECTION PROTOCOL OF NORTH EAST REGION

Prepared in Compliance to

Clause 12(2) and Clause 13 of Central Electricity Regulatory Commission Indian Electricity Grid Code Regulations, 2023

By

NERPC Secretariat

(Effective from 01.10.2023)

Contents

PROTECTION PROTOCOL OF NORTH EAST REGION

1. Background

1.1. The Protection Protocol of North East region is prepared in accordance with Clauses 12(2) & 13 of the Indian Electricity Grid Code, 2023 (IEGC 2023) notified by the Central Electricity Regulatory Commission.

1.1.1. The clause 12(2) of the IEGC 2023:

"There shall be a uniform protection protocol for the users of the grid:

a) for proper co-ordination of protection system in order to protect the equipment/system from abnormal operating conditions, isolate the faulty equipment and avoid unintended operation of protection system;

b) to have a repository of protection system, settings and events at regional level;

c) specifying timelines for submission of data;

d) to ensure healthiness of recording equipment including triggering criteria and time synchronization; and

e) to provide for periodic audit of protection system."

1.1.2. The clause 13 of the IEGC 2023:

"13. Protection protocol

(1) All users connected to the integrated grid shall provide and maintain effective protection system having reliability, selectivity, speed and sensitivity to isolate faulty section and protect element(s) as per the CEA Technical Standards for Construction, the CEA Technical Standards for Connectivity, the CEA (Grid Standards) Regulations, 2010, the CEA Technical Standards for Communication and any other applicable CEA Standards specified from time to time.

(2) Back-up protection system shall be provided to protect an element in the event of failure of the primary protection system.

(3) RPC shall develop the protection protocol and revise the same, after review from time to time, in consultation with the stakeholders in the concerned region, and in doing so shall be guided by the principle that minimum electrical protection functions for equipment connected with the grid shall be provided as per the

CEA Technical Standards for Construction, the CEA Technical Standards for Connectivity, the CEA Technical Standards for Communication, the CEA (Grid Standards) Regulations, 2010, the CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, and any other CEA standards specified from time to time.

(4) The protection protocol in a particular system may vary depending upon operational experience. Changes in protection protocol, as and when required, shall be carried out after deliberation and approval of the concerned RPC.

(5) Violation of the protection protocol of the region shall be brought to the notice of concerned RPC by the concerned RLDC or SLDC, as the case may be."

1.2. The Protection Protocol of North Eastern Region stipulates General Protection Philosophy of Protection System, Protection Schemes for Generators & various Transmission Elements in Power System, Protection Settings & their Coordination among entities, Disturbance Monitoring, Analysis and Reporting, Time Synchronization of Protection Systems, Protection Audit Plan, Performance of Protection Systems & Compliance Monitoring.

2. Applicability

The Protection Protocol of North Eastern Region shall be applicable to all North Eastern Regional entities, State/Central/Private Generating Companies/ Generating Stations including REGs, RHGS, integrated RE with Pumped Storage Plant (PSP), SLDCs, NERLDC, CTU, STUs, Transmission Licensees and NERPC.

3. Definitions

Words and expressions used in this Protection Protocol are defined in the Act or any other regulations specified by the Central Commission or Central Electricity Authority shall, unless the context otherwise requires, have the meanings assigned to them under the Act or other regulations specified by the Central Commission, as the case may be.

4. General Philosophy of Protection System

4.1. Protection philosophy shall be in accordance with below mentioned objectives, design criteria and other details. However, protection design in a particular system may vary depending upon judgment and experience in the broad contours of the protection philosophy. Consideration must also be given to the type of equipment to be protected as well as the importance of this equipment to the system. Further, protection must not be defeated by the failure of a single component.

4.1.1. **Objectives**:

The basic objectives of any protection schemes should be to:

(i) Automatically isolate the faulty element.

(ii) Mitigate the effect of short circuit and other abnormal conditions in minimum possible time and area.

(iii) Indicate the location and type of fault and

(iv) Provide effective tools to analyse the fault and decide remedial measures.

4.1.2. Design Criteria:

To accomplish the above objectives, the four design criteria for protection that should be considered are:

(i) fault clearance time/speed;
(ii) selectivity;
(iii) sensitivity and
(iv) reliability (dependability and security)

4.1.2.1. **Fault clearance time/speed**: In order to minimize the effect on customers and maintain system stability, Fault clearance time shall be as per CEA Grid Standard Regulations 2010, as amended to date.

4.1.2.2. **Selectivity:** To ensure Selectivity, coordination shall be ensured with the adjacent protection schemes including breaker failure, transformer downstream relays, generator protection and station auxiliary protection.

4.1.2.3. **Sensitivity**: To ensure Sensitivity, the settings must be investigated to determine that they will perform correctly for the minimum fault current envisaged in the system, yet remain stable during transients and power swings from which the system can recover.

4.1.2.4. **Reliability**: To ensure Reliability, two independent auxiliary direct current-supplies shall be provided for Main-I and Main-II relays. The Main-I and Main-II relays should be from two different makes or operating with different algorithm. The CB´s shall have two independent trip coils and two independent trip circuits. Each protection device should trip at least one of them by independent auxiliary DC- supplies.

4.1.2.5. **Security**: To ensure Security, the protection shouldn't limit the maximum transmission capacity of the element. Distance protection in particular could

cause spurious tripping due to specific grid conditions, in case of high load operation. Therefore, any special topologies must be known and considered for protection parameterization. For parallel Over Head Lines it is necessary to consider the rapid increase of load current in the healthy line when the faulty line trips and the protection operation must allow such conditions The load encroachment detection function of the relays must be used, when the highest distance zone resistance reach conflicts with the maximum transmitted load on the protected element.

4.2. All generating units shall have standard protection system to protect the units not only from faults within the units and within the Station but also from faults in sub-stations and transmission lines.

4.3. The generator, generator transformer, unit auxiliary transformer shall be provided with protection systems connected to two independent channels or groups, such that one channel or group shall always be available for any type of fault in the generator and these transformers;

4.4. Protection relays shall be configured in such a way that digital input points shall not pick up due to stray voltages.

4.5. Protective relays shall be used to detect electrical faults, to activate the alarms and disconnect or shut down the faulted apparatus to provide for safety of personnel, equipment and system.

4.6. Electrical faults shall be detected by the protective relays arranged in overlapping zones of protection.

4.7. The protection relays for the generators, motors, transformers and the transmission lines shall generally be of numerical type.

4.8. The protection system for 400kV and higher voltage transmission line and the line compensating equipment shall have one hundred percent back up communication channels i.e. two channels for tele- protection in addition to one channel for speech plus data for each direction. Provided that, for 220 kV, 132 kV, 110 kV and 66 kV lines, the channel for speech plus data can also be used for tele-protection

4.9. All relays used shall be suitable for operation with CTs secondary rated for one ampere or five amperes as per relevant Indian Standards or International Electrotechnical Commission or Institute of Electrical and Electronics Engineers standards.

4.10. Relevant Indian Standards or International Electrotechnical Commission or Institute of Electrical and Electronics Engineers standards shall be applied for protection of generators, transformers and motors.

5. Protection Schemes

The electrical protection functions for equipment connected with the grid shall be provided as per the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022 amended to date, the CEA (Technical Standards for connectivity to the Grid) Regulations 2007 amended to date, the CEA

(Technical Standards for Communication System in Power System Operation) Regulations 2020 amended to date, the CEA (Grid Standards) Regulations 2010 amended to date, the CEA (Measures relating to Safety and Electric Supply) Regulations 2023 amended to date, and any other CEA standards specified from time to time.

5.1. Thermal Generating Units

The electrical protection functions for generator, generator transformer, unit auxiliary transformer and station transformer shall be provided in accordance with but not limited to the list given in **SCHEDULE-I** of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022 amended to date.

For the generating units with a rating of more than one hundred megawatt, protection system shall be configured into two independent sets of protection (Group A and B) acting on two independent sets of trip coil fed from independent

DC supplies, using separate sets of instrument transformers, and segregated cables of current transformers and voltage transformers

5.2. Hydro Generating Units

The protection functions for Generator, Excitation Transformer, Generator Transformer, Generator and Generator Transformer, Unit Auxiliary Transformer, and Station Auxiliary Transformer shall be provided in accordance with but not limited to the list given in SCHEDULE-IV of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022 amended to date except for variable speed units which will have specialized protection functions.

5.3. REGs/RHGS/BESS

Protection Schemes for Renewable Energy (RE) Power Plants of Solar power generation, Wind power generation, Battery Energy Storage System (BESS) and Hybrid of these connected with grid at voltage level above 650 volts shall be in accordance with the Central Electricity Authority (Technical Standards for Construction of Renewable Energy Power Plants) Regulations, 2023 from the date as & when these regulations are notified (Presently the finalization of these Standards by CEA is under progress).

5.4. Substations & Transmission System Elements

5.4.1. All major protection relays for the Voltage levels 66 kV and above shall be of numerical type.

5.4.2. Grouping of Protection systems for the voltage level 66 kV and above:

i. The protection circuits and relays shall be electrically and physically segregated into two groups each being independent and capable of providing uninterrupted protection even in the event of one of the protection group fails or taken out for maintenance.

ii. Interconnection between these two groups shall not generally be attempted.

However, such interconnection shall be kept to the bare minimum, if found absolutely necessary.

5.4.3. The protections required in respect of transmission lines, transformers, reactors and bus bars but not limited to shall be in accordance with **SCHEDULE-V** of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022 amended to date.

5.4.4. Bus Bar Protection and Local Breaker Backup Protection (breaker failure protection):

i) Bus bar protection and local breaker backup protection shall be provided in 220 kV and higher voltage interconnecting sub- stations as well as in all generating station switchyards.

ii) Duplication of bus bar protection shall be done for all main buses of 400kV and above voltage class.

iii) The bus bar protection scheme shall be centralized or distributed type and have provision for planned future expansion.

5.5. HVDC Terminals/ Stations

5.5.1. Classical HVDC Terminals/ Stations

i) HVDC system protection shall consist of two parts:

(A) AC side protection:

AC side protection function shall cover the zone for converter transformer, AC filters, shunt capacitors, shunt reactors, and bus bars. These protections shall generally follow the same philosophy as in a typical substation i.e. detection of fault by relay and tripping of circuit breaker.

(B) DC side protection:

DC side protection shall cover the zones consisting of the valve hall, DC switchyard including smoothing reactor and DC filters, DC line, DMR line / electrode line and ground electrode. The protection equipment shall be designed to be fail safe and shall ensure high security to avoid mal-operation/ unwanted shutdown due to protection equipment failures.

ii) Following a DC Line fault, the HVDC System shall have the facility to restart, one or more times, the faulted pole at a variable pre-selected DC voltage level(s), not below 80% of the nominal voltage rating. The DC transmission system shall be capable of recovery in a controlled and stable manner without commutation failures during recovery following ac and dc system faults. The post fault power order shall be equal to the pre-fault power order unless AC/ DC systems dictate otherwise.

iii) Protection system required in respect of Classical HVDC Terminals/ Stations but not limited to shall be in accordance with 13 (b) of Part A of **SCHEDULE-VI** of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines)

Regulations 2022 amended to date.

iv) Software based controls and protection shall be used to permit flexibility in effecting modifications. Protection and controls shall be duplicated for reliability. The control & protection shall provide fast controllability of the HVDC system.

5.5.2. Voltage Source Converter (VSC) based HVDC Terminals/Stations

i) The protection equipment shall be designed to be fail-safe and shall ensure high security to avoid mal-operation/ unwanted shutdown due to protection equipment failures.

ii) Protection system required in respect of Voltage Source Converter (VSC) based HVDC Terminals/ Stations but not limited to shall be in accordance with 8 (b) of Part B of **SCHEDULE-VI** of CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations 2022 amended to date.

iii) Software based controls and protection shall be used to permit flexibility in effecting modifications. Protection and controls shall be duplicated for reliability. Protection shall be provided by numerical relays to suit the requirement of the HVDC system.

5.6. Philosophy of Transmission Line Protection

5.6.1. Transmission circuit construction can be considered in three main categories viz.: Overhead construction, Underground cable construction and Composite (overhead plus underground) construction.

5.6.2. Transmission circuit Main protection is required to provide primary protection for the line and clear all type of faults on it within shortest possible time with reliability, selectivity and sensitivity. Transmission circuit back-up protection shall cater for failure of any main protection system to clear any fault that it is expected to clear. A protection function that offers back-up for most faults may also provide main protection for some fault conditions. Combinations of main and back-up protection systems should be used to address the main and application specific requirements for transmission circuits.

5.6.3. Protection system of Transmission line shall have following features:

i) The systems applied must be capable of detecting all types of faults, including maximum expected arc resistance that may occur at any location on the protected line.

ii) The protection should be set not to trip under system transient conditions, which are not short circuits. Conversely where the short circuit current is low due to local grid conditions (weak network) or due to high resistance of the arc, this must be taken into consideration to trip the relay by using the most appropriate criterion, without jeopardizing the unwanted tripping during heavy load conditions.

iii) The design and settings of the transmission line protection systems must be such that, with high probability, operation will not occur for faults

external to the line or under non-fault conditions.

iv) Distance relay shall be capable to protect the series compensated lines from voltage inversion, current inversion phenomenon. Special measures must be taken to guard against these phenomenon

v) On 220kV and above transmission lines, 2 Main Protections (Main I and Main II), Inverse Definite Minimum Time (IDMT) directional back up Earth Fault protections alone to be provided. No back up over current protection to be applied.

vi) The Main-I and Main-II protection shall be numerical relays of different makes or employ different fault detection algorithm. They should be provided carrier aided tripping and powered by two separate DC sources

vii) Both Main-Main-II and I shall send initiation signal to Breaker Failure Relay (BFR) /LBB protection system.

viii) Internal DEF (Directional earth fault) function shall be set to trip the line in case of high resistive earth fault.

ix) The internal overvoltage function shall be used to protect the line against over voltages. Two stage over voltage protection for the transmission lines (Stage-I as Voltage and Time graded & Stage-II @ 140% of Nominal Voltage with time delay 100 ms) shall be implemented for the transmission lines of voltage levels 400kV and above only. The lines emanating from same substation shall be provided with pick-up as well as time grading to avoid concurrent trippings. The overvoltage relay shall have better than 98% drop-off to pick-up ratio (the ratio of the limiting values of the characteristic quantity at which the relay resets and operates). For over voltage detection, though Ph-to-N voltage is preferable to Ph-to-Ph voltage, to achieve required discrimination for OVR grading because of limitation imposed by voltage resolution of the relay, Ph-to-Ph voltage to be used for Over Voltage detection.

x) On 132kV and lower voltage transmission lines, only one Main protection and Back up protection by Inverse definite Minimum time (IDMT) directional O/C and E/F to be applied. Main protection should be suitable for single or three phase tripping. Additionally, auto-reclose relay suitable for 1 ph or 3 ph (with dead line charging and synchro-check facility) reclosure shall be provided.

xi) For very short lines less than (10) ten kilometers (any voltage level 132kV and above), cables, and combination of cable and overhead line, Differential protection (segregated phase type) has to be provided as Primary protection with distance protection as back up protection (built-in Main relay or standalone). Zone-I protection feature shall get automatically enabled in case of communication failure observed by the

differential relay for built in Main and in case of LDP relay failure/communication failure for stand alone The current differential protection should a reliable type (preferably digital). The protection should be of the segregate phase type, i.e. it should be able to detect the phase in fault and therefore for the case of single line-ground (SLG) faults to trip only the phase in fault (also to establish single phase A/R). The synchronization of the measured values is done via a communication system. The communication system for differential line protection should be based on fibre optic and any equipment should comply with the IEC 60834.

5.6.4. 33kV OUTGOING FEEDER SETTING PHILOSOPHY

Note: Trend analysis (observation of events over a period) should also be incorporated during calculation of time gradient settings with Distribution Substations at Grid Substation end.

1. The protection functions to be activated are:

   a. Non-directional Overcurrent Protection (IDMT Normal Inverse Curve)

   b. Non-directional Earth fault Protection (IDMT Normal Inverse Curve)

   c. Non-directional Definite Time Overcurrent and Earthfault Protection

   d. Local Breaker Backup Protection

   e. Under/Over-frequency, df/dt, Under/Over voltage should only be enabled if there is any case special case of system requirement

2. The TMS for overcurrent and earthfault may be kept at 0.1 (fixed). The downstream DISCOM Substations should maintain a time gradient with respect to observed average fault current and TMS kept at Grid Sub-station end.

3. If long network of LILO DSS (Distribution SS) are present, extreme inverse, very inverse curve may be followed at DSS end.

4. The Highset for OC and EF at Grid SS (GSS) side should be kept at 50ms. The Distribution SS (DSS) should keep their Highset at instantaneous. This would allow a time gradient of 50ms in case of Highset pickups at both GSS and DSS ends. The Highset delay at GSS may be increased only in case when Highset overlapping is observed in the feeders. (This may arise when the CB opening time and arc extinguishing time at DSS end is increased due to wear and tear)

5. The Highset may be kept between 3A to 5A (As per trend analysis).

6. Harmonic Restraint feature is to be enabled.

7. The pickup of overcurrent should be kept at least 1.1 times the CT ratio. Basically, 400/1A ratio is adopted at 33kV Level outgoing feeders. (The maximum demand being 20MW). The OC pickup should be kept at 440A

8. The pickup for earth fault protection is normally kept at 80A. However, the special

case may be taken into account:

If a 33kV Feeder is kept at less load most of the times (say, 2MW). The maximum load current in the line will be 40A (Approx.) In case of open circuit fault (no earth path), the feeder will not trip, as the zero-sequence current read by the relay will be 40A and the pickup of earth fault is kept at 80A. Such cases may be hazardous in case the line travels through city area. In that case, the earthfault pickup should be kept at a lower value (say 35 to 40A). Open circuit fault in such cases, will lead the relay to issue a trip on earth fault IDMT.

The Time gradient between 33kV Feeder at GSS end and Transformer LV side should also be maintained at 300ms.

5.6.5. Philosophy for protection settings:

Sl. No.	Protection setting		Reach and time
1.	Distance protection	Zone 1(Forward)	80% of the protected line, instantaneous
		Zone 2(Forward)	120% of the protected line (150% in case of D/C line). Time delay: 350msec (generally) and 500msec in case 20% of the protected line is greater than 60% of the shortest line at remote end
		Zone 3(Forward)	120% of the protected line + 100% of the longest line emanating from the far end bus bar. Time delay: 800msec
		Zone 4 (Reverse)	• For lines < 100 km 10% of the protected line or 50% of adjacent shortest line, whichever is lower • For lines > 100 km 20% of the protected line or 50% of adjacent shortest line, whichever is lower Time delay: 500mesc
2.	Line differential protection		Primary protection for lines less than 10KM. Time delay: instantaneous
3.	LBB protection and Bus Bar Protection (for 220kV and above as well as all Generating stations)		Two stage: Stage-I: (Re-Trip) time delay of 100 msec to trip own CB Stage-II: LBB time delay: 200msec to trip all CBs connected to the respective bus, LBB Current sensor I >20% In Bus bar protection time delay: instantaneous

4.	**O/C back up protection (for 132kVand below)**	**IDMT**	**<u>For I>1</u> Ib = 150% of current rating of the line. Time delay: to be coordinated with Z2 for three phase fault at remote bus (500msec). Forward directional Proviso- For networks involving long radial feeders, fault currents may not be sufficiently high and following the above rule may not be practically feasible. So, in such cases constituents may adopt settings as required, on case-to-case basis, with the prior approval of RPC <u>For I> 2 (and above)</u> Generally disabled unless decided otherwise by NERPC for special scenario**
5.	**E/F backup protection(for 132kV and above lines)**	**IDMT**	**<u>For In>1</u> Ib= 20 % of current rating of the line. Time delay: to be coordinated with Z3 for single phase to ground fault at remote bus (900msec). Forward directional <u>For In>2 (and above)</u> Generally disabled unless decided otherwise by NERPC for special scenario**
6.	**Broken conductor protection (alarm only)**		**Negative Sequence current to Positive Sequence current ratio more than 0.2(I2/I1 ≥ 0.2) Only for alarm: Time delay = 3-5 sec**
6.	**Allowable Load impedance encroachment**		**Imax = 150% of current rating of line Vmin = 0.85pu (85%) 30 degrees for load blinder**
7.	**Power swing Blocking function**		**Block all zones except Zone-1 or Block all zones and trip with OOS function**
8	**Carrier Aided Protection**		**To be provided on 132kV and above lines (PLCC or DTPC)**
9.	**Single/Three phase auto reclosure**		**To be provided on 132kV and above lines on Zone 1 or differential relay operation Dead time = 1.0s for Main CB, 1.5 to 2 sec for Tie CB. Reclaim time = 25.0s**
10.	**Over voltage protection (two stage, for 400kV and above only)**	**Stg I***	**V>110%. Time delay: 5 seconds**
		Stg II	**V>140%. Time delay: 100msec**

11.	**Carrier Aided Protection**	**Mandatory for Distance protection**
12.	**Antitheft Charging of line**	**Distance setting: Time delay for Z-1/2/3 should be made instantaneous which will help to trip immediately during fault and would not disturbed the upstream elements** **Dir EF: Pickup to be 20 % of rated current and TMS as minimum as possible.** **O/V setting: Stage-1 pickup should be minimum of that of all lines connected from the charging substation with minimum time delay and grading as possible.**
13.	**Switch on to fault (SOTF)**	**SOTF function to be provided in distance relay to take care of line energization on fault**
14.	**VT fuse fail detection function**	**VT fuse fail detection function shall be correctly set to block the distance function operation on VT fuse failure**
15.	**Direct inter-trip**	**To be sent on operation of the following:** **Overvoltage protection** **LBB** **Busbar protection** **Manual Trip**

*** The OVR grading, Voltage and Time graded, for the Stage-I over voltage protection shall be as recommended by NERPC/NERLDC**

6. Protection Settings, coordination and approval

The purpose is to ensure system protection is coordinated among the grid connected entities. The Protection systems coordination comprises the following:

i) Each Transmission licensee shall coordinate its Protection System schemes with concerned transmission system, sub-transmission system and generators.

ii) Each Generating Company shall coordinate its Protection System schemes with concerned transmission system and station auxiliaries.

iii) Utilities may seek assistance of NERPC and NERLDC also for ensuring coordination

iv) Each Transmission Licensee and Generation Company shall be responsible for settings calculations for protection of elements under its ownership. It shall be the responsibility of the respective asset owner to obtain the inputs (adjacent line settings, infeed values etc.) from STU/Generating Company/ Transmission Licensee necessary for calculation of the settings.

v) STU/Generating Company/Transmission Licensee shall provide the infeed values/latest network model to the requesting entity, within one week of receipt of such a request from the entity.

vi) Each user, for voltage levels 132kV and above, shall submit the protection settings as per the format prescribed, along with the calculation sheets, co-ordination study reports and input data, in advance, to NERPC/NERLDC for every new/modified element to be commissioned. The mentioned information shall be submitted to the NERPC/NERLDC **fifteen** days in advance for all the elements proposed to be commissioned. The user has to obtain relay setting approval by NERPC before FTC can be provided.

vii) FTC will only be issued after complete relay setting coordination is ensured by the applicant. It is the responsibility of the utility, which is applying for the FTC of any element, to coordinate with concerned utilities to ensure that they complete the relay coordination before applying for FTC

viii) The PCCM of NERPC shall review the settings to ensure that they are properly coordinated with adjacent system and comply with the existing guidelines. The forum may issue proper directions to utilities in this regard.

ix) All users connected to the grid shall obtain approval of the NERPC for any revision in settings, and implementation of new protection system

x) All users connected to the grid shall ensure correct and appropriate settings of protection as specified by the NERPC and intimate to the NERPC about the changes implemented in protection system or protection settings within a fortnight of such changes

xi) In case of failure of a protective relay or equipment failure, the Generating Company and Transmission Licensee shall inform appropriate LDC/NERLDC/NERPC. The

Generating Company and Transmission Licensee shall take corrective action as soon as possible.

xii) NERPC in consultation with the NERLDC & Regional entities shall undertake review of the protection settings, assess the requirement of revisions in protection settings and revise protection settings, from time to time and at least once in a year. The necessary studies in this regard shall be carried out by the NERPC & NERLDC. The modifications/changes, if any, in protection settings shall be advised to the respective users and STUs.

xiii) NERPC shall maintain a centralized database and update the same on periodic basis in respect of their respective region containing details of relay settings for grid elements connected to 132 kV and above. NERLDC also shall maintain such database.

xiv) Respective entities are responsible for ensuring to make available the implemented protection settings in the centralized database before obtaining FTC.

xv) If System Protection Schemes (SPS) is recommended to be implemented by the appropriate forum/Sub-Committee of NERPC on account of operational & system constraints, the same shall be implemented by the concerned Transmission licensee/ Generating Company/Entities within the specified timelines.

7. Disturbance Monitoring, Analysis and Reporting

The Purpose is to ensure that adequate disturbance data is available to facilitate Grid event analysis. The analysis of power system disturbances is an important function that monitors the performance of protection system, which can provide information related to correct behaviour of the system, adoption of safe operating limits, isolation of incipient faults,

7.1. The Disturbance Monitoring Requirements include the following:

i) Each Transmission Licensee and Generating Company shall provide Sequence of Event (SOE) recording capability by installing Sequence of Event recorders or as part of another device, such as a Supervisory Control and Data Acquisition (SCADA) Remote Terminal Unit (RTU), a generator plants Digital (or Distributed) Control System (DCS) or part of Fault recording equipment. This capability shall be provided at all substations and at locations to record all the events in accordance with CEA Grid Standard Regulations, 2010 amended to date.

ii) Each line shall be provided with facility for distance to fault locator.

iii) Each Transmission Licensee/Generating Company/Users shall provide Disturbance recording capability for the following Elements at facilities:

- All transmission lines (Each line shall be provided with facility for distance to fault locator)
- Autotransformers or phase-shifters connected to busses.
- Shunt capacitors, shunt reactors.
- Individual generator line interconnections.
- Dynamic VAR Devices.
- HVDC terminals.
- Bus Bars

iv) The Disturbance recording feature shall be enabled and configured in all the numerical relays installed. Disturbance recording system shall have minimum recording time of 3 seconds (0.5 seconds for pre-fault and 2.5 seconds for post fault).

v) Each Transmission Licensee and Generating Company shall record for Faults, sufficient electrical quantities for each monitored Element to determine the following:

- Three phase-to-neutral voltages. (Common bus-side/line side voltages may be used for lines.)
- V sync(for Three phase Auto reclose scheme)Three phase currents and neutral currents.
- Mutual compensation current (in case of double circuit line)
- Polarizing currents and voltages, if used (As applicable).

- Frequency (As applicable).
- Real and reactive power (As applicable).

The Minimum parameters to be monitored in the Fault record shall be specified by the PCC of NERPC.

vi) Each Transmission Licensee and Generating Company shall provide Disturbance recording with the following capabilities:

- The Disturbance recorders shall have time synchronization and a standard format for recording analogue and digital signals (DR labels to be standardized as per the Report of **FOLD Working Group - 3 on DR Parameter Standardization as per 59th PCCM**). The data files shall be capable of being viewed, read, and analyzed with a generic COMTRADE analysis tool as per the latest revision of IEEE Standard C37.111.
- Each Fault record duration and the trigger timing shall be settable and set for a minimum 3 second duration including 0.5 seconds for pre-fault and 2.5 seconds for post fault
- Each Fault recorder shall have sampling frequency of 1 kHz or better.
- Each Fault recorder shall be set to trigger for at least the following:

  Internal protection trip signals, external trigger input and additional triggers may be assigned as necessary.

vii) Each Transmission Licensee and Generating Company shall keep the recording instruments (disturbance recorder and event logger) in proper working condition and shall establish a maintenance and testing program for Disturbance Recorder (DR) that includes

- Maintenance and testing intervals and their basis.
- Summary of maintenance and testing procedures.
- Monthly verification of communication channels used for accessing records remotely (if the entity relies on remote access and the channel is not monitored to a control centre staffed around the clock, 24 hours a day, 7 days a week (24/7)).
- Monthly verification of time synchronization (if the loss of time synchronization is not monitored to a 24/7 control centre).
- Monthly verification of active analog quantities.
- A requirement to return failed units to service within 90 days. If a Disturbance Recorder (DR) will be out of service for greater than 90 days, the Transmission Licensee and Generating Company shall keep a record of efforts aimed at restoring the DR to service.

viii) The time synchronization of the disturbance recorders shall be corroborated with the PMU data or SCADA event loggers by NERLDC. NERLDC shall list out for

Disturbance recorders which are non- compliant for discussion in PCC meetings of NERPC.

ix) Each Transmission Licensee and Generating Company shall submit the data files to the NERLDC conforming to the following format requirements:

- The data files shall be submitted in COMTRADE and PDF format.
- File shall have contained the name of the Relay, name of the Bay, station name, date, time resolved to milliseconds, event point name, status.

The DR archives shall be retained for a period of **three years**.

x) A separate work-station PC, powered through UPS (Uninterrupted Power Supply) shall be identified with access to all the relays for extraction of DR. Auto-Download facility shall be established for automatic extraction of the DR files to a location on the work- station PC.

xi) Time Synchronization Equipment

a) Time Synchronizing Equipment complete with antenna, all cables and processing equipment shall be provided to receive synchronizing pulse through Global Positioning System or Indian Regional Navigation Satellite System Navic compatible for synchronization of event logger, disturbance recorder, Phasor Measurement Units, and Supervisory Control and Data Acquisition System or Substation Automation System.

b) Each substation shall have time synch equipment to synchronize all the numerical relays installed. Before any extension work, the capability of the existing Time-sync equipment shall be reviewed to ensure the synchronization of upcoming numerical relays.

c) The status of healthiness of the time-sync device shall be wired as "Alarm" to SCADA and as an "Event" to Event Logger.

d) The time synch status of all the installed numerical relays and event logger shall be monitored monthly and recorded. The Monthly records for relays not in time-sync shall be reported to NERLDC and NERPC. This record shall be archived for a period of three years by each concerned agency.

e) Remedial action shall be taken by the concerned substation/ Protection department immediately to make the relays in time synchronization with reference to external time source.

f) All the new Grid elements/Bay extension shall have accurate and precise Time synchronization equipment.

7.2. Disturbance Analysis and Reporting

i) Immediately following an event (grid disturbance or grid incidence as defined in the CEA Grid Standards) in the system, the concerned user or SLDC shall inform NERLDC through voice message.

ii) Written flash report shall be submitted to NERLDC and appropriate SLDC by the concerned Transmission Licensee/Generating Company/User within eight (8) hours from Grid event.

iii) Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted by the respective Transmission licensee and Generating Company within twenty-four (24) hours from Grid event. These records shall be uploaded by the respective Transmission licensee and Generating Company in the Web Based Tripping Portal of NERLDC.

iv) NERLDC shall classify the grid incidents and grid disturbances according to CEA (Grid Standards) Regulations, amended to date. NERLDC shall report the event (grid disturbance or grid incidence) to CEA, NERPC and all regional entities within twenty-four (24) hours of receipt of the flash report.

v) After a complete analysis of the event, the Transmission licensee and Generating Company/User shall submit a detailed report in the case of grid disturbance or grid incidence within one (1) week of the occurrence of event to NERLDC and NERPC.

vi) NERLDC shall prepare a draft report of each grid disturbance or grid incidence including simulation results and analysis which shall be discussed and finalized in the PCC meetings of NERPC as per the timeline specified in Table below.

Sl. No	Grid Event (GD/GI Classification as per the CEA Grid Standards)	Flash report submission deadline (Users/ SLDC)	Disturbance record and station event log submission deadline by Users/ SLDC)	Detailed report and data submission deadline by Users/ SLDC)	Draft report submission deadline by NERLDC	Discussion in PCC and final report submission deadline by NERPC
1	GI-1/GI-2	8 hours	24 hours	+7 days	+7 days	+60 days
2	Near miss event	8 hours	24 hours	+7 days	+7 days	+60 days
3	GD-1	8 hours	24 hours	+7 days	+7 days	+60 days
4	GD-2/GD-3	8 hours	24 hours	+7 days	+21 days	+60 days
5	GD-4/GD-5	8 hours	24 hours	+7 days	+30 days	+60 days

vii) The analysis reports submitted by NERLDC shall be discussed in the Protection Coordination Sub-Committee (PCC) meetings of the NERPC. The PCC shall identify the lessons learnt during the events being discussed. The PCC shall scrutinize the correctness of operation of subject protection systems put in place by the concerned Constituents and the final analysis repot along with the recommendations shall be concluded. It shall also recommend the appropriate remedial measures for system improvement.

viii) The implementation of the recommendations of the final report shall be monitored by the PCC of NERPC.

ix) Any additional data such as

- Single line diagram (SLD)
- Protection relay settings,
- HVDC transient fault record,
- Location of fault with distance
- Fault details with type & relay indications
- CT/PT/CVT rating details with location
- Bus-bar arrangement/ Configuration of feeders
- CB positions (OPEN/ CLOSE) at the time of fault
- Isolator & Earth-switch positions (OPEN/CLOSE)
- Voltage, frequency & power flows with direction at the time of fault
- DR&EL records
- switchyard equipment

and any other relevant station data required for carrying out analysis of an event by NERPC, NERLDC and concerned SLDC shall be furnished by the Users including NERLDC and respective SLDC, as the case may be, within forty- eight (48) hours of the request. All Users shall also furnish high-resolution analog data from various instruments including power electronic devices like HVDC, FACTS, renewable generation (inverter level or WTG level) on the request of NERPCs, NLDC, NERLDCs or SLDCs.

x) Triggering of STATCOM, TCSC, HVDC run-back, HVDC power oscillation damping, generating station power system stabilizer and any other controller system during any event in the grid shall be reported to the NERLDC and NERPC if connected to ISTS and to the concerned SLDC if connected to an intra-state system. The transient fault records and event logger data shall be submitted to the NERLDC or concerned SLDC within 24 hours of the occurrence of the incident. Generating stations shall submit 1 second resolution active power and reactive power data recorded during oscillations to NERLDC or concerned SLDC within 24hours of the occurrence of the oscillations.

xi) A monthly report on events of unintended operation or non-operation of the protection system shall be prepared and submitted by each user/owner of important elements in the regional grid, as identified by the appropriate forum of NERPC including those in the State grids that are critical for regional grid operation to NERPC and NERLDC within the first week of the subsequent month.

xii) The detailed analysis reports shall be archived periodically. The archive shall be retained for a period of three years by each concerned agency.

8. Protection Audit Plan

8.1 All Users/Entities connected at 132 kV and above, shall conduct internal audit, as per the prescribed audit checklist, of their protection systems annually, and any shortcomings identified shall be rectified and informed to NERPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with NERPC.

8.2 All users shall also conduct third party protection audit of each sub-station at 132 kV and above once in five years or earlier as advised by the respective RPC.

8.3 After analysis of any event, PCC of NERPC may identify a list of substations / and generating stations where third-party protection audit is required to be carried out and accordingly advise the respective users to complete third party audit within three months.

8.4 The third-party audit report shall contain all the information as in Annexure-1(Third Party Protection System Checking & Validation Template for a Substation) of CERC (Indian Electricity Grid Code), Regulations 2023). The protection audit reports, along with action plan for rectification of deficiencies detected, if any, shall be submitted to the respective NERPC and NERLDC or respective SLDC, as the case may be, within a month of submission of third-party audit report. The necessary compliance to such protection audit report shall be followed up regularly in the PCC meetings of NERPC.

8.5 Annual audit plan for the next financial year shall be submitted by the users to NERPC by 31st October every year. The users shall adhere to the annual audit plan and report compliance of the same to NERPC.

9. Performance Monitoring of the Protection Systems

9.1. Users/Entities shall submit the following protection performance indices of previous month to NERPC and NERLDC on monthly basis for 132 kV and above by 10th of the subsequent month and the same shall be reviewed in the ensuing PCC meeting of NERPC.

a) The Dependability Index defined as: D=(NC+NF)

Where, NC is the number of correct operations at internal power system faults and

NF is the number of failures to operate at internal power system faults.

b) The Security Index defined as: S=(NC+NU)

Where, NC is the number of correct operations at internal power system faults and

NU is the number of unwanted operations.

c) The Reliability Index defined as: R=(NC+NI)

Where, NC is the number of correct operations at internal power system faults and

NI is the number of incorrect operations and is the sum of NF and NU

9.2. Users/Entities shall furnish the reasons for performance indices less than unity of individual element wise protection system to the NERPC and action plan for corrective measures. The action plan will be followed up regularly in the PCC Meeting of NERPC

10. Compliance Monitoring

10.1. The Protection Protocol of NER shall be reviewed as and when required, in consultation with the stakeholders of the North Eastern Region.

10.2. Violation of the Protection Protocol of the North Eastern Region shall be brought to the notice of NERPC by the NERLDC or concerned SLDC, as the case may be.

10.3. In case any User/Entity fails to comply with the Protection Protocol or fails to undertake remedial action identified by the PCC of NERPC within the specified timelines, the NERPC would approach the Commission with all relevant details for suitable directions.

***

SCHEDULE- I

[See sub-regulation (10) of regulation 10]

List of Electrical Protection Functions for Thermal Generating Units

1. Generator

Sl. No.	Protection Function	Remarks
(a)	Generator differential protection (87G)	
(b)	100% stator earth fault protection (64G)	For units of 100 MW and above.
(c)	95% stator earth fault protection (64G1)	For units less than 100 MW.
(d)	Standby stator earth fault protection (64G2)	
(e)	Inter-turn fault protection (87TG)	Applicable where split winding in Stator is provided and if six terminals are available.
(f)	Loss of field protection (40G)	To be duplicated for units of 500 MW and above.
(g)	Negative phase sequence current protection (46G)	
(h)	Low-forward power and Reverse power interlock for steam turbine generator (37/ 32G)	Preferably 3-phase power relays shall be provided. Both the relays shall be duplicated for units of 500 MW and above.
(i)	Rotor earth fault protection - two stages (64F1/F2)	
(j)	Definite time over-voltage protection (59G)	
(k)	Generator under frequency protection (81G)	
(l)	Over-fluxing protection for generator (99G)	To be provided for units of 500 MW and above in duplicate.
(m)	Overload protection for generator (51G)	
(n)	Back- up impedance protection, 3 pole (21G)	
(o)	Overheating (winding and/ or bearing) (49G)	Alarm only.
(p)	Instantaneous and time delayed over current protection on high voltage side of excitation transformer (51)	
(q)	Generator pole slipping protection (98G)	
(r)	Accidental back energisation protection (50GDM)	
(s)	Generator circuit breaker failure protection (50ZGCB)	To be provided for GCB scheme only.

Note: In case digital multifunctional generator protection system is provided, the protection systems for generator shall be duplicated for units of one hundred mega watt and above. Each MGPS shall preferably be provided with individual inputs from CTs and VTs and connected to the independent set of hand-reset trip relays, such that one set is always available in case of testing and mal-operation of the other set. If the MGPS does not include any protection mentioned in the table above, separate discrete protection shall be provided for the same. The MGPS shall preferably have continuous self-monitoring and testing facilities.

2. Generator Transformer

Sl. No.	Protection Function	Remarks
(a)	Overall differential protection (87OA)	
(b)	Generator transformer differential protection (87GT) for single phase bank	
(c)	Restricted earth fault protection for generator transformer (87NGT)	
(d)	Over head line connection differential protection (87L)	For 3 single phase banks, if 87L

		includes HV winding, separate 87NGT is not mandatory.
(e)	Back- up earth fault protection on generator transformer HV neutral (51NGT)	
(f)	Over-fluxing protection for generator transformer (99GT)	To be duplicated for units of 500 MW and above.
(g)	Back- up non-directional over-current protection in all phases on HV side of generator transformer (51GT)	
(h)	Generator transformer oil temperature indicator (OTI) trip (49Q) and winding temperature indicator (WTI) trip (49T)	
(i)	Generator transformer Buchholz (63), Pressure relief valve (PRV)/ other mechanical protections	
(j)	Pole discrepancy protection of generator transformer breaker (162)	To be provided, if single pole breakers are used.
(k)	Breaker failure protection of generator transformer breaker (50Z)	
(l)	Start-up earth fault protection for LV and HV winding of generator transformer and UATs (64T)	To be provided for GCB scheme only.

3. Unit Auxiliary Transformer(s)

Sl. No.	Protection Function
(a)	Differential protection (87UAT)
(b)	LV back-up earth fault protection (51NUAT)
(c)	LV restricted earth fault (87NUAT)
(d)	Back-up over-current protection (51UAT)
(e)	OTI(49Q) and WTI (49T) trip
(f)	Buchholz (63), PRV/ other mechanical protections

4. Station- Transformer(s)

Sl. No.	Protection Function
(a)	Differential current protection (87)
(b)	Restricted earth fault protection for LV winding (87NLV)
(c)	Restricted earth fault protection for HV winding (87NHV)
(d)	Back-up over-current protection on HV side (51)
(e)	Back-up earth-fault protection (51N)
(f)	Over-fluxing protection (99)
(g)	Buchholz protection (63)
(h)	Winding temperature high (49T)
(i)	Oil temperature high (49Q)
(j)	Pressure relief valve trip (PRV)
(k)	Breaker failure protection (50Z)

SCHEDULE-II

[See sub-regulation (3) of regulation 12]

Design Requirements for Ash Handling System

A. Design Requirements for Ash Handling System of Pulverised Fuel Steam Generators

1. The capacity of ash handling systems, as a percentage of maximum ash generated corresponding to firing of worst coal or lignite at boiler maximum continuous rating, shall not be less than the following:

		-	100% standby blowers for intermediate and storage silos;
		-	50% standby for air compressors to be used for transporting ash.
(c)	Ash slurry disposal	-	One pump stream as operating standby and one pump stream as maintenance standby for wet slurry system;
		-	One standby stream for high concentration slurry system.

SCHEDULE-III

[See sub-regulation (7) of regulation 36]

The minimum Load for Continuous Operation for Various Types of Hydraulic Turbines

Sl. No.	Type of turbine	Minimum load for continuous operation (percent)
(a)	Pelton or Kaplan or Bulb	30
(b)	Deriaz	40
(c)	Francis	50
(d)	Propeller	85

SCHEDULE-IV

[See clause(f) of sub-regulation (12) of regulation 40]

Minimum Protections to be provided for Hydro- electric Generating Units

1. Generator

Sl. No.	Protection functions	Size of generating unit		
		Small (<10 MVA)	Medium (10-100 MVA)	arge (> 100 MVA)
(a)	Differential (87G)	Y	Y	Y
(b)	95 % stator earth fault (64G1)	Y	Y	Y
(c)	100 % stator earth fault (64G2)	N	Y	Y
(d)	Backup impedance (21G)	N	Y	Y
(e)	Voltage controlled over current (51)	Y	N	N
(f)	Negative phase sequence (46G)	Y	Y	Y
(g)	Loss of excitation (40G)	Y	Y	Y
(h)	Reverse power (37/32G)	Y	Y	Y
(i)	Pole slipping (98G)	N	N	Y
(j)	Stator overload (49S)	Y	Y	Y
(k)	Over voltage (59G)	Y	Y	Y
(l)	Under frequency (81G)	Y	Y	Y
(m)	Dead machine (27/50G)	N	N	Y
(n)	Rotor earth fault (64R)	Y	Y	Y
Note: Y- Required; N- Not required.				

2. Excitation Transformer

Sl. No.	Protection functions	Size of generating unit		
		Small (< 10 MVA)	Medium (10-100 MVA)	Large (> 100 MVA)
(a)	Restricted earth fault (64)	Y	Y	Y
(b)	Instantaneous and IDMT over current (50/ 51)	Y	Y	Y
(c)	Winding temperature (49)	Y	Y	Y
Note: Y- Required.				

3. Generator Transformer

(a) Generator transformer differential protection (87T)
(b) Restricted earth fault protection (64GT)
(c) IDMT over current protection (51)
(d) Neutral grounding back-up earth fault protection (51NGT)
(e) Over head line connection differential protection (87L)
(f) Overfluxing protection (99GT)
(g) Monitoring of Insulation of low voltage bushing (59T)
(h) Buchholtz relay (63)
(i) Winding temperature protection (49T)
(j) Oil temperature protection (49)
(k) Pressure relief valve (PRV)

4. Generator and Generator Transformer

(a) Overall differential protection (87OA)
(b) Breaker Failure Protection (50Z)

5. Unit Auxiliary Transformer

(a) Restricted earth fault protection (64)
(b) Instantaneous and IDMT over current protection on high voltage winding (50/51)
(c) Neutral grounding back-up E/F protection (51NGT)
(d) Winding temperature protection (49T)

6. Station Auxiliary Transformer

(a) Restricted earth fault protection (64)
(b) Instantaneous and IDMT over current protection on high voltage winding (50/51)
(c) Neutral grounding back-up earth fault protection (51NGT)
(d) Winding temperature protection (49T)

SCHEDULE-V

[See sub-regulation (3) of regulation 48]

Protection Details of Transmission Lines, Transformers, Reactors and Bus Bars

1. Transmission Line Protection

No.	Protection	765 kV	400 kV	220 kV/230 kV	132 kV/110 kV/ 66 kV
(a)	Main l- Distance protection*	Y	Y	Y	Y (for 132 kV/110 kV) Y/N (for 66 kV)
(b)	Main Il- Distance protection* or directional comparison protection or phase segregated line	Y	Y	Y/N 'N' if Directional IDMT over	N

	differential protection			current and earth fault back up protection is provided otherwise 'Y'	
(c)	Directional inverse definite minimum time (IDMT) type earth fault relay	Y	Y	'Y' if both Main-I & Main-Il are distance protections otherwise 'N'	N
(d)	Directional IDMT over current and earth fault back up protection	N	N	'Y' if Main-II is not provided otherwise 'N'	Y
(e)	Two stage over voltage protection	Y	Y	Y/N	Y/N
(f)	Auto reclosing#	Y (Single phase and three phase)	Y (Single phase and three phase)	Y (Single phase and three phase)	Y/N (three phase)

***For short line (less than 10 km) or cable or combination of overhead line and cable, line differential protection shall be used with built-in backup distance protection.**

 # For cable or combination of overhead line and cable, autoreclosing shall not be provided.

Note: (1) Y- Required; N- Not required; Y/N- Optional.

(2) Transmission lines with distance protection shall, in general, have carrier aided or fibre optic based inter-tripping or blocking feature.

(3) Separate cores of current transformer and voltage transformer shall be used for Main-I and Main-ll.

2. Transformer Protection

Sl. No.	**Protection**	**765 kV**	**400 kV**	**230 kV/220kV/ 132 kV/110 kV**	**66 kV**
(a)	Differential protection	Y	Y	Y	Y
(b)	Over fluxing protection	Y	Y	Y	N
(c)	Restricted earth fault (REF) protection	Y	Y	Y	Y
(d)	Backup directional over current and earth fault protection (HV and LV side) or impedance protection	Y	Y	Y	Y
(e)	Buchholz, WTI and OTI (for 1 MVA and above), MOG with low oil level alarm, OSR for OLTC, PRD, SA on both primary and secondary sides of transformers located outdoors and connected to over head lines	Y	Y	Y	Y
(f)	Tertiary winding protection	Y	Y	Y	N

Note: (1) Y- Required; N- Not required.

(2) WTI- winding temperature indicator; OTI- oil temperature indicator; OLTC- on load tap changer; PRD- pressure relieve device; OSR- oil surge relay; MOG- magnetic oil gauge; SA- surge arrester.

3. Reactor Protection

Sl. No.	Protection	765 kV	220kV /400 kV
(a)	Differential protection	Y	Y
(b)	REF protection	Y	Y
(c)	Reactor backup protection (impedance type or definite time over current (O/C) and earth fault (E/F) protection)	Y	Y
(d)	Buchholz, WTI, OTI, MOG with low oil level alarm, SA (if required)	Y	Y

Note: (1) Y- Required.

(2) WTI- winding temperature indicator; OTI- oil temperature indicator; MOG- magnetic oil gauge; SA- surge arrester.

4. Bus Bar Protection and Local Breaker Backup Protection (breaker failure protection)

Bus bar protection and local breaker backup protection shall be provided in 220 kV and higher voltage interconnecting sub- stations as well as in all generating station switchyards. Duplication of bus bar protection shall be done for all main buses of 400kV and above voltage class. The bus bar protection scheme shall be centralized or distributed type and have provision for planned future expansion.

SCHEDULE-VI

(See regulation 49)

PART-A

Technical Details of Classical HVDC Terminals/ Stations

1. **General:** The conventional Thyristor (Gate Turn On device) based HVDC converter technology or Line Commuted Converter technology or Current Source Converter technology shall be used for back to back and long distance bulk power HVDC transmission system. Gate Turn Off devices / other better devices capable of handling similar or higher quantum of power may also be considered.
2. **Design Consideration:** (a) The converter configuration and rating for HVDC installation shall be based on following considerations:
   (i) The amount of power to be transmitted
   (ii) The transmission distance
   (iii) Staging consideration of the project
   (iv) Location of converter station
   (v) The amount of power to be transmitted at the different stages of the project
   (vi) Reliability and availability requirements
   (vii) Loss evaluation
   (viii) Size and weight of the Converter transformers for transport
   (ix) Electrical characteristics of sending and receiving end power system to which HVDC transmission system is connected

Note: The DC power rating shall include nominal, reverse, forward and overload power levels, specific loading cycle and weightage factor to calculate load losses.

(b) Electric design of HVDC transmission lines shall take into account the following considerations:

(i) Corona performance (Corona loss, Radio Interference, Audible Noise, Electric field and ion current in the vicinity of the line)

(ii) Air Characteristic

(iii) Insulator performance

(c) The minimum conductor height above Ground level shall be selected mainly on the basis of ensuring human safety, Ground level electric field and ion current density level. The corona loss with I^2R losses

harmonic injection and self-excitation. Sub Synchronous Damping (SSD) Controller shall be provided for converter Stations near Generating stations.

(A) Load frequency controller (LFC)

(B) Current margin controller

(C) Excessive reactive power consumption controller

(D) AC system stability function, such as power swing damping function.

(E) Run back / Run up controller with provision to be linked to SPS of System Operator

(iv) The pole control, converter control, and valve control modules shall also be provided.

(v) The control shall be designed to give fast stable and proper response to normal control actions as well as during disturbances such as AC & DC faults.

(b) Protection System

(i) HVDC system protection shall consist of two parts:

(A) AC side protection:

AC side protection function shall cover the zone for converter transformer, AC filters, shunt capacitors, shunt reactors, and busbars. These protections shall generally follow the same philosophy as in a typical substation i.e. detection of fault by relay and tripping of circuit breaker.

(B) DC side protection:

DC side protection shall cover the zones consisting of the valve hall, DC switchyard including smoothing reactor and DC filters, DC line, DMR line / electrode line and ground electrode. The protection equipment shall be designed to be fail safe and shall ensure high security to avoid mal-operation/ unwanted shutdown due to protection equipment failures.

(ii) Following a DC Line fault, the HVDC System shall have the facility to restart, one or more times, the faulted pole at a variable pre-selected DC voltage level(s), not below 80% of the nominal voltage rating. The dc transmission system shall be capable of recovery in a controlled and stable manner without commutation failures during recovery following ac and dc system faults. The post fault power order shall be equal to the pre-fault power order unless AC/ DC systems dictate otherwise

(iii) Protection system shall have two redundant systems with following protections.

(A) Converter differential protection;

(B) DC over current protection;

(C) DC differential protection;

(D) AC conductor ground fault protection;

(E) Commutation failure protection;

(F) DC filter protection#;

(G) DC smoothing reactor protection;

(H) DC line ground fault protection with restarts#;

(I) DC line differential protection#;

(J) DC under voltage/ over voltage protection;

(K) Ground Return mode / Dedicated Metallic Return (DMR) protection#

(L) AC filter protections

(M) Electrode line monitoring and protection#

(N) Thyristor Failure Monitoring

not applicable for back to back schemes

(iv) DC online fault locators shall be provided to monitor the entire DC line length and give location of the fault with good accuracy in the range of $\pm$ 1000 meters

(c) Software based controls and protection shall be used to permit flexibility in effecting modifications. Protection and controls shall be duplicated for reliability. The control & protection shall provide fast controllability of the HVDC system. Operation of the HVDC bipole system shall be possible in the following modes:

(i) Balanced/ unbalanced bipolar operation;

(ii) Monopolar operation with pole metallic return:

(iii) Monopolar operation with ground return / with Dedicated Metallic Return (DMR) mode;

(iv) Reduced voltage operation;

(v) Power reversal mode.

(d) The 'Sequence of events' recorder, transient fault recorder, on-line DC Line fault locator, GPS system, visual display system, operator control protection and monitoring system shall be a part of the HVDC system.

14. Telecommunication- For smooth operation of the HVDC system, communication network with high reliability and availability shall be provided for transmission of control and protection signals between the two or more (in case of multi-terminal DC) HVDC terminals. There shall be main and back up communication link. The main communication link shall be through OPGW and back up communication link shall be either through OPGW or PLCC.

15. Valve Hall: The valve hall shall mainly contain thyristor valves, its associated structure, & cooling and arresters. No oil filled equipment shall be present inside the valve hall. In case the turret of converter transformers (having oil) is protruding inside the valve hall, suitable fire barrier matching with adjacent valve hall wall fire rating shall be provided. The valve halls shall be provided with interference screening. In addition, the control cable and cable termination rooms shall be suitably screened to minimize radio interference. Two nos. scissor lift for erection and maintenance of valve modules shall be provided per station. Proper cable sealing shall be provided for cable entry into valve hall and control room to avoid entry of water and moisture. Necessary measures shall be taken to take care of high frequency noise emission from valves.

16. Valve Hall Ventilation: Suitable ventilation systems and filters with adequate redundancy shall be provided in the valve hall. The valve hall shall be kept at a positive pressure under all conditions.

17. Grounding & Safety

(a) The design of the grounding system shall be based on relevant IS/ IEEE.

(b) In order to prevent adverse effect (overheating due to induced circulating current) of magnetic field of air core reactors, special care shall be taken such that no closed loops are formed by the earthing conductors and in reinforcement bars of the foundation. Air core reactor manufacturer's guidelines shall be followed.

(c) The electrical safety clearances for the dc side shall not be less than the clearances applicable for an ac switchyard at the equivalent BIL level.

(d) The total electric field excluding space charge at ground level shall be as prescribed in relevant standards.

(e) Fencing and electrical & mechanical key interlocking arrangements shall be provided for valve halls, smoothing reactor area, AC and DC filter areas, DC LFL Capacitor Area and for equipment mounted directly on ground without suitable height of steel structure.

18. Dedicated Metallic Return (DMR) / Earth Electrode

The current return path of a bipolar configuration shall be either via a Dedicated Metallic Return (DMR) conductor or via earth return using earth electrodes at both converter terminals. DMR mode shall be preferred if it is difficult to identify a suitable site for earth electrode station.

If earth electrodes are to be used the following requirements shall also be considered:

(a) The earth electrode station shall be connected to the terminal by means of an overhead transmission line. The earth electrode shall be located at a minimum distance of approximately 25 km (radial distance) away from the converter station. It shall be designed to operate continuously at nominal load and overload as per the requirement. The electrodes shall be designed for both types of operation, anodic and cathodic.

(b) The thorough soil investigation shall be carried out for shallow and deep resistivity, thermal conductivity and moisture content etc. at the proposed location.

(c) The earth electrode station shall have sub-electrodes. The maximum current density at the sub-electrode surface, i.e. the boundary between backfill (coke) and soil shall not exceed 0.5 A/m2 in clay soils. The number of sub-electrodes shall be determined considering that 30% of the sub-electrodes are not available. The amp hour rating for earth electrode shall be selected based on the study for duration of earth electrode current and the service life of the earth electrode station.

(d) The earth electrode station shall not affect the nearby electrical installation, buried metallic pipelines, oil & gas pipelines, and railway lines etc.

(ii): The above values of creepage distance are applicable for an altitude upto 1000m above sea level. For altitude above 1000m above sea level, necessary altitude correction factor as per relevant IS/IEC shall be considered.

(c) **DC wall bushing -**DC wall bushings, used for electrical connection between the equipment inside the valve hall and the outdoor DC yard shall be of polymer housing as per relevant standards.

(d) **DC Reactors -** The DC reactors (if used) shall be of air core type. The reactors shall generally comply with relevant standards and shall also have beensubjected to DCtests as pertheir application.

(e) **DC Voltage and Current Measuring Devices-** The DC voltage measuring equipment shall be installed at each pole. The DC measuring equipment at pole and neutral bus shall be suitably located based on the control philosophy and different protection zones such that complete pole and neutral equipment are protected.

(f) **DC Filters-** If required DC harmonic filters shall be provided in DC yard to limit harmonic voltages present on the DC lines (pole lines and electrode lines).

8. Control and Protection

(a) Control

(i) DC converter terminals shall be either manned by operator or controlled by remote Operation of SCADA system. The control system hierarchy shall be as follows:

(A) Station/ Bipole* Control (*only for bipolar arrangements, functionality offered as part of station control also acceptable);

(B) Converter /Pole Control;

(C) MMC control;

(ii) The HVDC converter shall have control features including but not limitedto the following:

(D) Active power control

(E) Reactive power control;

(F) AC Voltage control

(G) DC Voltage control

(H) Frequency controller (if applicable);

(I) Power modulation control (if applicable);

(J) Runback and run-up functions (if applicable);

(K) Power Oscillation Damping (POD)

(L) Sub synchronous torsional interaction dampingcontrol (if applicable);

(b) Protection

(i) The protection equipment shall be designed to be fail-safe and shall ensure high security to avoid mal-operation/ unwanted shutdown due to protection equipment failures.

(ii) HVDC system protection shall consist of following protection zones:

(A) AC System Protection zone

(B) Converter or Interface Transformer Protection Zone

(C) Secondary Busbar Protection Zone

(D) Converter Protection Zone

(E) DC Busbar Protection Zone

(F) DC line & cable Protection Zone

(iii) Protection system shall have two redundant systems including the following protections.

(A) AC over- and under-voltage protection

(B)Over- and under-frequency protection

(C)AC busbar differential protection;

(D) Insertion resistor overload protection

(E)AC overcurrent protection

(F) Converter overcurrent protection

(G) Converter overload protection

(H) Converter module differential protection

(I) Converter current differential protection

(J) DC voltage imbalance protection

(K) DC busbar differential protection

(L) DC link differential protection

(M) DC over- and under-voltage protection

(N) Electrode line monitoring and protection (if applicable)

(O) DC filter protection (if applicable)

(P) AC filter protection (if applicable)

(Q) AC connection Harmonic protection

(R)Phase current unbalance

(S) Protection.Block Failure or Repetitive Blocking failure protection

(T)Converter arm harmonic protection

(U) DC Line + cable Overcurrent Protection

(V) DC Line + cable harmonic protection

(c) Software based controls and protection shall be used to permit flexibility in effecting modifications. Protection and controls shall be duplicated for reliability. Protection shall be provided by numerical relays to suit the requirement of the HVDC system.

(d) For bipolar schemes the following operation modes shall be possible:

(i) Balanced/ unbalanced bipolar operation;

(ii) Monopolaroperation with metallic return;

(iii) Monopolar operation with ground return / DMR

(e) The 'Sequence of events' recorder, transient fault recorder, on-line DC Line fault locator, GPS system, visual display system, operator control protection and monitoring system shall be a part of the HVDC system.

9. Telecommunication- For smooth operation of the HVDC system, communication network with high reliability and availability shall be provided for transmission of control and protection signals between the two or more (in case of multi-terminal DC) HVDC terminals. There shall be main and back up communication link. The main communication link shall be through OPGW and back up communication link shall be either through OPGW or PLCC.

10. Grounding & Safety

(a) The design of the grounding system shall be based on relevant IS/ IEEE.

(b) In order to prevent adverse effect (overheating due to induced circulating current) of magnetic field of air core reactors, special care shall be taken such that no closed loops are formed by the earthing conductors and in reinforcement bars of the foundation. Air core reactor manufacturer's guidelines shall be followed.

(c) The electrical safety clearances for the dc side shall not be less than the clearances applicable for an ac switchyard at the equivalent BIL level.

(d) The total electric field excluding space charge at ground level shall be as prescribed in relevant standards.

(e) Fencing and electrical & mechanical key interlocking arrangements shall be provided for valve halls, smoothing reactor area, AC and DC filter areas, DC LFL Capacitor Area and for equipment mounted directly on ground without suitable height of steel structure.

11. Dedicated Metallic Return (DMR) or Earth Electrode –The current return path of a bipolar configuration shall be either via a Dedicated Metallic Return (DMR) conductor or via earth return using earth electrodes at both converter terminals. DMR mode shall be preferred if it is difficult to identify a suitable site for earth electrode station. If earth electrodes are to be used the following requirements shall also be considered:

(a) The earth electrode station shall be connected to the terminal by means of an overhead transmission tine or underground cable. The earth electrode shall be located at a minimum distance of approximately 25 km (radial distance) away from the converter station. It shall be designed to operate continuously at full load as per the requirement. The electrodes shall be designed for both types of operation, anodic and

ANNEXURE – 1

SUB-STATION LIST - FOR ADMS (ADVANCED DISTRIBUTION MANAGEMENT SYSTEM) SCHEME IMPLEMENTATION IN MEGHALAYA

S.No.	Name of Substations	Transformer Capacity/ Rating (in MVA)	Sub Station Feeders
1	KEATING ROAD S/S	2x7.5	5
2	MAWLAI S/S	2x10	4
3	UMJARAIN S/S	2x5	3
4	MAWIONG S/S	2x5	2
5	NONGTHYMMAI S/S	2x7.5	5
6	KENCH's TRACE S/S	2x5	4
7	MAWPREM S/S	2x5	3
8	AIRFORCE S/S	2x7.5	5
9	MAWPHLANG S/S	5	3
10	SE FALLS S/S	2x10	6
11	4th Furlong	2x5	3
12	LAPALANG S/S	10	4
13	METER FACTORY S/S	2x7.5	
14	MNREDA (Nongmynsong)	2x5	2
15	LAD SMIT S/S	2x5	2
16	UMROH ,Mawkasiang	2x5	
17	MAWSYNRAM S/S	2.5	2
18	SOHIONG S/S	5	3
19	SOHRA S/S	10	5
20	Mawmihthied S/S	2.5	2
21	NONGSTOIN S/S	2x10	6
22	NONGPYNDENG S/S	5	3
23	MAWRUKSOIN S/S	2.5	2
24	MAWSAWA MAIRANG S/S	2x5	5
25	LAITLAWSANG	5	
26	NEW COLONY S/S UMIAM	2x5	5
27	NONGPOH S/S	2x5	4
28	JYNTRU S/S	5	3
29	BYRNIHAT S/S	2x5	6
30	RAJABAGAN S/S	10	5
31	KILLING S/S	5	4
32	JOWAI S/S	2x5	5
33	KHLIEHTYRSHI S/S	5	4
34	IALONG S/S	2.5	3
35	KHLIEHRIAT S/S(Moowakou)	2x10	5
36	LUMSHNONG S/S	5	2
37	HAWAKHANA	2 x 5	4

38	DOBASIPARA	2 x 5	4
39	RONGRAM	2.5	
40	AMPATI	2.5+3.15	4
41	MENDIPATHAR	2.5+3.15	2
42	WILLIAMNAGAR	5+2.5	3
43	BAGHMARA	2x2.5	5
44	CHERANGRE	7.5	3
45	RONGKHON	2X5	3
46	PRAHARINAGAR	(2.5 + 5)	

Annexure E.2

GOVERNMENT OF MEGHALAYA
PLANNING, INVESTMENT PROMOTION & SUSTAINABLE DEVELOPMENT DEPARTMENT
****

No.PLR.46/2023/11, Dated Shillong, the 24th May, 2023

To

1. Principal Secretaries / Commissioner Secretaries / Secretaries to the Government of Meghalaya, Health / Social Welfare / PHE / IT & Communications / AH & Veterinary / Fisheries / Tourism / Power / PWD Department

Subject : **Action Taken Report on recommendations made by Hon'ble Union Ministers during fortnightly visit to NE States - Regarding**

Sir / Madam,

I am directed to forward herewith a copy of the letter No.Coord-13/21/2021-Coord Sec dated 27/04/2023 received from the Deputy Secretary to the Government of India, M/o DoNER along with the recommendations and actionable points made by Hon'ble Union Ministers during fortnightly visit to NE States.

In this connection, you are requested to kindly furnish action taken report w.r.t the recommendations relating to your department at the earliest.

This is for favour of kind information and necessary action.

Yours faithfully,

Enclo : As above

[V. Thabah]
Planning Officer & ex - Officio
Under Secretary to the Government of Meghalaya,
Planning, Investment Promotion &
Sustainable Development Department

O/o. the Director Distribution
D.No. 114
Date 26/5/23
Signature

Memo No.PLR.46/2023/11 – A, **Dated Shillong, the 24th May, 2023**

Copy to:-

1. The P. S. to the Chief Secretary to the Government of Meghalaya for kind information of the Chief Secretary.
2. The Director AH & Vety/ Dairy/ Health Services (MI)/ Social Welfare/ IT & Communication / Tourism / Fisheries / MePDCL / MePGCL / MePTCL, Meghalaya Shillong for kind information and necessary action.
3. The Chief Engineer, PHE / PWD (NH) / PWD (Standard), Meghalaya, Shillong for kind information and necessary action.
4. The Deputy Commissioner, Ri – Bhoi District, Nongpoh, for kind information and necessary action.

By order etc.,

Under Secretary to the Government of Meghalaya,
Planning, Investment Promotion &
Sustainable Development Department

NEC Scheme for new 33kV lines for Byrnihat - Nongpoh line

Scanned with OKEN Scanner

No.Coord-13/21/2021-Coord Sec
Government of India
Ministry of Development of North Eastern Region
*****

Vigyan Bhawan Annexe,
Maulana Azad Road, New Delhi-11
Dated the 17th April, 2023

To

All the Chief Secretaries to NE States
(As per list attached)

Subject: Action Taken Report on recommendations made by Hon'ble Union Ministers during fortnightly visits to NE States – regarding.

Madam/Sir,

In continuation of this Ministry's letter of even number dated 7th December, 2022, 6th January, 2023 and 7th March, 2023 on the subject cited above, I am directed to state that under MDoNER's Programme "Fortnightly visits of Hon'ble Union Ministers to North Eastern Region", some Hon'ble Union Ministers submitted their recommendations after visiting North Eastern States.

2. The recommendations with actionable points as received in February & March, 2023, are forwarded herewith for taking necessary action in the matter. Further, the status of action taken in this respect may kindly be furnished to the concerned Hon'ble Union Ministers under intimation to this Ministry.

3. This issues with the approval of Competent Authority.

Yours faithfully,

(Nehjamang Simte)
Deputy Secretary to Govt. of India
Tel. 011-23794689

Enclosures: As above.

Sl. No.	Name of Hon'ble Union Minister/ Hon'ble MoS	Place visited	From	To	Recommendation made by Hon'ble Ministers	Action to be taken by
1	Shri Bhanu Pratap Singh Verma Hon'ble MoS for Micro, Small and Medium Enterprises	Imphal Manipur	29.10.2021	30.10.2021	• Take initiative to replace the plastic products by bamboo	M/o Environment, Forest & Climate Change State Govt
2	Shri Bhanu Pratap Singh Verma Hon'ble Minister of State for Micro, Small and Medium Enterprises	Agartala Tripura	31.10.2021	02.11.2022	• Expedite the infrastructure works of training centre being constructed by MSME Ministry	M/o MSME State Govt
3	Dr. Jitendra Singh Hon'ble MoS (IC) for Science & Technology, Earth Sciences	Jorhat Assam	12.05.2022	12.05.2022	• Need to further strengthen the ties between academia and industry to develop cutting edge technologies and products and deliver them in shortest possible time frame and thereby to realize the vision for 'Samarth' and 'Atmanirbhar Bharat'. The innovative Star-ups created by young entrepreneurs must shoulder responsibility for the next 25 years of glorious journey, when India celebrates its 100th year of independence as a frontline nation in the world. • Need to prepare a White Papers for thematic areas for collaborative research and technology development with absolute targets and well thought plan / roadmap for achieving the same with strict timelines.	M/o Science & Technology M/o Skill Development & Entrepreneurship
4	Dr. Raj Kumar Ranjan Singh Hon'ble Minister for Education & External Affairs	Chandel Manipur	24.07.2022	24.07.2022	• Inadequacy of specialist doctors and other medical professionals is an area of concern and needs immediate attention. Efforts should be made to increase the number of specialist doctors and other medical professionals at District Hospital, CHCs, PHCs and PHSCs. There are 51 villages covered under District Hospital, 115 Villages under CHC Chakpikarong and 53 Villages under PHC Sajik Tampak. Since the Villages are widely scattered and lack of proper public transport in the hilly terrain, creation of more PHSCs in the above uncovered villages as cluster group will enhance in providing quality health care service for the villagers.	M/o Health & Family Welfare State Government
					• Available banking facility needs augmentation	M/o Finance
					in Manipur.	State Govt
					• Efforts needs to augment to ensure adequate supply of material for micro-irrigation as reflected in the allocation and covered area survey	M/o Agriculture & Farmers Welfare State Govt
					• Allocation of STI and RPL under Skill Development is low for the district which needs to be enhanced	M/o Skill Development & Entrepreneurship State Govt
					• The district is situated on a mountainous area and the villages are widely scattered. Though the district has several indicators like all-weather roads under PMGSY, road connectivity to Villages of the far-flung areas is an area requiring focused attention. There are 52 villages (which has population of more than 250) only sanction under All-weather Road 150 village are with population less than 250 remaining for sanction under PMGSY all-weather road as per 2011 census. A shortage in public transport in major parts of the district has also been observed which needs to be addressed. • Various agencies are undertaking several Road Projects as mentioned below - 1. Patel in Chandel by NHIDC 2. Chandel (Chandel Christian) to Sugnu (Khambathel) by BRTF 3. Chakpikarong to Sajik Tampak by BRTF 4. Chonjang to New Samtal (Morsh New Samtal route) under PMGSY 5. Chakpikarong to Khangjoi (Pt V) under PMGSY 6. Khangjoi to Yangouten under PMGSY 7. New Songjang to Gamphajol under PMGSY	M/o Rural Development MoRTH State Govt
					There is an immediate need to augment the number of administrative officers and staff. Utilization and deputation of staff outside the district could be considered.	State Govt

					Poultry farming in the mixed fruit [illegible] garden. Biochar should be used in all plantation specially in Black Pepper. Production of biochar and distribute among the farmers. Introduction of [illegible]. ICAR Spices Board and Horticulture Department should make a collaborative project to promote Black Pepper cultivation among the farmers so that farmers can produce processed pepper and later black pepper [illegible] too. • Forest Department must distribute 15 [illegible] saplings among each farmers • Black Pepper should be planted with standing Red Palm Oil at HRC Nagicherra • Promote Black Pepper cultivation among the SHGs • To make Tripura as economic hub incorporate horticulture in 2 lakh degradable area under Watershed projects	
					• Bharat Net facility should be provided as DBT in all other schemes depends upon internet connectivity	M/o Communication
					• District need to saturate GOI schemes in all PHCs and its Sub Centers • Adequate bed should be arranged for institutional delivery & serious emergency patients. All Central Governments like Ayushman Bharat universal immunization etc. should reach 100% saturation	MoHFW & State Govt.
					• Jan Aushadhi Kendra should be opened at all feasible places. Sanitary pads should be made available in ample amount. Explore possibilities of providing of natural nutritional supplements like moringa instead of capsules	M/o Chemical & Fertilisers
					• Safe drinking water facility, toilets & electricity should reach at 100% saturation level in all schools. Block wise analysis of data would help in better planning & saturation.	M/o Education & State Govt
					• All central schemes of financial inclusion should be promoted & advertised	M/o Finance & State Govt

					• All schemes for skill development of Central Government & State Government should be advertised & explained to people. People should be encouraged to take advantage of these schemes	M/o Skill Development & Entrepreneurship and State Govt
					• Administration and line departments should focus on timely maintenance of different types of roads. All durable infrastructure created from Government fund need to maintained with the help of people participation	MoRTH & State Govt
					• Fresh water ornamental culture soft toy and garments making may be promoted for livelihood activities under DAY-NRLM	MSME & State Govt
					• Livelihood activities of Piggery goatary may be taken up in Rwanda model through SHG. Handing over the unutilized infrastructure of Birchandra Manu Pig Breeding Farm of CLF/VO/SHG for optimum utilization of the existing infrastructure of the farm and promotion of livelihood activities Sepahijala District • Fruit Cultivation like Turmeric, Ginger, Centred Lemon, tuberose, Marigold, Pine apple etc. and also plant dwarf coconut plant in the periphery • Dwarf coconut, Moringa may be planted in all the AWCs • To provide at least 10 goatary to the beneficiaries as individual benefits • Nursery of dragon fruit may be raised • Planting material (Tissue Culture) may be collected from the Kanpur Krishi Vigyan Kendra, Kanpur • Godaki Plantation also may be taken up as inter crop • Piggery of England variety may be introduced instead of local variery • Cattle shed may be taken up under MGNREGA for providing individual benefits for enhancing the income of the beneficiaries the process may be adopted in Poultry Farm as per the guidance of ICAR Directorate of	M/o Animal Husbandry & Dairying

					Poultry Research (DPR), Hyderabad • Action Plan is to be prepared to bring more SHG for promotion of livelihood activities based on forest products Forest Department shall strive to promote products of Aga and Gandhiaru	
8	Shri Pankaj Chaudhary Hon'ble MoS for Finance	Darrang, Golaghat Assam	21.02.2023	24.02.2023	• Though the progress of making new AWC after receiving fund from Govt of Assam is very low with 30% physical and 20% financial progress in second last month of the year • Lack of delivery infrastructure in char(riverine) areas • The antenatal check-ups for migratory labours are very less	MoHFW & State Govt
					• PM Fasal Bima Yojana is available only for limited crops (Maize need to be included). Farmers have been cultivating maize in place of wheat considering their benefit • Need to link Mandis with e-Market in the district of Darrang	Min Agriculture & FW and State Govt
					• Road connectivity to school is poor in river fringe areas • Displacement of habitation due to erosion • Due to recurrent flood situation, the day-to-day classes are affected • Female literacy level is poor in riverine areas •	State Govt
9	Shri Devusinh Chauhan Hon'ble MoS for Communications	Serchhip Mizoram	17.02.2023	20.02.2023	• DoNER Ministry should also play an active role in facilitating CSR funding of various developmental projects • Several development projects have been reported to be delayed due to several reasons. Lack of funds has been cited as one of the major reasons • Road Connectivity is a challenge for the district as the development activities under the same have overshot targets both due to physical as well as administrative reasons. For creation of road infrastructure DoNER Ministry may prepare a plan • Each minister may be allotted an Aspirational district. Long term association of a minister will result in better monitoring of the development works of the aspirational district	MDoNER

					• An incentive system to reward the districts on the basis of the incremental growth selected growth parameters over a specific period would further enthuse and motivate the District Administration to perform to their optimum	
					• Inter-departmental coordination between various ministries/development agencies would further fast-pace the overall development of the district. An example in this regard is of the NH-54 construction currently underway by NHAI which requires more coordination with the State authorities	All Central Ministries
					• Medical infra was adequate but the lack of specialist doctors and other medical professional is an area of concern it needs immediate attention • There is also need of more model Anganwadi centers for the district. It will make the Aganwadi Centres more acceptable to the users and also motivate the ICDS service providers to enhance the quality of services • Child Care Programme especially child with Severe Acute Malnutrition (SAM) needs to be paid focused attention • Availability of more ambulances may be ensured • The District Hospital Serchhip is to be converted to a 100 bedded hospital under the CSR initiative of Power Grid Corporation of India Ltd. Provision of Staff quarters may also be made part of the revamp plan of District Hospital Serchhip • Coverage under Ayushman Bharat Mission is 70%. Efforts shall be made to increase the coverage	MoHFW & State Govt
					• Number of schools with functional drinking water facility have witnessed an increase in the district • 'Adopt a School' Programme of the district administration is doing well and has resulted in improvement of the school infrastructure. More collaborations in this regard under CSR initiatives may be explored	Min Education & State Govt

					• Jhum Cultivation is still prevalent in the district. Efforts must be made to motivate the farmers to turn towards conventional modes of agriculture through knowledge and resource support • Efforts are needed to augment and ensure adequate supply of material for micro-irrigation • The Sialsir Panchayat under the district has set a model example for water resources management. the same may be replicated in other blocks and Panchayats • There are 2 FPOs (Farmer Producer Organizations) in the district. Efforts shall be made to provide appropriate support to these and for creation of more such FPOs • Marketing of local products may be done a larger scale, services of DoP and TRIFED may be taken in this regard	M/o Agriculture & FW and State Govt
					• Banking facilities in the district need augmentation • Departments of Posts has been asked to ramp up IPPB (India Post Payment Bank) presence in these areas making banking facilities available here.	M/o Finance & State Govt.
					• Placement after skill development is an outcome of PMKVY. Therefore, monitoring of the placement data may be carried out	M/o Skill Development & State Govt.
					• The district is situated in a mountainous area and the villages are widely scattered. Road connectivity to villages of the far-flung areas is an area requiring focused attention • Public transport is inadequate in major part of the district. it needs to be addressed • Road connectivity to villages under PMGSY needs monitoring as many of the projects under PMGSY have been pending since long.	MoRTH & State Govt
					• Important places in the district may be identified and developed from the point of view of tourism development in the district	M/o Tourism & State Govt.

10	Shri Krishan Pal Gurjar Hon'ble MoS for Power & Heavy Industries	Departures Tripura	09.01.2023	10.01.2023	• Special doctors are required in the hospitals • Improvement of electricity infrastructure is required • Mid day meal cooking cost is very less which needs to be enhanced • Settlement of claims under PMFBY are to be improved • Tender value for Smart Meter is much high than the DPR value which needs to be examined • High Quality of variety of cattle may be hired from Haryana/ Rajasthan for high productivity by the AHDD Department	State Govt
11	Shri Mahendar Nath Pandey Hon'ble MoS Ministry of Heavy Industries	Namsai Arunachal Pradesh	10.12.2022	11.12.2022	• To consider allocation of funds for innovative projects which can't be funded under normal scheme in Aspirational districts of NER or to consider allocate allocation of untied fund through NEC annually • May consider initiate 'Innovation & Challenge fund' scheme for Aspirational district to finance innovative programs and critical needs of the districts • Special package for school infrastructure in Aspirational district may be considered on priority by DoNER / NEC • There is a need of a special project for popularizing Micro irrigation. DoNER Ministry may consider special scheme for it	MDoNER
					• The PMKVK established pre covid-19 time have not yet re-started functioning. As such, the district is far behind in skill development. The Ministry should ensure functioning of PMKVK in Aspirational district immediately. Special annual fund for skill development may be considered for each Aspirational district. Ministry may also consider special officers for poorly performing district, so that improvement is ensured	M/o Skill Development & Entre
					• May take up the matter of HR gaps in Aspirational district and special initiatives/ provisions may be kept under MHT • Establishment of medical college at Namsai will cater to 13 districts of Arunachal Pradesh in the eastern frontier. Ministry may actively consider	MoHFW

					this matter on priority. • Release of funds against sanctioned projects on priority to Aspirational District across all Ministries • Special earmarked provisions in existing CSS schemes for Aspirational districts. Ministries may consider policy framework for mandatory special provision for Aspirational District in allotments of funds across all CSS & central sector schemes for augmenting investment in these districts for ensuring time bound transformation. • Aspirational districts with substantial Tribal/ Minority population may be prioritized in schemes of ministries related to their specific development, eg, scheme of Article 275(1), MoTA, PM JVK of MoMA may be of great use in augmenting infrastructure gaps in social, education & health sector, agricultural development of the district, skilling the youths, etc. • AAI, NHPC, NHIDCL, PGCIL may be directed by concerned Ministry to extend CSR initiatives in Namsai, AP	All Central Ministries/ NITI Aayog
12	Shri Som Prakash Hon'ble MoS for Commerce & Industry	Ri Bhoi Meghalaya	01.12.2022	02.12.2022	• There is no medical college in district as well as in State	MoHFW & State Govt.
					• Road connectivity is major concerns as vast are of the district is inaccessible	MoRTH, MDoNER & State Govt.
					• 58.45% households are covered under the Jal Jeevan Mission which requires exceptional attention. Only 53% schools have functional drinking water facility. • Being in hilly terrain, most part of the district face problem of water supply. District Administration need technical support for scientific evaluation and execution of watershed development initiatives, check dams and other water conservation methods like reservoirs, etc. • Massive shortage of water supply pipes.	M/o Jal Shakti
					• Internet connectivity is erratic in the district which hampers adhaar enrolment, digital education penetration, financial services and other services being offered by Common Service Centres, etc.	M/o Communication
					• District also faces problem in power supply as there is only single source of power. There is need to upgrade power infrastructure in the district.	M/o Power & State Govt.
					• Large number of Anganwadi centres are functional from lease building. There is demand for permanent building for them.	State Govt.

List of Chief Secretary of NE States

Sl. No.	Name of State	Name of Officer	E-mail
1.	Arunachal Pradesh	**Shri Dharmendra (IAS:89)**	cs-arunachal@nic.in
2	Assam	**Shri Paban Kumar Borthakur (IAS:89)**	cs-assam@nic.in
3.	Manipur	**Dr. Rajesh Kumar (IAS:88)**	cs-manipur@nic.in
4	Meghalaya	**Shri Donald Phillips Wahlang, IAS**	cso-meg@nic.in
5.	Mizoram	**Dr. Renu Sharma, (IAS:88)**	cs-mizoram@nic.in cs_miz@rediffmail.com
6.	Nagaland	**Shri J. Alam**	csngl@nic.in
7.	Sikkim	**Shri S.C. Gupta (IAS:86)**	cs-skm@hub.nic.in
8.	Tripura	**Shri Kumar Alok** (IAS:90)	cs-tripura@nic.in cstripura@gmail.com

Annexure E.11

F. No. 43/4(9)/2021-DS-II-(E-259171)
Government of India
Ministry of Power
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Shram Shakti Bhawan, Rafi Marg
New Delhi, Dated: 15th June, 2023

OFFICE MEMORANDUM

Subject: Protocol for providing Electricity to Border areas of one State from Grid of Neighbouring State – reg.

As per The Electricity Act 2003, Distribution of Electricity is a licensed activity and it is the duty of the respective distribution licensee to develop and maintain an efficient, co-ordinated and economical distribution system in his area of supply to provide reliable and quality power to all consumers in its licensed area. The Electricity (Rights of Consumers) Rules, 2020 also mandates that it is the duty of every distribution licensee to supply electricity on request made by an owner or occupier of any premises with minimum standards of service in accordance with the provisions made in these rules.

2. Some instances have been brought to the notice of Govt. of India wherein providing electricity distribution services through electricity network in areas/ villages/ habitations/ locality near the border, is either not feasible or not cost effective for the distribution licensee of the concerned State due to lack/ difficulty in access and long distance from existing grid. Providing access to electricity in such areas through stand-alone/ mini-grid solar photo-voltaic systems, with storage can be a solution, but that would be expensive. There is also, generally a demand from consumers as well as from public representatives to provide grid electricity for productive usage with enhanced quality and reliability of power supply in accordance with the Electricity (Rights of Consumers) Rules, 2020.

In many cases, such areas may be in closer proximity to the grid network of the distribution licensee of the neighbouring State and supply of electricity in these areas may be feasible as well as cost effective by sourcing input power supply from the distribution licensee of the neighbouring State.

3. In order to facilitate providing electricity supply in such areas of one State by sourcing input power supply from the distribution licensee of the neighbouring State, a Protocol has been finalized by this Ministry and enclosed herewith at **Annexure.** This protocol may be adopted by all the stakeholders with immediate effect.

4. This issues with the approval of Hon'ble Minister of Power & NRE.

(Piyush Singh)
Joint Secretary to the Govt. of India
Tel: 011-23714367

To

1. Chief Secretaries of all States and UTs
2. Additional Chief Secretary/ Principal Secretary/ Secretary (Energy/ Power) for all States and UTs.
3. Secretary, FOR
4. Secretaries of all SERCs/ JERCs/ CERC
5. CMDs/ MDs of DISCOMs of all States and UTs

PROTOCOL FOR PROVIDING ELECTRICITY TO BORDER AREAS OF ONE STATE FROM GRID OF NEIGHBOURING STATE

Background

As per The Electricity Act 2003, Distribution of Electricity is a licensed activity and it is the duty of the respective distribution licensee to develop and maintain an efficient, co-ordinated and economical distribution system in his area of supply to provide reliable and quality power to all consumers in its licensed area. Relevant provisions of The Electricity Act 2003 are appended herewith at the end of this note for ready reference. As per present legal framework, electricity distribution services in an area within geographical limits of State are to be provided by the designated distribution licensee of the area and distribution license can be granted by the respective SERC/JERC for their operations within the State. As such, distribution licensee of one State cannot extend electricity services in an area of any other State.

As per the Electricity (Rights of Consumers) Rules, 2020, it is the duty of every distribution licensee to supply electricity on request made by an owner or occupier of any premises in line with the provisions of Act. It is the right of consumer to have minimum standards of service for supply of electricity from the distribution licensee in accordance with the provisions made in these rules. Further, the distribution licensee is requested to supply 24x7 power to all consumers. However, the Commission may specify lower hours of supply for some categories of consumers like agriculture.

Some instances are being reported wherein providing electricity distribution services through grid network in an area/ villages/ habitations/ locality is either not feasible or not cost effective for the concerned distribution licensee of the Statedue to various reasons such as forest areas, hilly/difficult terrain, border areas of State, long distance from existing grid, O&M issues etc.. Providing access to electricity in such areas through stand-alone / mini-grid solar photo-voltaic systems can be a solution, which has been attempted in past by many States/ DISCOMs in some areas. However, there is a persistent demand of consumers as well as public representatives to provide grid electricity for productive usage with enhanced quality and reliability of power supply in accordance with the Electricity (Rights of Consumers) Rules, 2020.

Further, in many cases, such areas may be in closer proximity to the grid network of the distribution licensee of the neighbouring State and supply of electricity in these areas may be feasible as well as cost effective by sourcing input power supply from the distribution licensee of the neighbouring State.

In such a scenario, the following Protocol may be adapted for providing electricity supply in such areas of one State by sourcing input power supply from the distribution licensee of the neighbouring State.

Definitions

Parent Distribution Licensee: The Distribution Licensee of concerned geographical areas under whose jurisdiction the consumers premises are situated/ located.

Supplier Distribution Licensee: The Distribution Licensee of the neighbouring State from where input power supply is proposed to be sourced for supplying power to the consumers situated/located in Parent Distribution Licensee jurisdiction areas.

In case, providing electricity distribution services through grid network to consumers situated/located in an area (villages/ habitations/ locality) is either not feasible or not cost

effective for the Parent Distribution Licensee of a State/ UT due to various reasons such as forest areas, hilly/difficult terrain, border areas of State, long distance from existing grid, O&M issues etc., such Parent Distribution Licensee may consider providing power supply to such consumers by sourcing input power supply from the Supplier Distribution Licensee, provided further that such areas are in closer proximity to the electricity network of the Supplier Distribution Licensee and supply of electricity in these areas is feasible as well as cost effective.

In such cases, following protocol may be followed:

(i) The Parent Distribution Licensee would seek electricity connectivity at nearest input point in the area of Supplier Distribution Licensee at 11/22/33/66 kV level depending upon the load demand and technical feasibility.

(ii) The Parent Distribution Licensee would be responsible for establishment of the requisite distribution network viz. 33/11 KV or 33/22 kV or 66/11 KV power substations, 11/22/33/66KV lines, Distribution Transformers, LT lines, other associated works etc. for extending power supply to the consumers in its area of jurisdiction. All costs in this regard would be borne by the Parent Distribution Licensee and form part of Annual Revenue Requirement of the Parent Distribution Licensee as per applicable Regulations.

(iii) Similarly, the distribution network viz. 33/11 KV or 33/22 kV or 66/11 KV power substations, 11/22/33/66 KV lines, boundary metering, other associated works, etc. as may be required for providing electricity connectivity by the Supplier Distribution Licensee to the Parent Distribution Licensee, would be laid down by the Supplier Distribution Licensee. However, all costs in this regard would be borne by the Parent Distribution Licensee and form part of Annual Revenue Requirement of the Parent Distribution Licensee as per applicable Regulations.

(iv) The responsibility of Operations and Maintenance of such electricity distribution network would be of the respective Distribution Licensee which has established such network and form part of Annual Revenue Requirement of the respective Distribution Licensee as per applicable Regulations.

(v) An appropriate metering arrangement would be made as per relevant CEA Regulations at the input point of the Supplier Distribution Licensee to account for the energy supplied to Parent Distribution Licensee.

(vi) The service connections to the consumers would be released by the Parent Distribution Licensee in accordance with the applicable Supply Code and Regulations of the concerned SERC/JERC of Parent Distribution Licensee.

(vii) The tariff along with other provisions of supply would be applicable to the consumers as per relevant Regulations of the Parent Distribution Licensee. The responsibility of Metering, Billing and Revenue collection in respect of such consumers would be of the Parent Distribution Licensee.

(viii) The tariff for the electricity supply by Supplier Distribution Licensee to the Parent Distribution Licensee would be equivalent to Average Cost of Supply of Supplier Distribution Licensee determined in the latest Tariff Order of Supplier Distribution Licensee until a specific tariff is determined for such category of power supply by the concerned SERC/JERC of the Supplier Distribution Licensee.

(ix) The Supplier Distribution Licensee would raise electricity bill to the Parent Distribution Licensee for the power supplied at input point as per energy consumption recorded by the metering arrangement at the input point on monthly basis by 10th day of succeeding month. The Parent Distribution Licensee shall be liable to make payment to the Supplier Distribution Licensee as per the bill raised by Supplier Distribution Licensee within one month from the date of issue of bill.

(x) In case, the payment is not made by the Parent Distribution Licensee to Supplier Distribution Licensee within the stipulated period, the Supplier Distribution Licensee shall have the right to regulate/discontinue the power supply till the due payments are cleared.

(xi) The Parent Distribution Licensee shall also provide Security Deposit to the Supplier Distribution Licensee equivalent to estimated bill amount for 2 months period.

The above protocol would be applicable only for providing power supply in villages/ habitations located in remote far-flung areas wherein providing electricity distribution services through grid network is either not feasible or not cost effective for the concerned distribution licensee of the State due to various reasons such as forest areas, hilly/ difficult terrain, border areas of State, long distance from existing grid, O&M issues etc..The above protocol may continue until grid connectivity from the network of Parent Distribution Licensee becomes feasible and cost effective.

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